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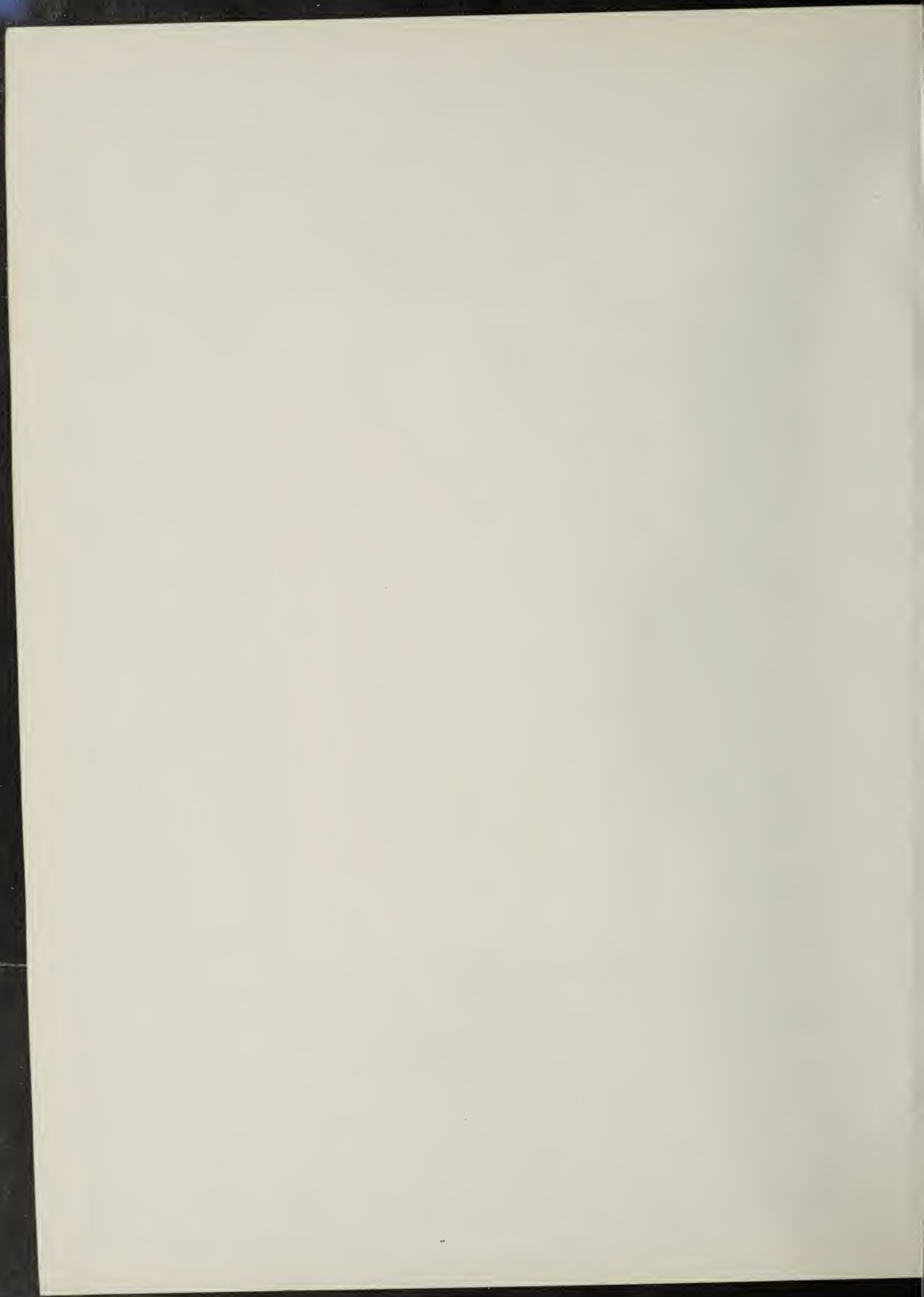
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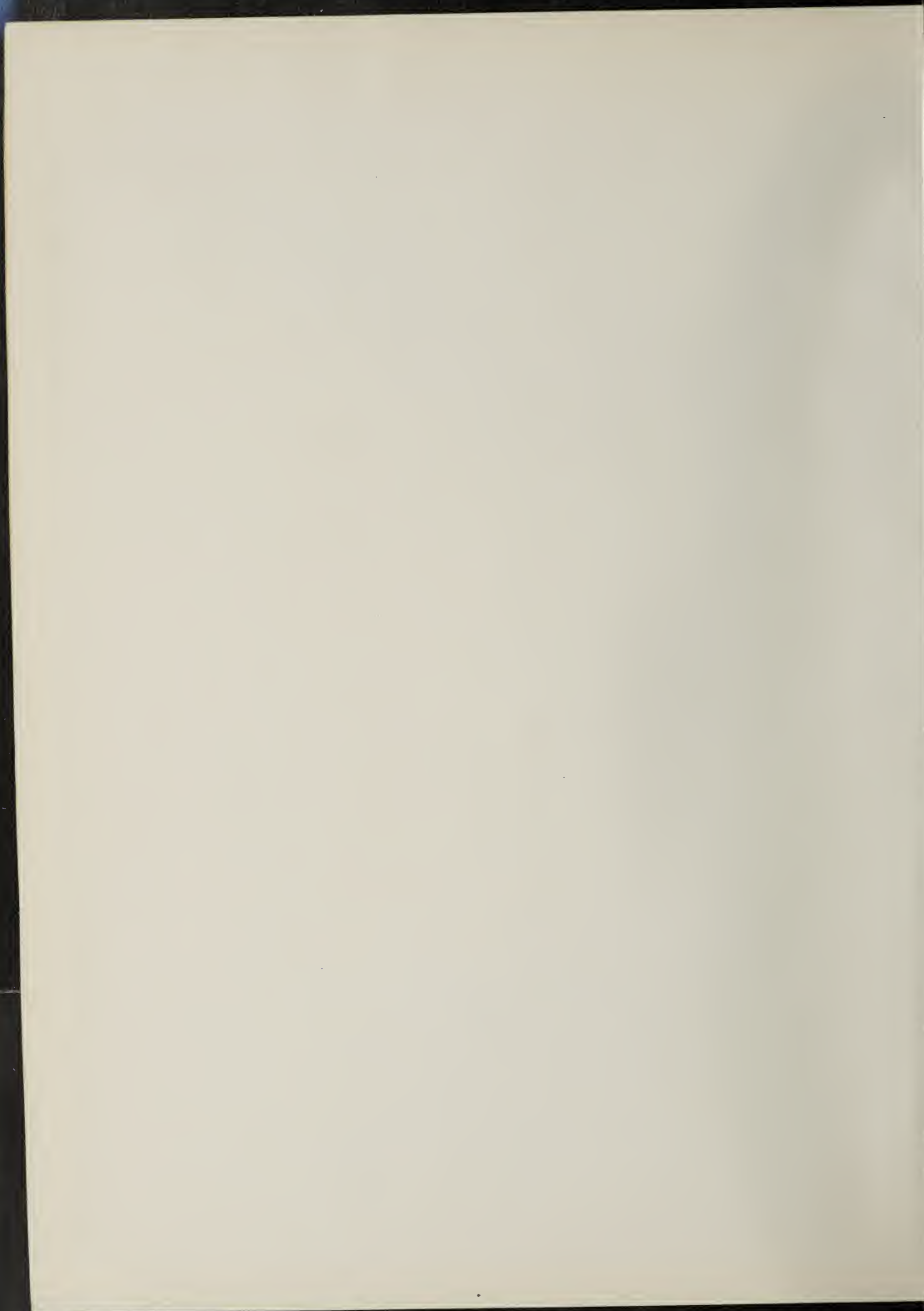
















VOL. XIX, No. 1.

INDIANAPOLIS, IND., JANUARY, 1893.

\$2.00 a Year in Advance.



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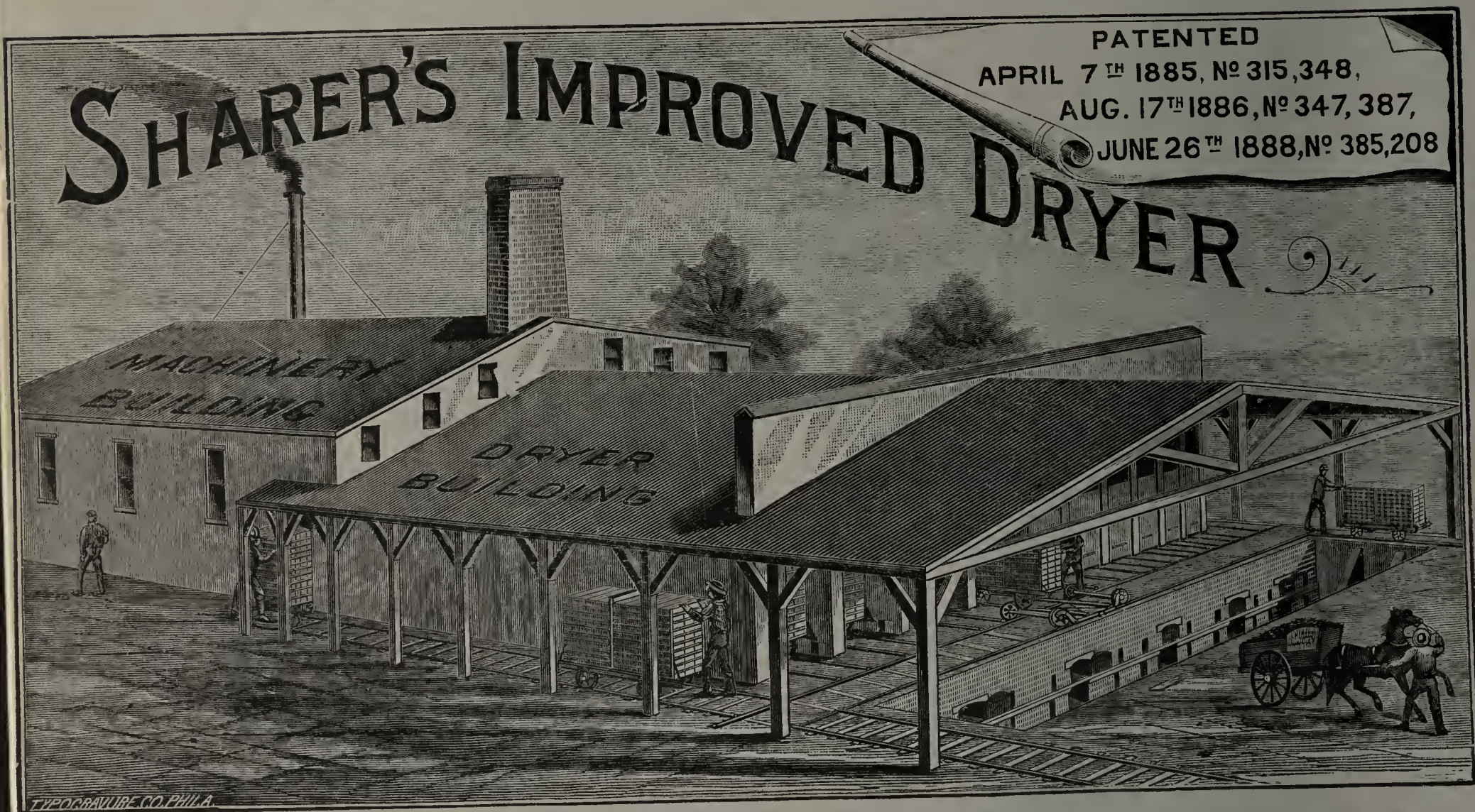
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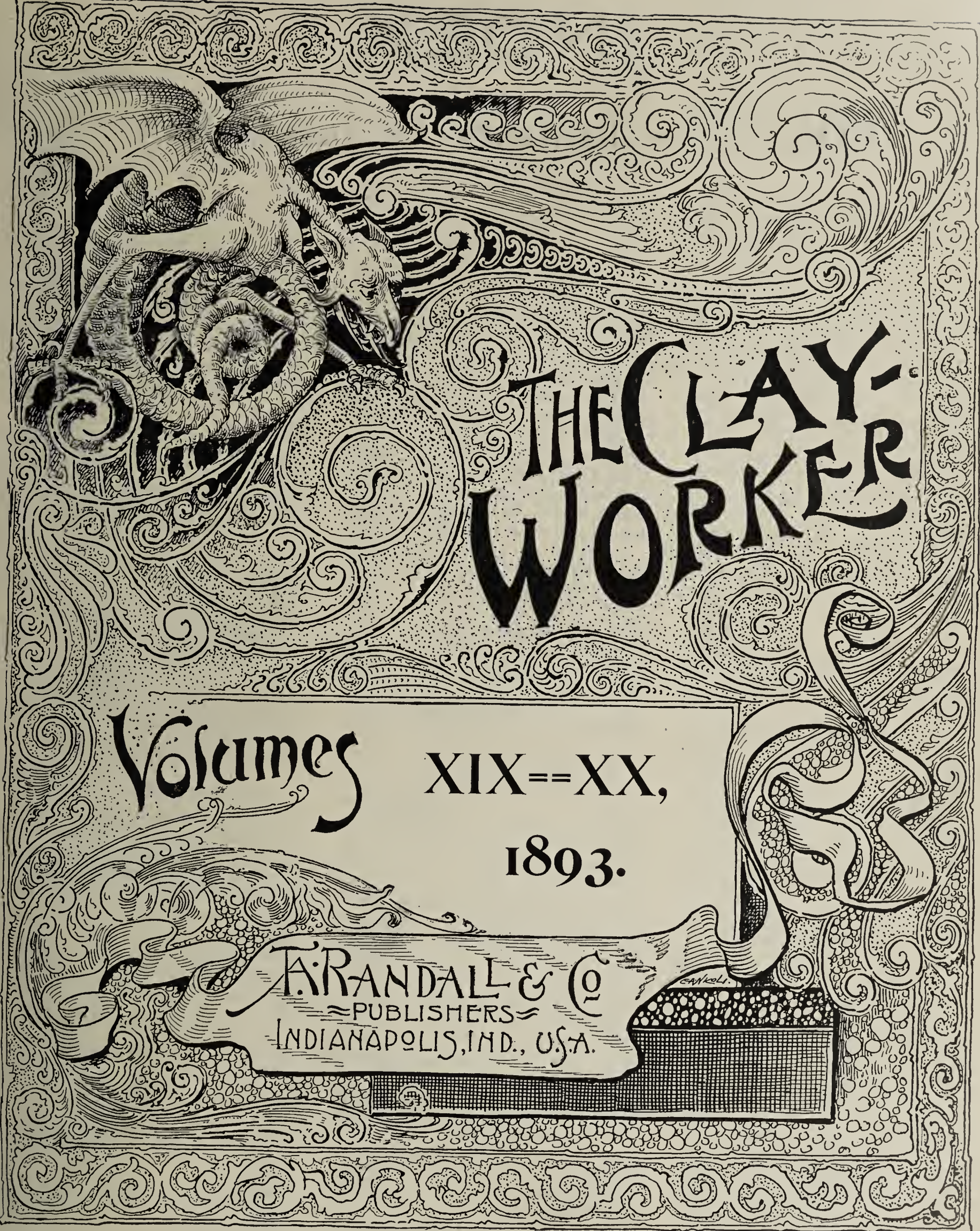
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# THE CLAY WORKER

Volumes

XIX==XX,

1893.

A. RANDALL & CO  
PUBLISHERS  
INDIANAPOLIS, IND., U.S.A.



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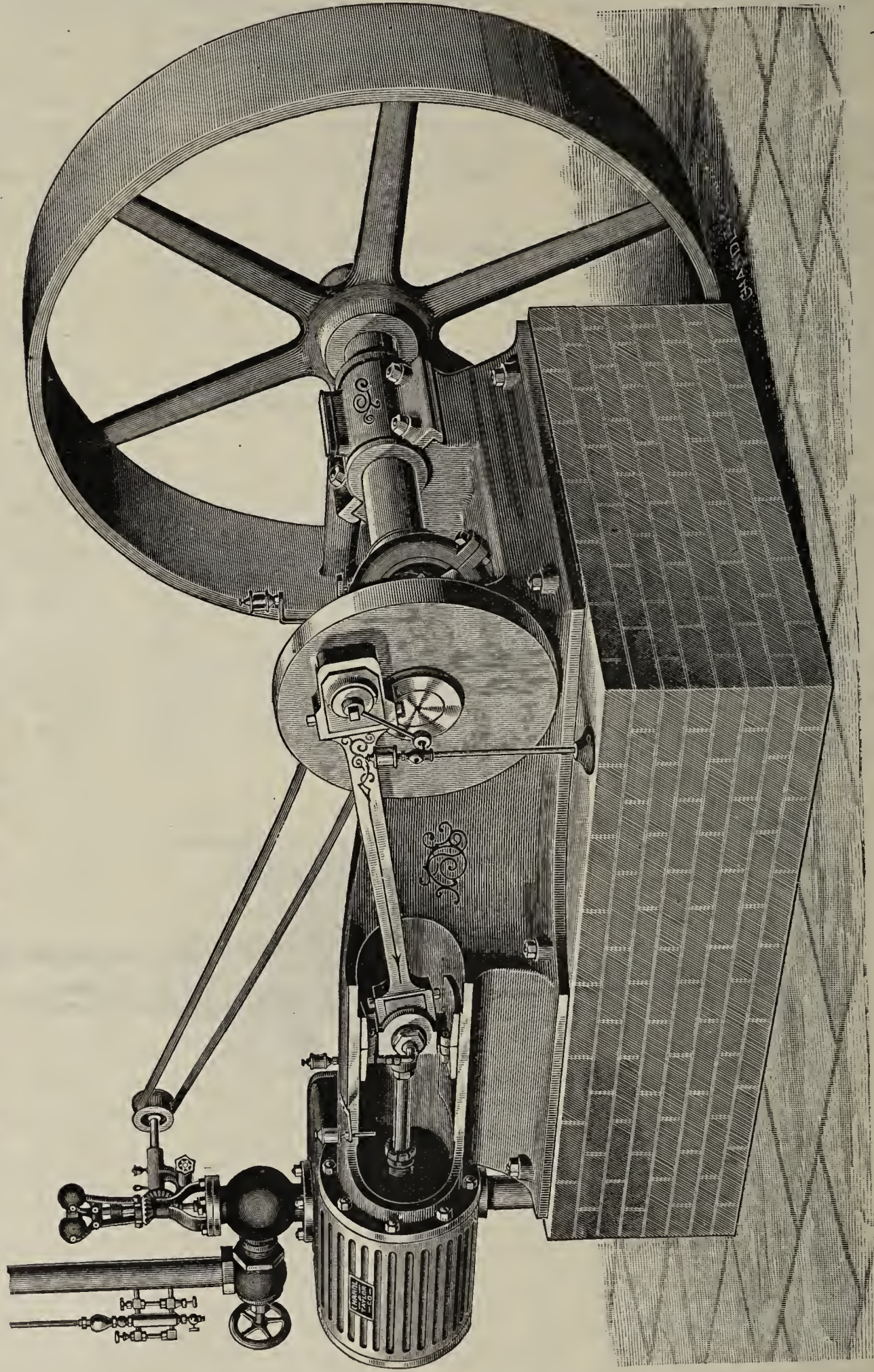
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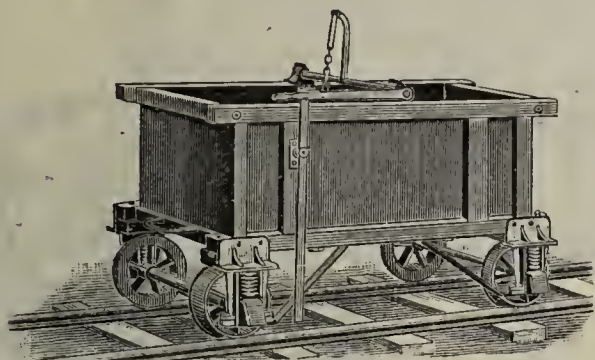
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FIREBOX

CHANDLER & TAYLOR CO., Indianapolis, Ind.

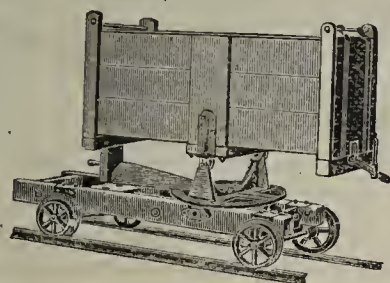
For Descriptive  
Catalogue Address



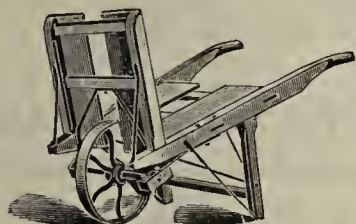
# BRICK YARD SUPPLIES.



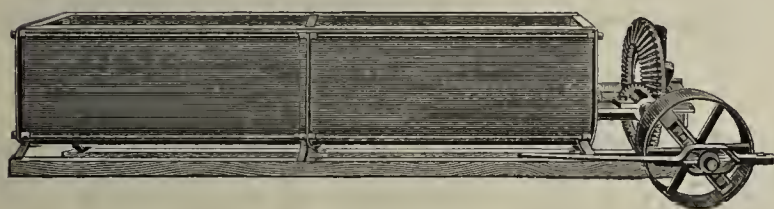
BOTTOM DUMP===Chilled Wheels.



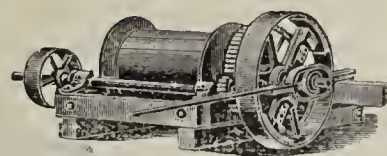
REVOLVING DUMP===Chilled Wheels.



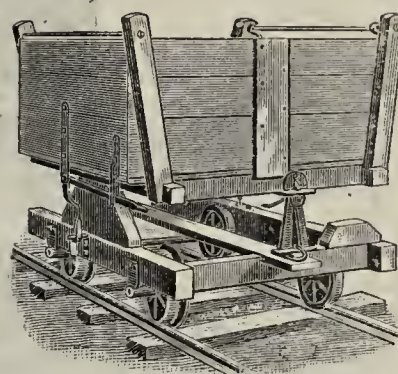
BARROWS.



PUG MILLS.



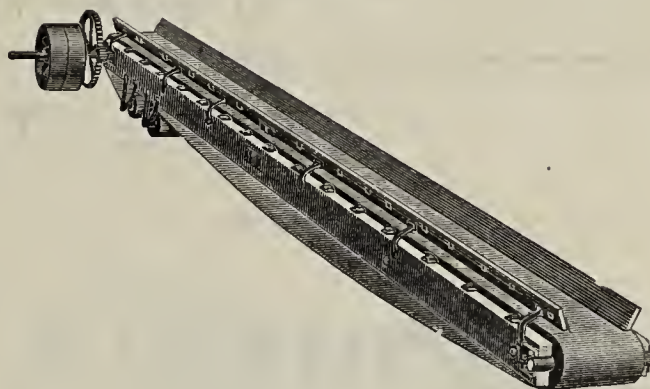
WINDING DRUM.



SIDE DUMP===Chilled Wheels.



TRUCKS.



ELEVATORS.



BRICK MOULDS.

We make the only clay car having chilled wheels.  
 If in need of supplies of any kind we can save you *money*.  
 We manufacture everything used on a Brickyard.  
 When you purchase from us you buy from manufacturers and save all commissions.

**C. & A. POTTS & CO.,**  
**INDIANAPOLIS, INDIANA.**

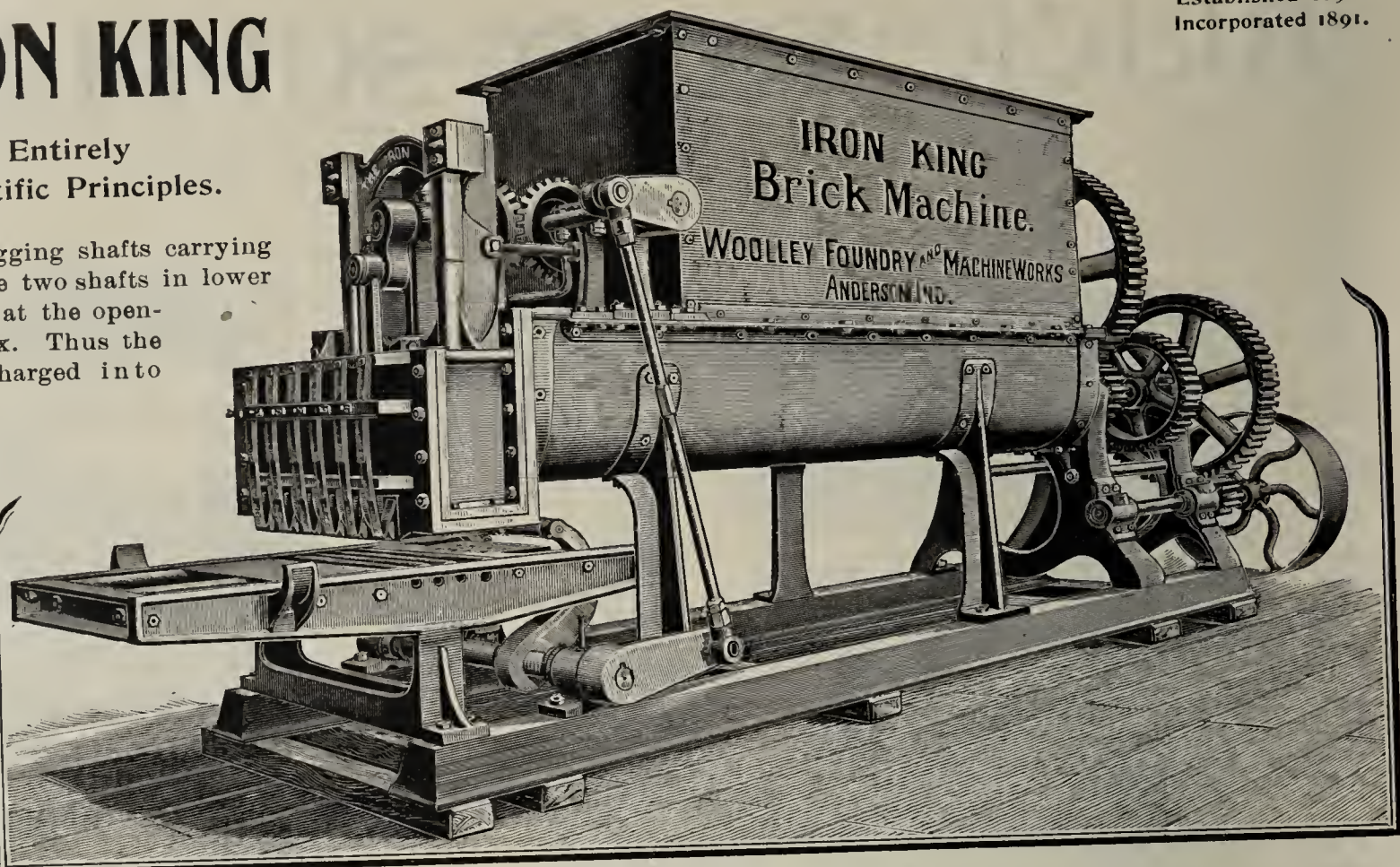


Established 1890.  
Incorporated 1891.

# The IRON KING

Is Constructed Entirely  
On Scientific Principles.

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and



positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

**WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.**

... SAVE THE PENNIES. ...

## The Potts :: Mould Sander.

**T**HE only machine made that will sand the moulds better than can be done by hand. It never gets drunk or strikes for more wages. It is sure and reliable. It will save its cost in a short time.

Every machine shipped on trial, if it does not do the work we will take out and return at our expense.

**C. & A. POTTS & CO.,**

=

**Indianapolis, Ind.**

W. J. EGGE & CO.,  
BRICK MANUFACTURERS,  
OFFICE, 217 NORTH NINTH ST.,  
YARD, COR. TENTH AND ALLEN STS.

*Allentown, Pa. January 12, 1892*

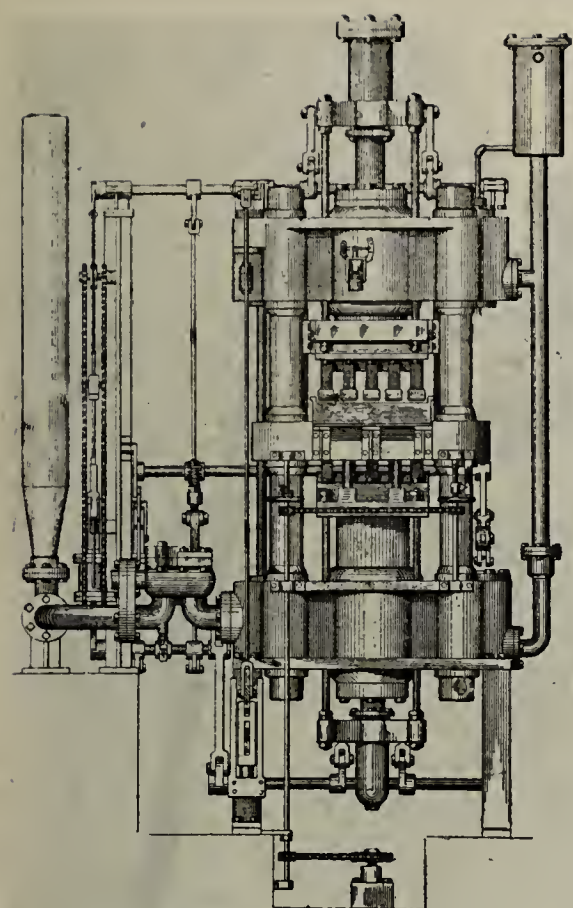
Messrs C. & A. Potts & Co.:

Gentlemen- The Mould Sander we got from you, and used last season, gives entire satisfaction. We could not do without it, for before we had the Sander, we paid two dollars a day and often found it difficult even at those wages to keep a hand at it during the season. Now, with the sander, we pay a boy seventy-five cents a day.

Yours,

*W. J. Egge & Co.*

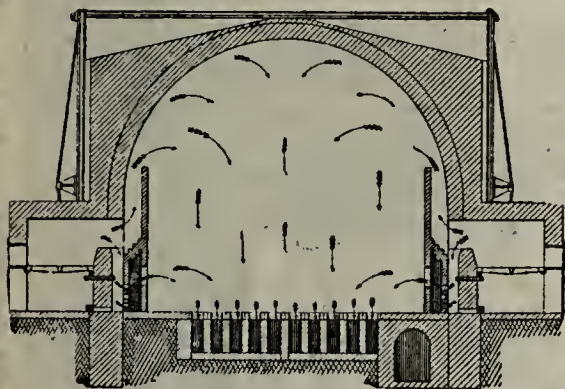




VERTICAL SECTION.

FRONT VIEW.

REAR VIEW.



# THE KOCH Perfection Hydraulic Brick Press

AND

The Grath DOUBLE Down Draft Kiln

SUPERIOR TO ALL OTHERS.

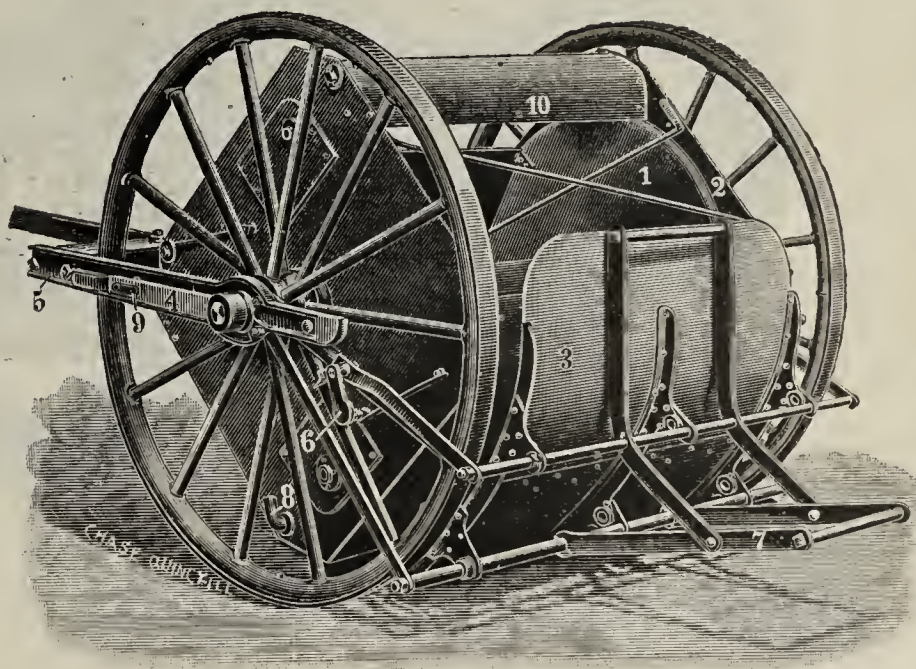
Our Press, Kilns, Gatherers and Disintegrator are in use at the American Hydraulic Press Brick Company's Yards, Collinsville, Ill., who are turning out the finest quality of Press Brick made in the history of Brickmaking.

Brick free from granulation and hard and smooth as polished granite.

## THE QUINCY CLAY GATHERER

For gathering and shedding dry clay it is unequalled. It is self-loading and unloading. It is the cheapest and most approved Clay Gatherer. Gathering clay by this method dispenses with shovelers and avoids strikes.

No brickyard complete without the Quincy Clay Gatherer.



We are General Agents for the ROSS CLAY PULVERIZER. Grinds more clay than all other mills. Will not clog or get out of order. Guaranteed in all particulars.

Manufacturers of the BEST BLACK COLOR for Brown, Gray and Mottled Brick, of the best quality.

# ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.



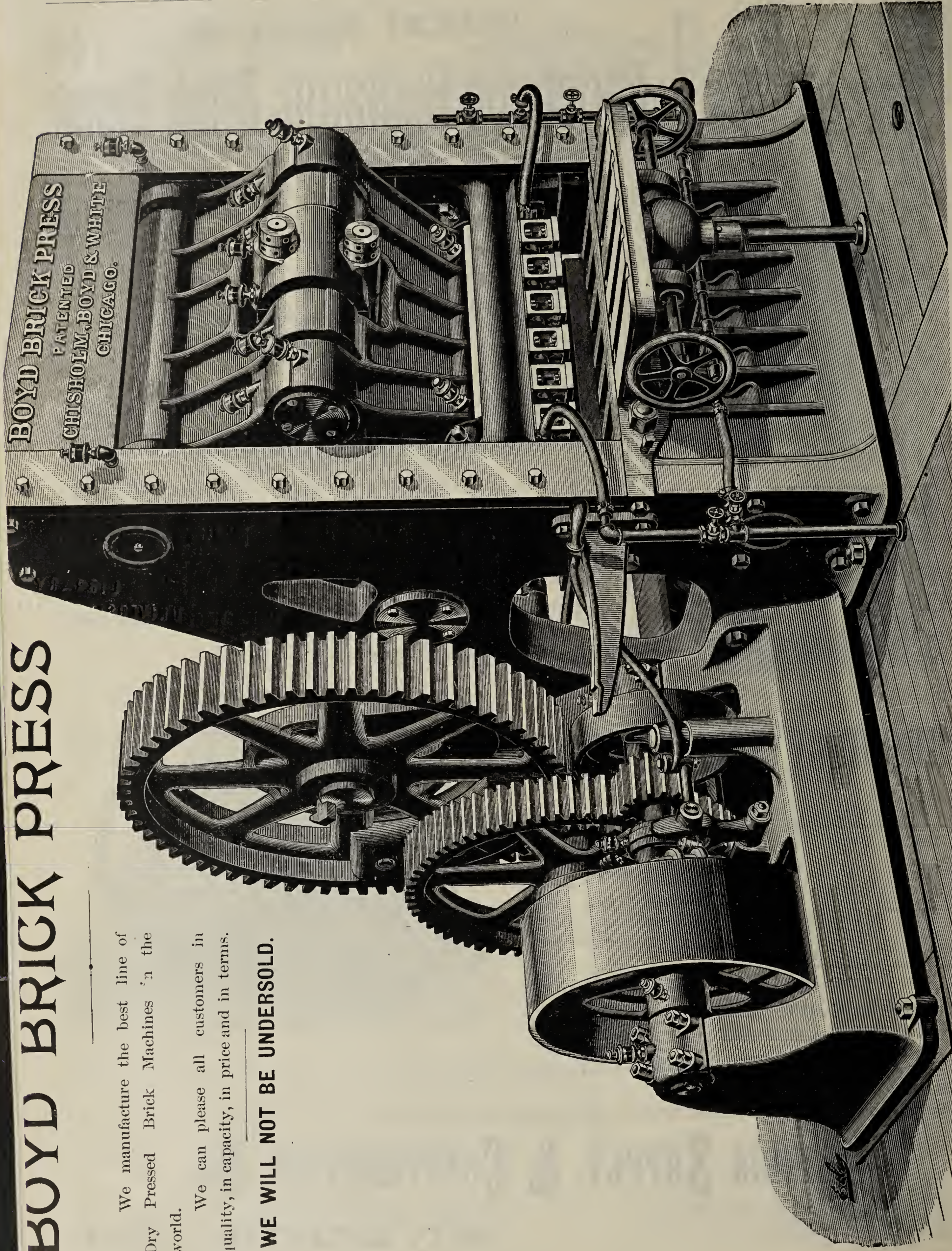
# BOYD BRICK PRESS

We manufacture the best line of  
Dry Pressed Brick Machines in the  
world.

We can please all customers in  
quality, in capacity, in price and in terms.

**WE WILL NOT BE UNDERSOLD.**

THE CLAY-WORKER.



ADDRESS  
Chisholm, Boyd & White, Monon Block, CHICAGO.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing the Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be our own in case of failure. Why experiment when you can have a sure thing.

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

CHICAGO.



# THE U. S. BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

This Press is specially designed to meet the requirements of the modern Brick Plant, inasmuch as it is a representative of **STRENGTH, DURABILITY,** and above all of **SIMPLE CONSTRUCTION.**

The U. S. Brick Press is to-day turning out thousands of the finest brick in the country.

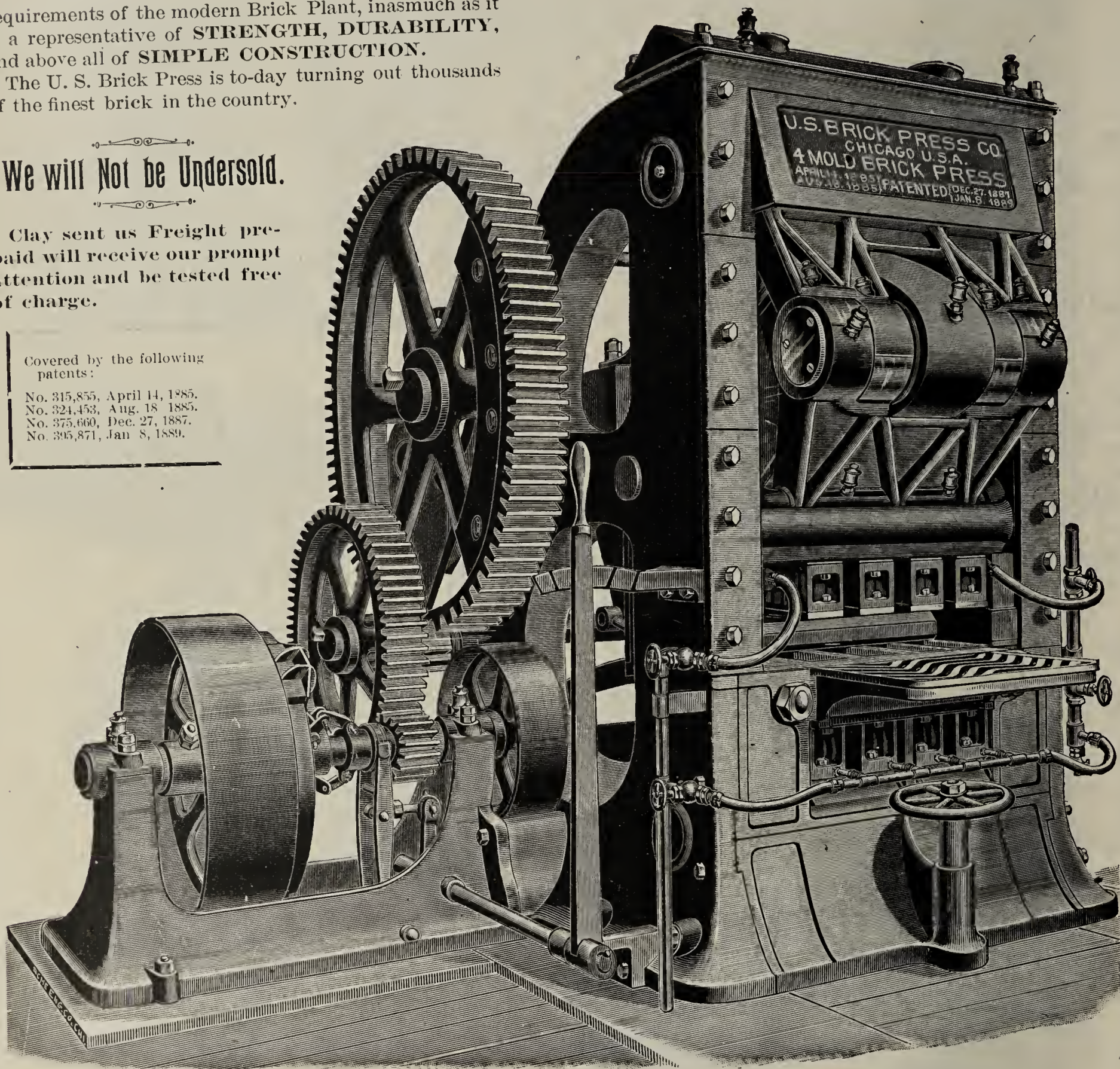
OFFICE:  
Room IIII, 79 Dearborn St. CHICAGO, ILL.

**We will Not be Undersold.**

Clay sent us Freight pre-paid will receive our prompt attention and be tested free of charge.

Covered by the following patents:

No. 315,855, April 14, 1885.  
No. 324,453, Aug. 18 1885.  
No. 375,660, Dec. 27, 1887.  
No. 395,871, Jan 8, 1889.



**U. S. Dry Clay Brick Presses in use on the following yards:**

Colorado Fire Clay Manufacturing Co., Pueblo, Col., 4-Mold.

James McNeen, La Junta, Col., 2-Mold.

Worthorst Stone Co., Massillon, Ohio, 4-Mold.

Walter Collins, Columbus, Ohio, 4-Mold.

George Smith, Jacksonville, Ill., 2-Mold.

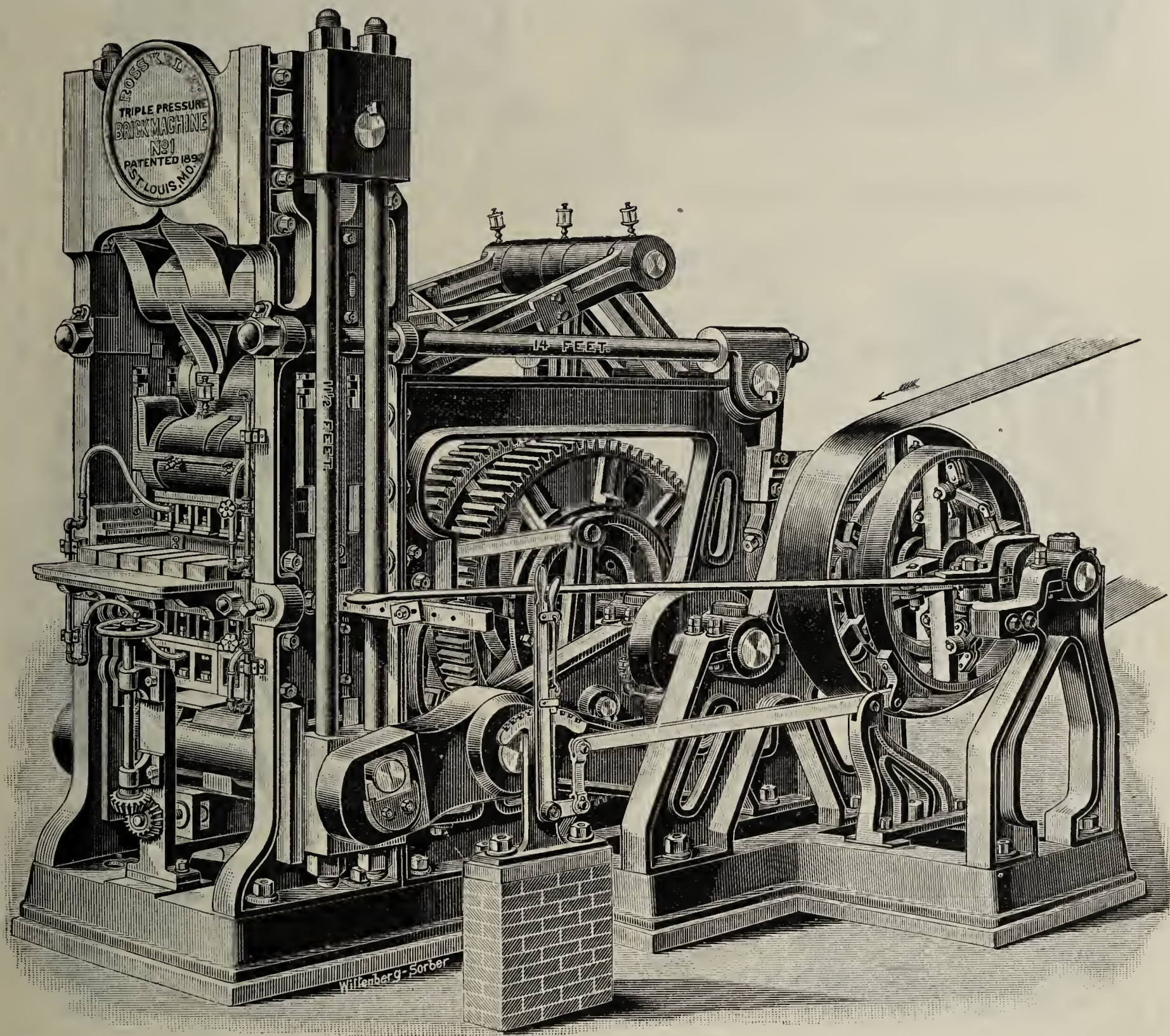
[Mention the CLAY-WORKER.]



# The Ross-Keller Brick Machine.

## (Triple Pressure)

Weight 68,000 pounds, Capacity 35,000 pressed brick per day.



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

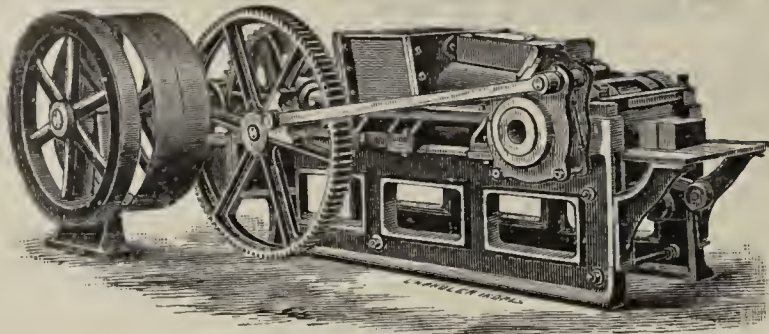
For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**

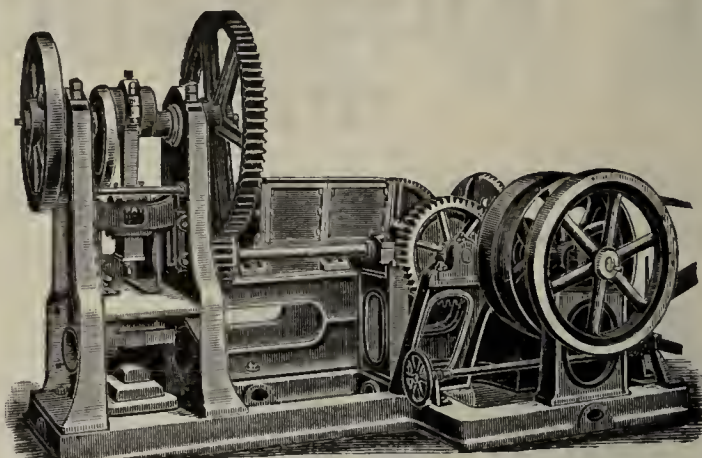
Room 207 Laclede Building,

ST. Louis, MO., U. S. A.

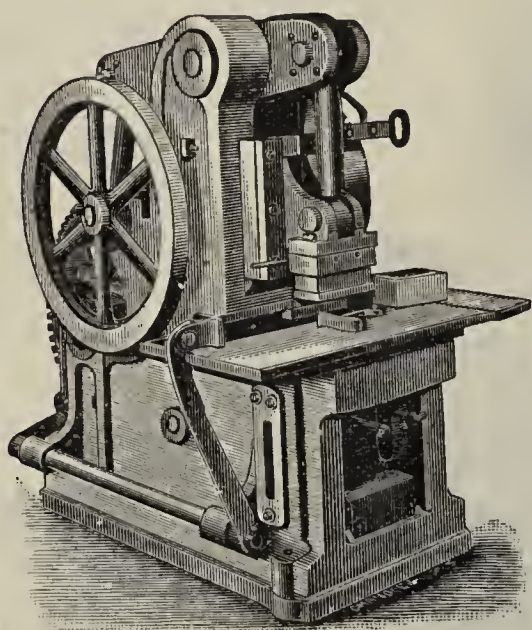




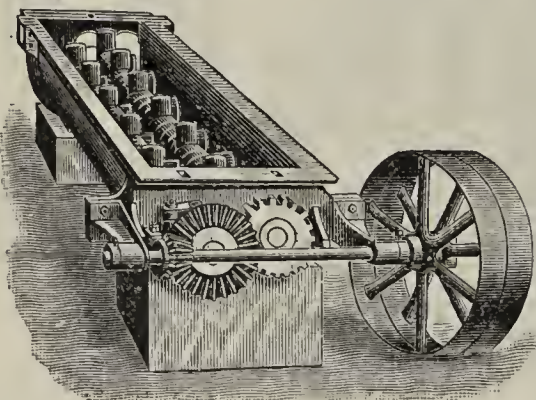
IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK &amp; TILE PRESSING MACHINE



DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building **BRICK**

and the best and most economical  
kiln in which to burn them.

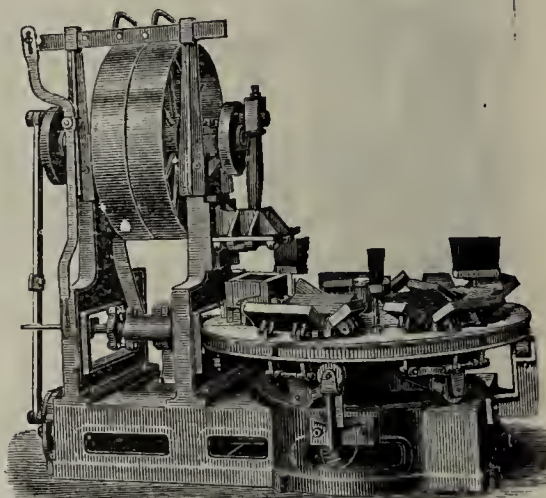
We are prepared to furnish complete  
equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

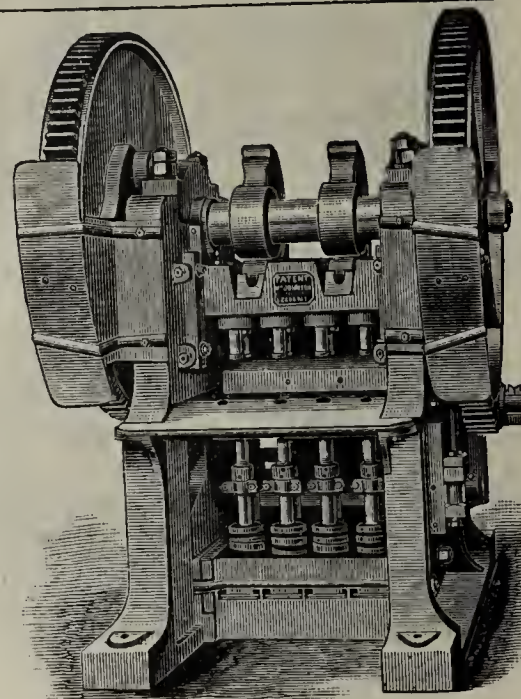
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



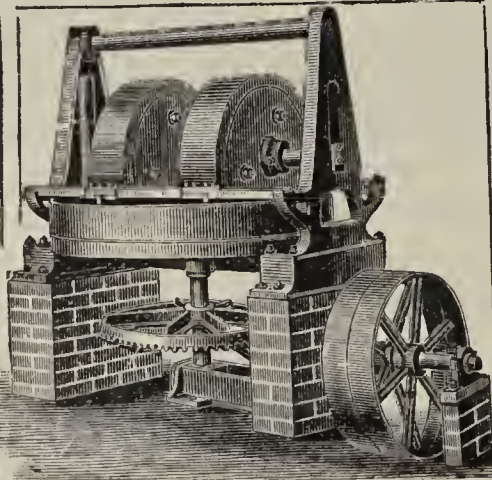
PAT. STEAM SAND-FACED PRESSING MACHINE



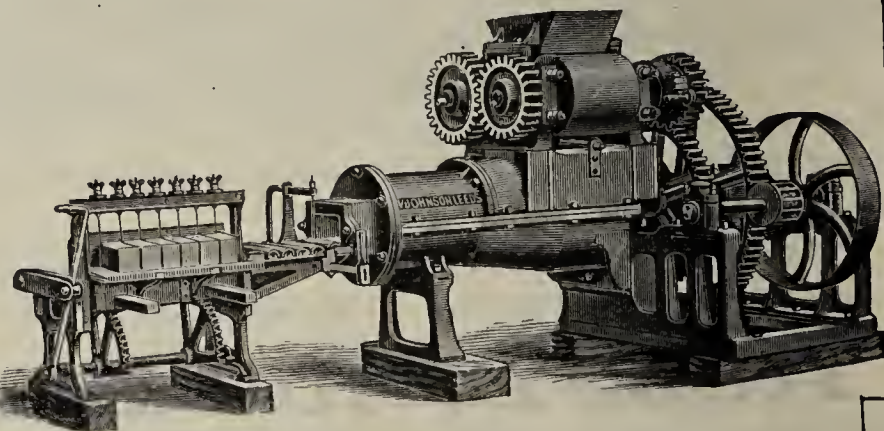
THE UNIVERSAL BRICK MACHINE



HAND LEVER BRICK PRESS



PERFORATED EDGE RUNNER CLAY GRINDER



COMBINATION PUG MILL BRICK &amp; TILE MACHINE



ESTABLISHED 1854.

INCORPORATED 1875.

# St. Louis Iron & Machine Works

Iron Founders and Builders of Heavy Machinery.

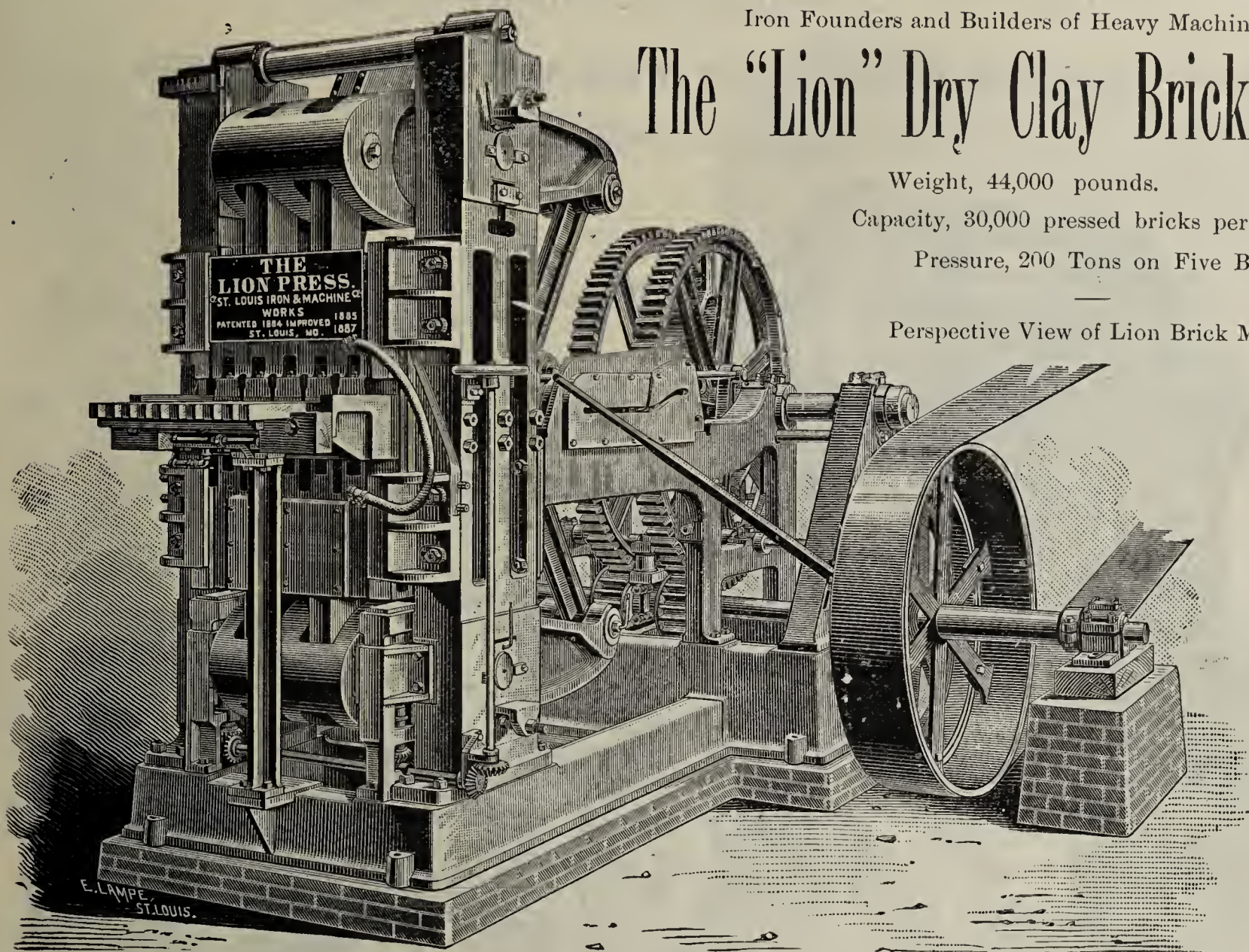
## The "Lion" Dry Clay Brick Press.

Weight, 44,000 pounds.

Capacity, 30,000 pressed bricks per 10 hours.

Pressure, 200 Tons on Five Bricks.

Perspective View of Lion Brick Machine.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—30,000 capacity and 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

# ST. LOUIS IRON & MACHINE WORKS,

Main Street and Choteau Ave., St. Louis, Mo.

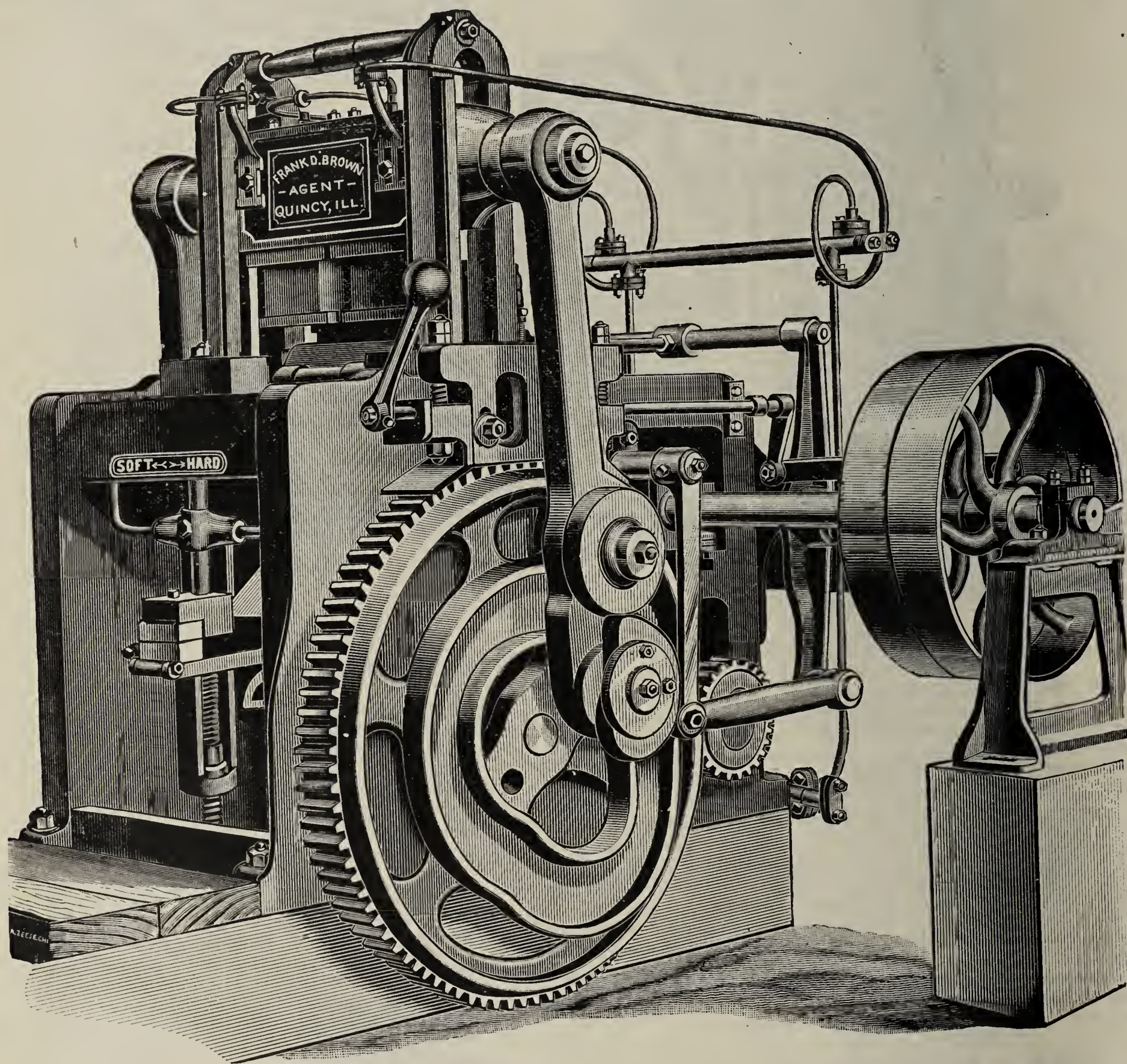


# Whittaker Press Brick Machine

Works Clay Semi-plastic, Semi-dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



Clay sent freight prepaid will be pulverized, pressed and burned free of charge.

**FRANK D. BROWN, Sole Owner and Agent,**

**QUINCY, ILL.**

[Mention the Clay-Worker.]



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

In addition to the stock of 2, 3 and 4-Mold Presses at our Factory, at Keokuk, Iowa, we can show you a complete dry clay brick plant, fitted with our Presses and every modern appliance, Kilns, Etc.

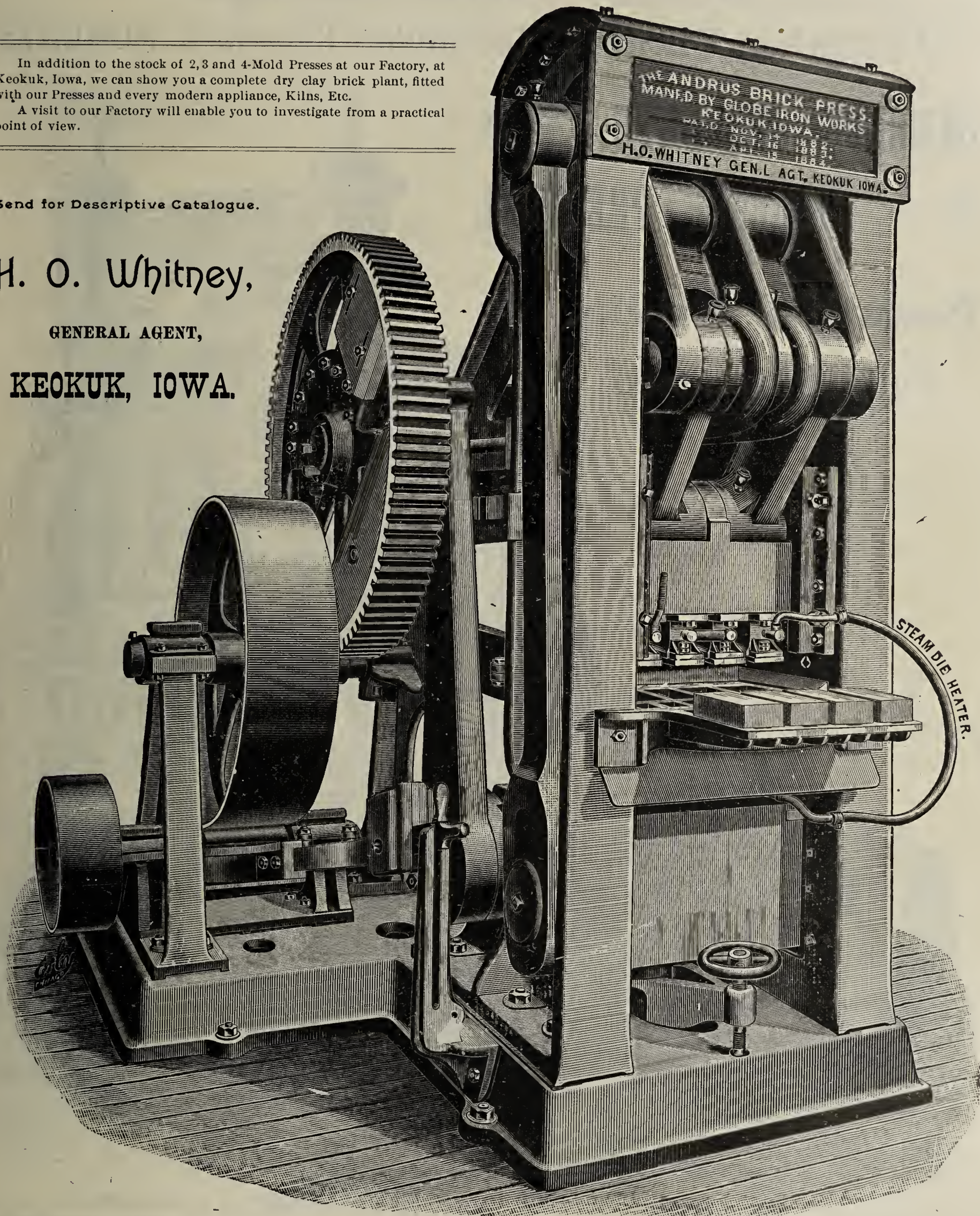
A visit to our Factory will enable you to investigate from a practical point of view.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





# THE SIMPSON BRICK PRESS:

**NO SEAM AROUND THE BRICK.**

**CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!**

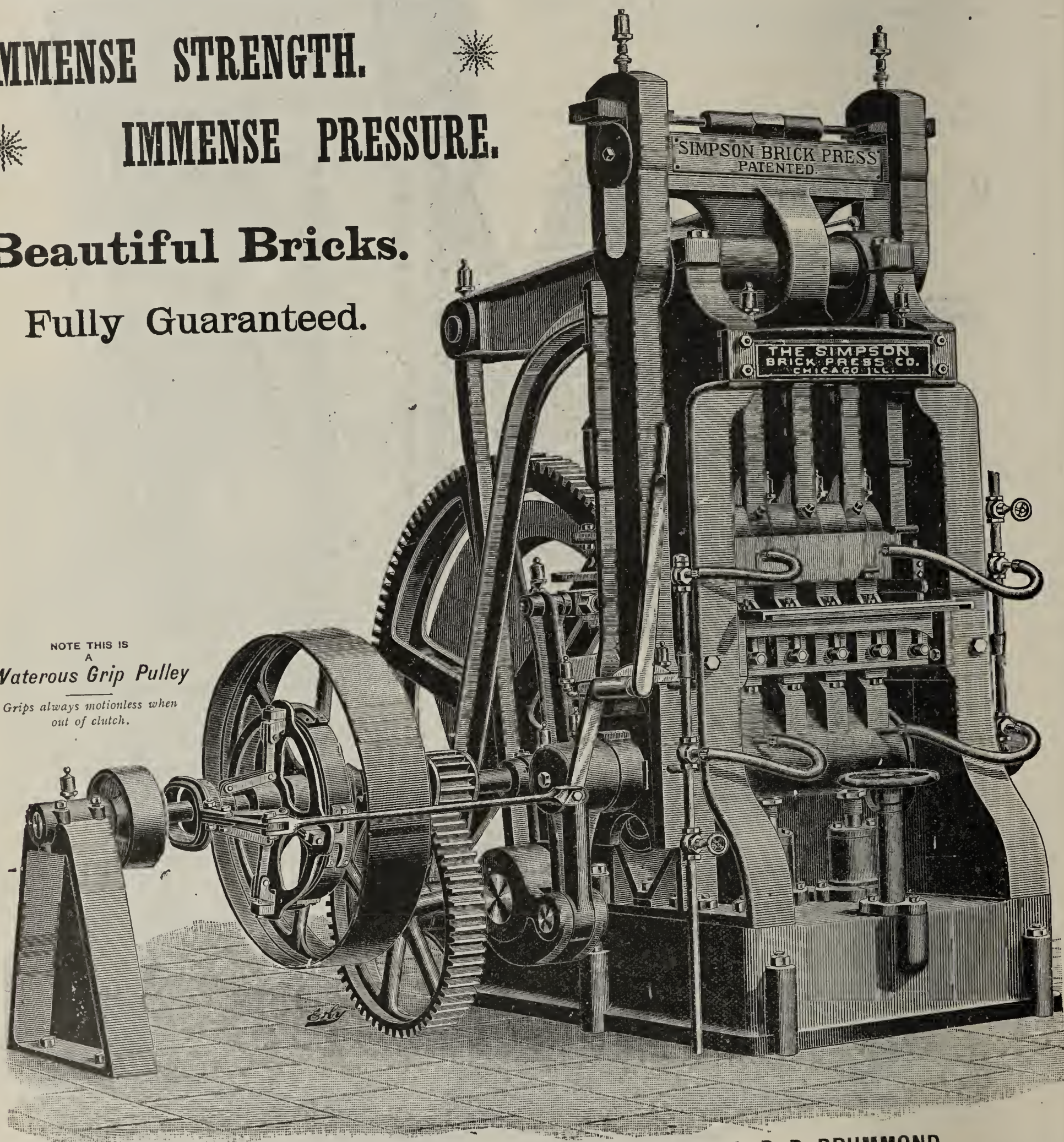
**IMMENSE STRENGTH.**

**IMMENSE PRESSURE.**

**Beautiful Bricks.**

**Fully Guaranteed.**

NOTE THIS IS  
A  
*Waterous Grip Pulley*  
Grips always motionless when  
out of clutch.



APPLY TO  
**THE SIMPSON BRICK PRESS CO.,**  
Room 210, 87 and 89 Wash. St., Chicago, Ill.

Agent for the South, **D. B. DRUMMOND,**  
313 Commercial Bld'g, St. Louis, Mo.  
Agents for Canada, **WATEROUS ENGINE WORKS CO.,**  
Brantford, Canada.





# See the SIMPSON PRESS.

READ WHAT A USER THINKS OF IT.

O. W. McFARLAND, President.  
CHAS. BRANAHL, SR., Vice-President.  
R. F. KILGEN, Secy and Treas., 112 N. 8th Street.  
M. J. REILLY, Superintendent.

TELEPHONE 2934.

COTE BRILLIANT PRESSED BRICK CO.

OFFICE, 5216 ST. LOUIS AVENUE

St. Louis, Mo. Sept 3<sup>rd</sup> 1892

Messrs Simpson Brick Press Co  
Chicago

Gentlemen

After using your Dry Press Brick machine for about 16 months we are thoroughly convinced that it is the very best Machine in market to-day. And we would not exchange for any other machine known. We average 20,000 brick per day of 10 hours when making Common brick - And when making Stock brick we average 17 to 18,000. Our Repair bills have been a little less than \$14<sup>00</sup> per month. And we have not lost 3 consecutive hours at any one time since we started, on account of the machines.

We began with one machine in April 1891. So well did we like it that we put in another in July 1891. And our confidence was so great and satisfaction so complete, we put in another in April 1892. And if we are ever in need of more machines. The "Simpson" is our choice. We would not buy any other.

Sincerely, Yours

Cote Brilliant Pressed Brick Co M J Reilly



# MORRISON'S IMPROVED KILNS FOR BURNING CLAY WARES.

DAILY PRODUCT OF OUR KILNS IN UNITED STATES---ONE MILLION BRICKS.

Especially adapted to burning paving, repressed, ornamental and common bricks.

\* \* PATENTED IN UNITED STATES AND CANADA. \* \*

SUCCESSFUL.



DURABLE.

Pressed bricks burned without fire marks, of uniform color. Arch bricks all fronts or pavers

————— AND NONE DAMAGED. —————

Coal screenings preferred for fuel. Will burn either wood or coal. One fireman for two hundred thousand bricks.

  THE  ONLY  KILN 

That regulates the temperature of heat, and directs its course by a system of air drafts, giving complete control of the degree of heat, as well as its manipulation. This system we have covered by letters patent. Parties using these air drafts are liable to prosecution for infringement.

For descriptive circulars, prices, terms, etc., address us, stating what you want.

## R. B. MORRISON & CO.,

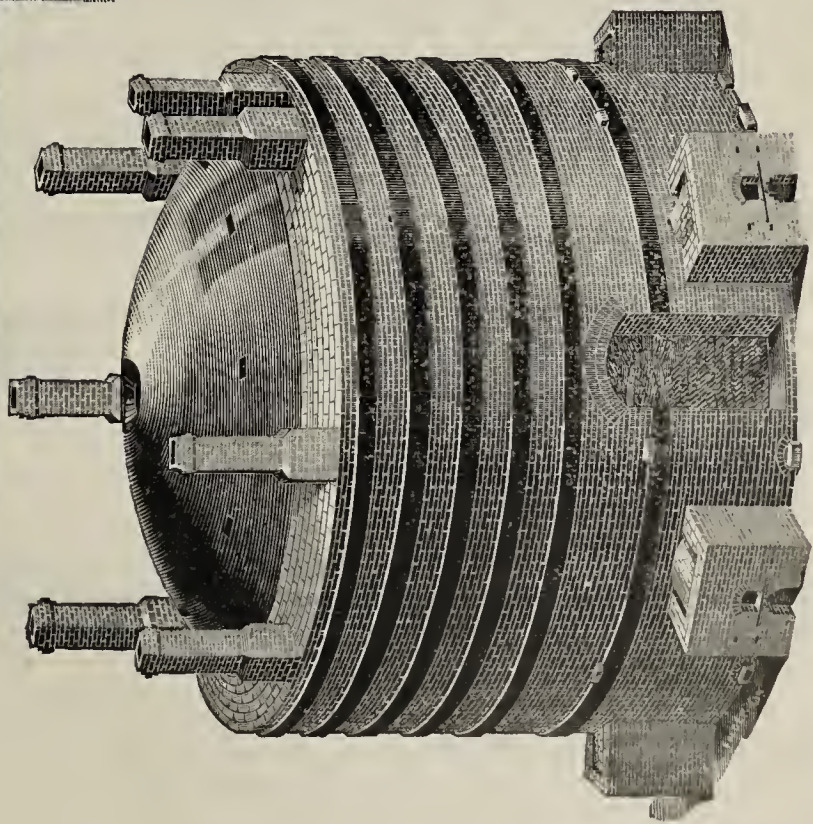
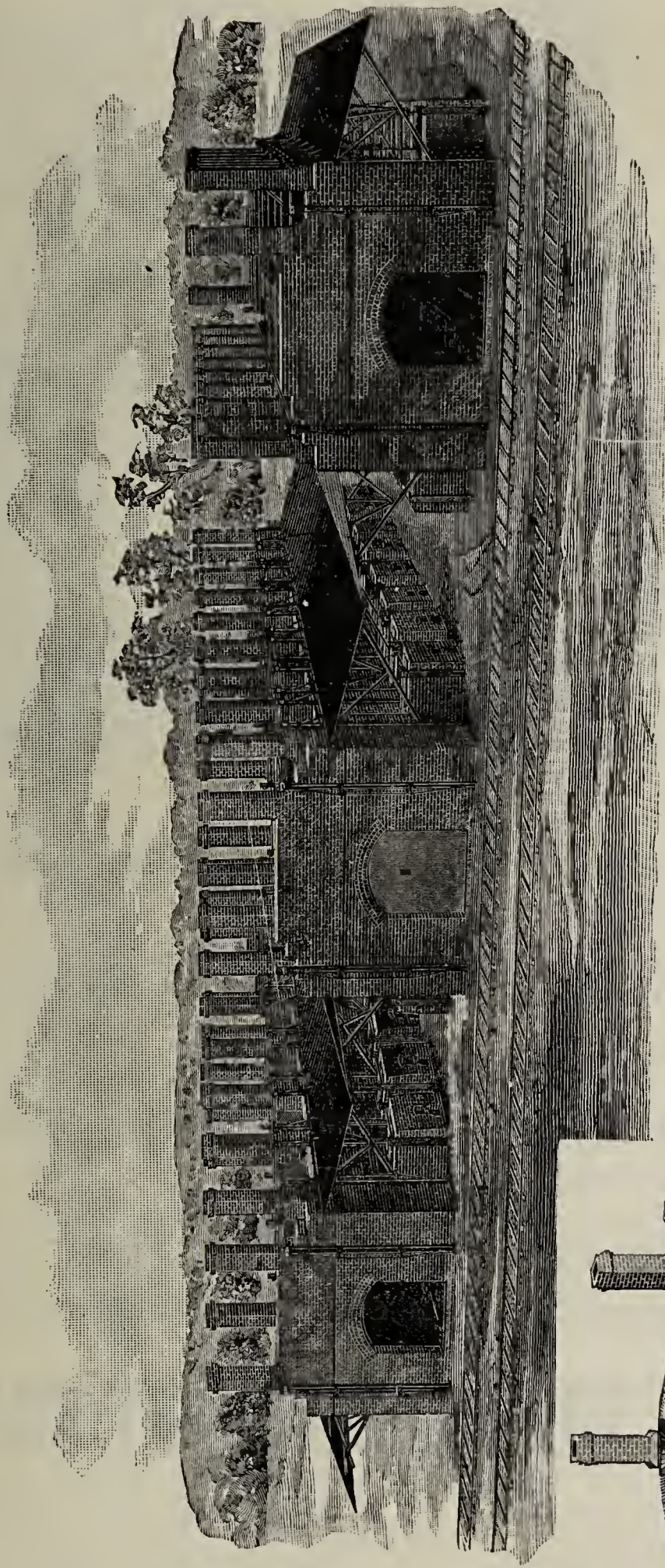
PROPRIETORS,

Box 335,

ROME, GEORGIA.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



Just a  
Few Words  
With You.



NO doubt, with the advent of the new year you made many good resolutions.

PROBABLY ONE was to accumulate more, if possible, of the "root of evil."

A GOOD way to do this would, in our judgment, be to equip your plant with the best DRIER known.

THIS would enable you to operate continuously and regardless of outside influences.

THUS you would gain a point in economy, increase your capacity and enhance the value of your product.

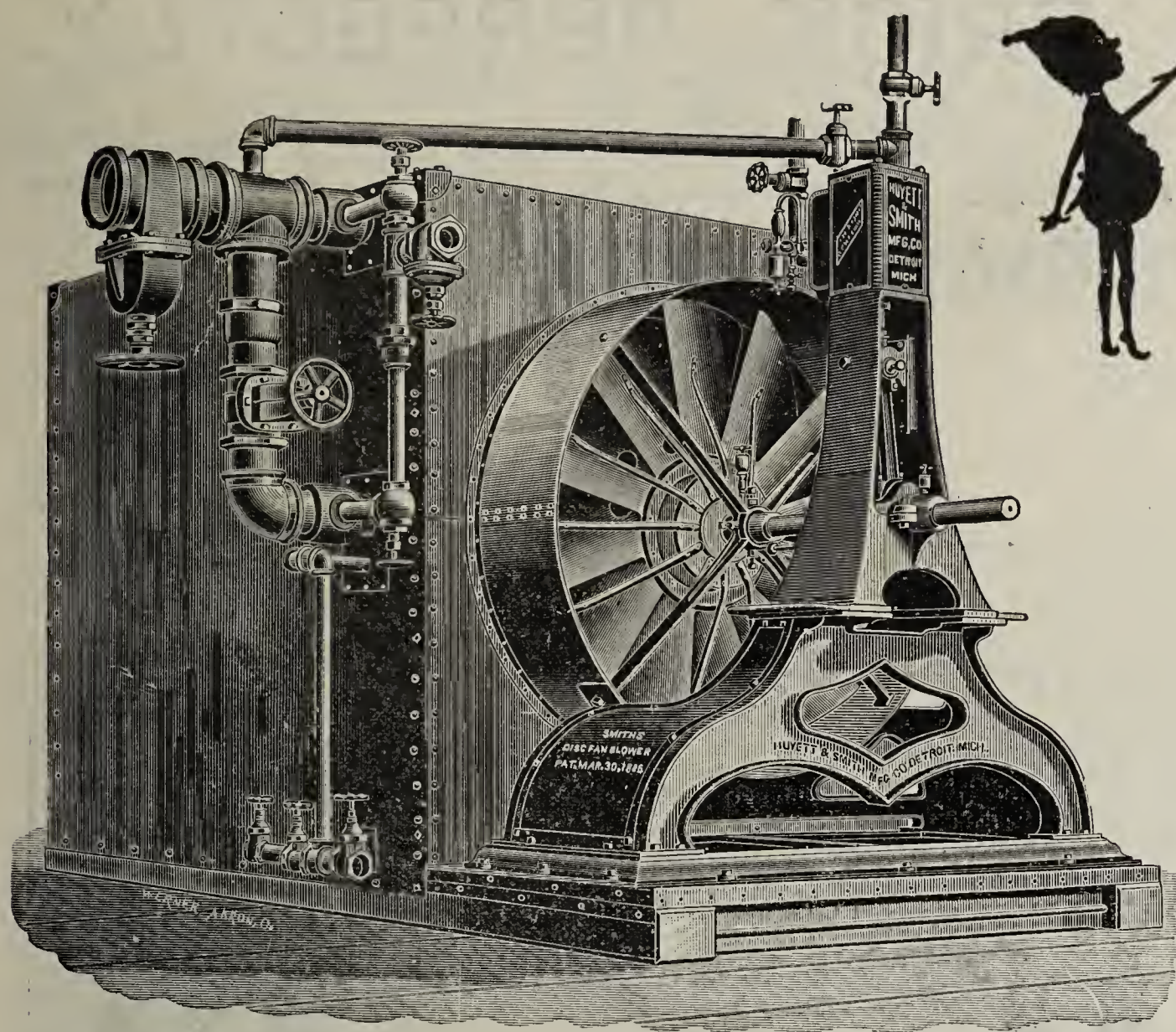
WE would be pleased to hear from you; we can give you some information particularly useful to you now. Sincerely,

OFFICE AND SALESROOM:  
925 Main W. St.

**THE STANDARD DRY KILN CO.,**

LOUISVILLE, KY.





THE  
Brick Dryers

OF

THE

World are

THE

Huyett & Smith Mfg. Co.,

1400 Russell Ave.,

DETROIT, MICH.

✧ Try Them and be Convinced ✧

Their Dryer dries more brick to the ton of coal or cord of wood than any dryer made.

All work is uniform, cheap and effective.

Full working plans furnished with every order.

Erection of plant superintended when desired.

All work guaranteed exactly as represented.

Write for plans and information.

**THE HUYETT & SMITH MFG. CO.,**

CHICAGO, 31 So. Canal St.  
NEW YORK, 107 Liberty St.  
BOSTON, 48 Union St.  
PITTSBURGH, 99 First Ave.  
NEW ORLEANS, 28 Union St.

DETROIT, MICH.



# DRYING BRICK PERFECTLY.

CHAS. S. PURINGTON,  
PRES. & GENERAL MANAGER.

T. S. DOBBINS,  
SECRETARY.

## PURINGTON BRICK CO.

OFFICE:

ROOM 50, 163 LA SALLE ST.

TELEPHONE, MAIN 3752.

CHICAGO, Jan. 5, 1893.

IRON CLAD DRYER CO.,  
CHICAGO, ILL.

GENTLEMEN:—I have been using the two Dryers you erected for me last fall constantly since completion, and I would say, I am perfectly satisfied with the working of the same. We have no trouble drying the brick perfectly without any injury, and it seems that this cold weather we are now having, does not retard the drying in the least, and we have dried as many as 150,000 bricks per day when the mercury out doors registered near zero.

The heating apparatus, which was constructed under your new system, is simply perfect—it is easily kept in repair, in



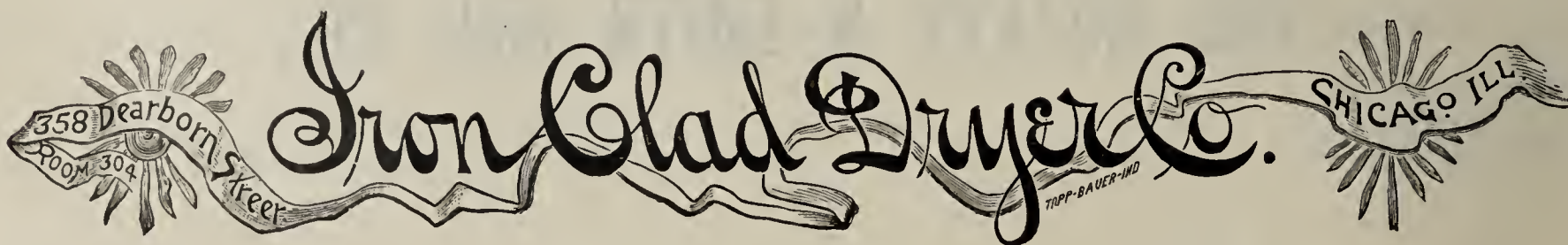
DRYERS OF THE PURINGTON BRICK CO., BERNICE, ILL., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

fact we have very little repairing to do, and since you finished it, cold weather does not seem to have any effect on it, and we would consider that freezing up the pipes would be simply carelessness on the part of the men that attend to the Dryer.

Wishing you a prosperous new year, we remain,  
[See cut of Dryer on last cover page.]

Yours respectfully,

PURINGTON BRICK CO., W. S. PURINGTON, Pres't.





# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., JANUARY, 1893.

No. 1

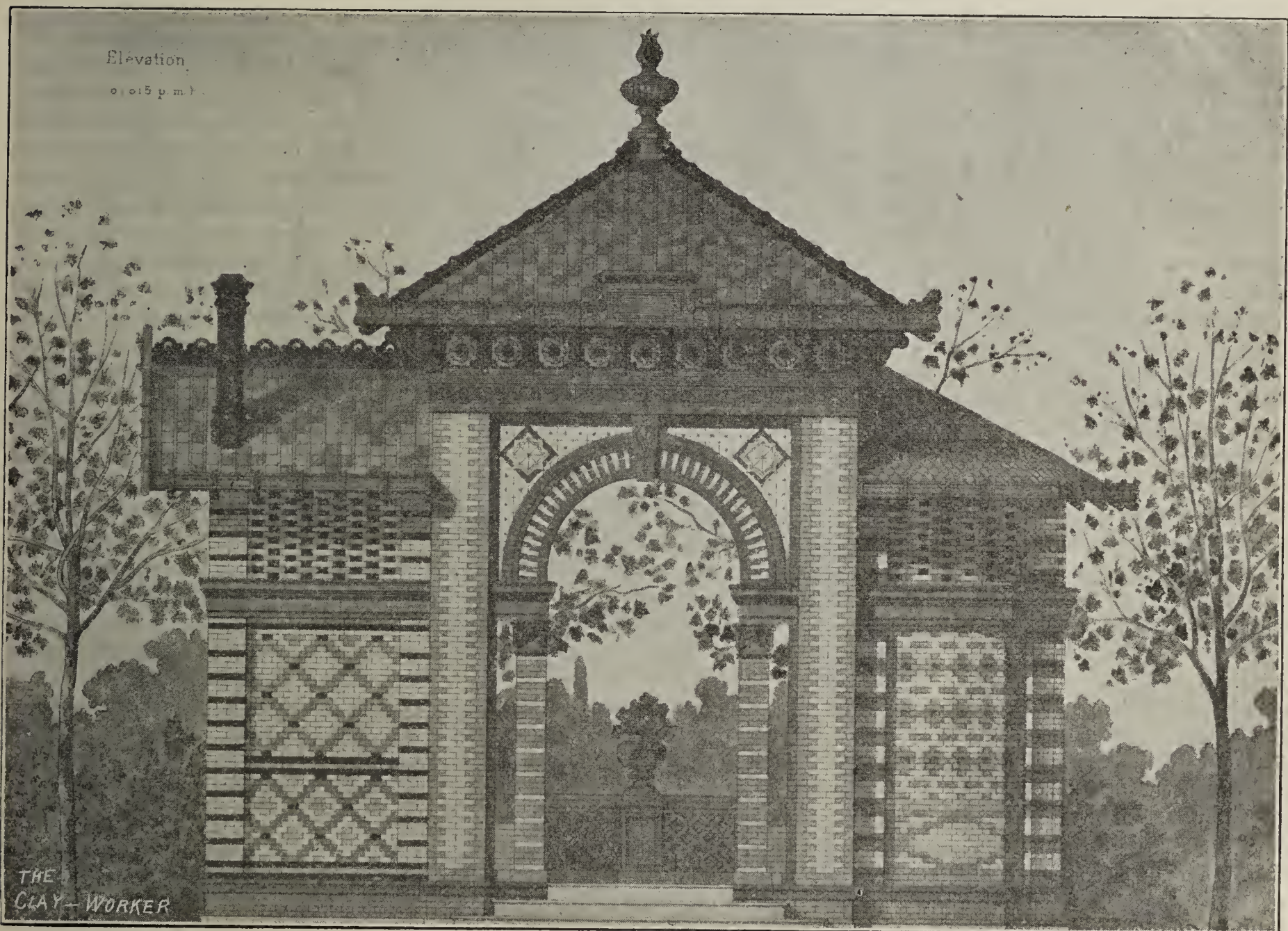
Written for the Clay-Worker.

## ART IN BRICKWORK.

NOW that the time for the erection of special structures in connection with our Columbian Exposition is at hand, it is interesting to see what others have done along this line.

other parts. This would be interesting to those contemplating an exhibit at Chicago next year. It is to be hoped that the French people, who are the authors of this design, will have something of the same general character at our Exposition, and that we may have work of our own with which to make

as far as the mechanical part of laying them is concerned, our work is of the highest order. However, the French would be able to take our brick, and by combining them according to their ideas of color and decoration, do work which is superior to anything we have yet done. Their sense of design and color from an



BRICK PAVILION IN PARIS EXPOSITION OF 1889.

The cut given is of a building erected at the Paris Exposition in 1889. It, like a structure shown in a previous issue, is intended to show clay products. There is tile decoration under the cornice, a tile roof, spandrels over the arches, brick and terra cotta in the general construction and as well in decorative form for

comparisons. We have the French people at a disadvantage in the manufacture of various articles, notably in brick. One finds brick work of a higher general constructive character in America than any place else in the world. We certainly make better looking brick than the French people—better colored—and

artistic standpoint is more highly developed than is ours. It has so happened that the hundreds of years of their history have been given to the development and education of the artistic instinct. Their surroundings since the 12th century have been of an artistic character. This naturally has



an influence upon their work to-day. True, they have not improved in design beyond that of the early period of their work. This is owing to the fact that they reached the acme of artistic excellence, along certain lines, during the 13th century, and relatively they have done nothing better since. However, they have done work along other lines, and designed in different styles since that period; and everything which they have done has been of a very high order.

With us the conditions are quite different; we came as settlers to a new country; the first work to be done was to protect ourselves from the elements, and it is only within recent years that very large sections of our country have been able to consider anything not strictly utilitarian. However, if we are without pride of opinion which prevents us seeking benefits from others, we will go to the French, Germans, English and others, and accept whatever they have of value to offer us. The most that they have to give us is in matters of design, and here we should absorb much. It is unfortunately true of Americans, that we like to assume greatness from the beginning, in everything that we undertake. There are many who think that the best place to study architecture is in Chicago, and the best place from which to draw architectural inspiration is the great cities of this country. Such a disposition is unfortunate in that it impedes progress along certain lines. From an engineering standpoint our Chicago structures are of the highest possible character; from a utilitarian standpoint they are not to be excelled; as office buildings and similar structures they are admirably planned and constructed in a very superior manner; but from a distinctively architectural standpoint—that which combines art with engineering,—it often happens that the most pretentious structures are very unsatisfactory and of a character which will not stand the test of time and the refining influences of progress. The greatest benefits which may come to us are from being certain of our strength and then acknowledging our weakness.

We do a very superior character of clay work, not alone in brick, but in floor tiling, and, as far as it has been carried, in roofing tile. Our terra cotta are superior to the English terra cotta which was imported into this country a few years ago. We may acknowledge

this without injury to ourselves, always bearing in mind that there may be details in the methods of construction of other countries, by which we may profit. However, it is not best for us to assume that, being in this high state of advancement with respect to construction and detail, we are equally fortunate in matters of design. Our people have been educated to the utilitarian; they have been particularly educated as constructors, but their education has been neglected in Arts. Certainly we do not appear in a favorable light when viewed from this standpoint. No harm can come from entertaining this view even if we do not believe it to be true. It puts us in a position to better absorb the best which may come to us.

This design is made from a color reproduction of the original. Being in black and white it cannot show the exact coloring, nor does it show the exact color values. The print shows quite an exaggeration of the relative difference in effects, and it does not show the real artistic quality which belongs to it in the original. In using different colors of brick and other clay products, they must be successfully handled; otherwise the designs had better be perfectly plain. Not only must the difference in actual colors be considered, but also that of shade, so that the entire structure is harmonious not alone in its different outlines, but as to the details of color. Bricklayers and others may profitably study this design. Different forms of decorative brick work can be worked out even in two colors, buff and red. Anything which we can do to lead people to the construction of a more artistic brick work, will add to the product of labor and material which is put into clay. Clay work which is artistic brings relatively more money than that which is merely substantial. The profits in this kind of work are absolutely greater. The artistic progress of brick work is quite as important to one who makes common brick as to those who operate in different lines. Those who make common brick are interested in seeing the industries distributed. Where brickmakers give their attention to the production of a high grade of brick, they remove just that much competition from the production of the ordinary American article.

Correct speech is correlated to right conduct and cleanly living, and to neglect it is to foster a slouchy and dangerous habit.—*Ex.*

#### VITRIFIED BRICK PAVEMENTS SUPERIOR TO ALL OTHERS.

VITRIFIED brick is not considered as good material for street paving purposes by T. M. Symons as Trinidad asphalt. Probably no one will be surprised to hear that the gentleman recommends his own material. So far as he extols the merits of asphalt he may be given credit for the ability and earnestness of a promising salesman. For the pearls of wisdom relating to vitrified brick which he scatters so lavishly, we fear there will be nothing but swine. The vitrifying process is comparatively modern. Many of the large cities of this country have never yet tested this pavement, but wherever it has been thoroughly tested it is considered by the best authority as the pavement of the future. Its reputation is not sustained by tickling, itching palms with the spoils of a great monopoly. It is a public improvement that has come into use at the demand of the public, and its adoption in nearly every city has been solicited only after small blocks or crossings of streets have been laid by its enthusiastic advocates, and its vast superiority thus fully demonstrated. That is the kind of argument that is convincing. One doesn't have to obtain an exclusive contract for a whole street to demonstrate the superiority of vitrified brick. Wherever this material is used great local industries spring up so that street paving becomes a permanent home manufacturing enterprise, furnishing as much employment and conferring a greater public benefit than shops, factories, or other industries that are often bonused. This material has especial recommendations here. Fine clay is found in this vicinity. It can be manufactured and laid down here cheaply. It is superior to all other pavements for a wet climate. It recommends itself to localities where the foundation is not absolutely permanent, in preference to asphalt, on account of the ease with which it can be repaired. For this reason also it is to be preferred in any growing and improving city where sewers and street car lines may be laid, or excavation rendered necessary at any time. Good vitrified brick forms a healthful, even, dustless, smooth, noiseless and comparatively cheap pavement, and one that is more durable and easier to repair than any other suitable for the general traffic purposes,—*Pacific Builder.*



Written for the Clay-Worker.

### INTERESTING BRICKS.

THE modern American is imbued with the idea that this is the age of invention, and marvels and wonders over the ignorance of the past ages. What in the world did those poor benighted creatures do for the thousand and one comforts which our energy and enterprise have given to the ease of man? But if these people were ignorant of the telegraph and railroads, they were wise in another channel;

#### THEY WROTE BOOKS UPON BRICKS.

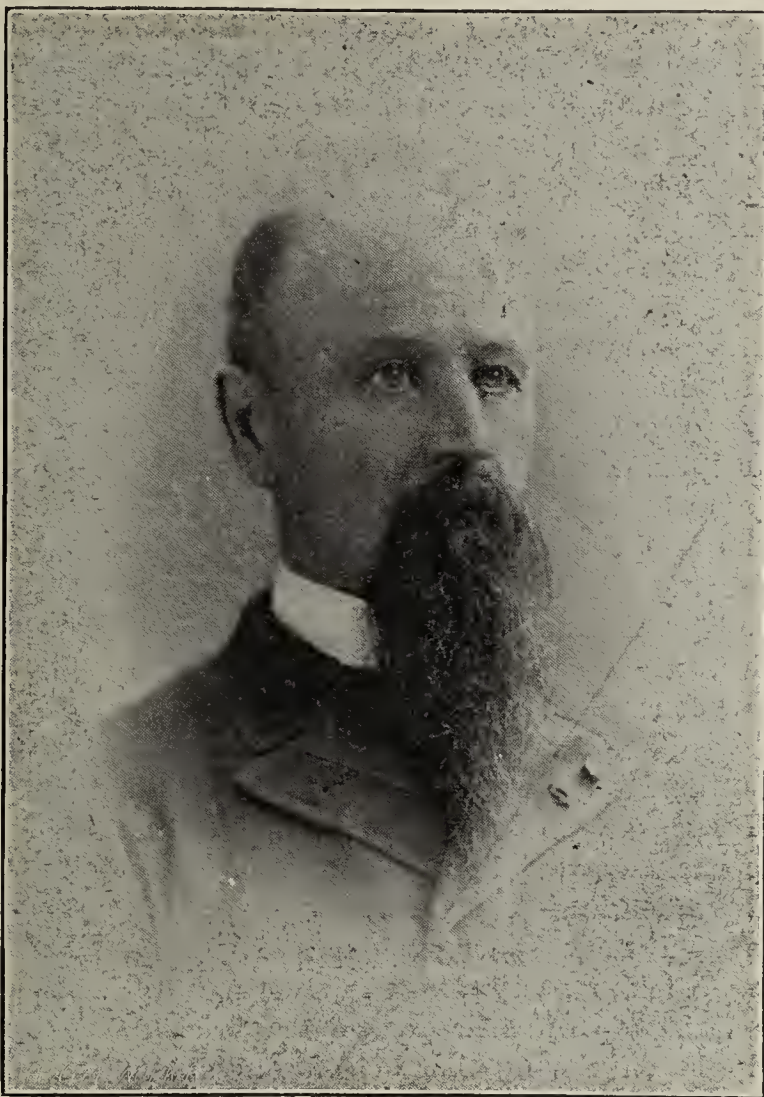
While Layard, the great archaeological explorer, was at work upon the ruins of Koyunjik for the second time, and was directing the explorations in the royal palace of Assurbanipal, a noted warrior king of Assyria about 650 B. C., he came upon two small rooms, the floors of which were covered to the depth of twelve inches with fragments and pieces of bricks, or tablets of baked clay. It was evident that the accumulation was the rubbish of fallen walls. But the interesting part was, that each brick had been written upon both sides with cuneiform characters. Mr. Layard knowing the value of these inscriptions, packed many cases of the fragments, and sent them to the British Museum. In the vaults of that institution they lay for nearly forty years. George Smith, an engraver, at work upon the cuneiform texts used in the "Cuneiform Inscriptions of Western Asia," published by the British Museum, became so much interested in the meaning of his work, that he studied diligently all that was known of the ancient languages. His was a bright mind, and it was not long before he was puzzling over the cuneiforms of Layard's collection. Piecing and patching together the fragments was slow work, but worthy, for the result was part of an epic poem. The world of savants was all excitement.

The London Daily Telegraph became interested and sent Mr. Smith to resume excavations at Koyunjik. Two times he returned home with his treasures and

finally put together what is known as the "Deluge Tablet." His name was famous but his end was a sad one, dying at an early age of the plague, near the field of his labors. The last entry in his diary is pathetically typical of the man. He writes: "Not so well. If Doctor were present, I would recover, but he has not come. Very doubtful case. \* \* \* I do not fear the change but desire to live for my family. Perhaps all will be well yet."

#### ANCIENT CLAY TABLETS.

The bricks or tablets vary in size, the larger ones being about nine by six



D. G. RHOADS, BUILDING AND PAVING BRICK MANUFACTURER, OMAHA, NEBRASKA.

and a half inches, while some of the smaller ones are no more than an inch square. The larger ones are flat, but the little ones are often convex. The moist clay tablet was taken in the hand and impressed by a stylus having a triangular section. The result was that the marks were wedge or arrow shaped. Different combinations of these wedges made cuneiform writing. The tablet after being so written on one side was turned over and inscribed upon the other. If it were a large piece, legs were stuck on at unoccupied places and used to stand the work on while the other side was being finished. After this, the tablet was baked.

The tablets which made Smith famous are called the "Deluge Tablets," on account of their subject matter. The translation reads: "When Heaven above and the earth below were as yet unnamed, Aspu and Mummu Trammat (abyss and the billowy sea) were the beginning of all things; their waters mingled and flowed together. That was the Primeval Chaos; it contained the germs of life, but darkness was not lifted from the waters and therefore nothing sprouted or grew. The gods also were not. They were as yet unnamed and did not rule the destinies of men. Then the great gods came into being, and the divine hosts of heaven and earth. And the days stretched themselves out, and the god Annu \* \* \*" Here the inscription is yet unfound. Soon after, however, the thread is taken up again, and thus is unfolded a story that tallies in every way with the wonderful tale of Genesis, the deluge, and of the saving of the race in the person of one, faithful to his gods.

It is an honorable office, that of the clayworker, to bridge over the abyss that separates us from the dark past; and it is something they should know and think about, for happiness is found where man honors the work of his own hands. E. C. W.

#### PROGRESSIVE.

We hand you herewith money order for CLAY-WORKER to the close of December 1893, and are very happy to do this. Allow us to say, we regard your journal as one of great value and wish you success and prosperity in the conduct of it for the coming year.

We have nothing of especial interest to communicate. Our works which were burned early in the summer have been partly rebuilt, and to that extent are more productive than ever before.

We are now building gas kilns and a drying house, which, if successful, will insure us a product of 30,000 per day, aside from tile and other special work. We produce our own gas from generators, working under a new application of old time principles of gas producing, and as it has at present been only partly tried, we will say nothing of what we will expect from it.

Respectfully Yours,  
W. H. GOODRICH, Mg'r.  
Mexico (Mo.) Fire Brick Co.



Written for the Clay-Worker.

### DRY PRESS HINTS.

No. 3.

#### METHODS OF BURNING.

I HAVE often been asked the question, what kind of a kiln do you prefer for burning dry press brick? Now, my experience has been confined to up draft kilns (open top), down draft and continuous kilns, and my preference lies between the two latter mentioned kilns. Taken *generally*, open top kilns are not a success for burning this make of brick. I know there are some who can, or think they can, successfully contradict this statement, based upon their own experience perhaps, in some particular place and on some particular clay. I said *generally*. In the first place you must not lose sight of the fact that dry pressed brick take considerably more fire or heat to burn them than plastic made brick, for the reason that they are denser, and this very density is the life and soul, and also one of the chief points of superiority of a dry pressed brick. Mind you, I don't say that you cannot burn dry pressed brick in an open top kiln, but I do say that you cannot do it as successfully or as economically as in either of the two latter mentioned kilns. In the first place, leveling of floor for setting is an expense in more ways than one.

It is not an uncommon sight on yards using up draft kilns for this class of brick, to see every truck full and the machine stopped. Ask the reason and they will tell you that the setters are "leveling up." Stand around a while and you will see a man wheeling a barrow full of ground clay—perhaps several of them—into the kiln. Ask him what it is for and he will tell you for "leveling up." When the kiln has "got hot" you may, on looking through the arches, find one "leg" that has given way. Ask the burner the reason and he will invariably tell you that the "leveling up" has settled. You can trace the result of this "settle" well up into the kiln in the shape of warped, cracked and broken bricks.

Then again, the elements are too great a factor in the success of these kilns. Just about the time you are congratulating yourself on the kiln going down even, and all your arches even in heat, is about the time that a wind storm may decide to start out on a racket. You hear of it and immediately decide to head him off. You shout for Tom,

Dick and Harry, get boards, nails and a hammer, or may be you cannot find a hammer, and so call your fire shovel into requisition, and finally you have raised a barricade on the windward side. Then you smile and say, "Let her come." The wind sees your smile, goes you one better, and comes on.

Yes, go after your boards, and when you come back you will find fire and smoke sweeping through the portals of the fire doors that don't happen to be on the windward side.

Then again, the large percentage of arch and salmon bricks obtained in these kilns is not a paying factor. You can invariably expect at least two courses under flatting to be worthless, while the wear and tear of said flatting is a big item in the course of a year. The bulk—if not all—of these "defections" are obtained in down draft kilns. The fuel account per M is also very much less in the latter kiln, while the percentage of good hard face brick, of uniform color and shape, is by long odds favorable to close kilns.

Now another point. You know that rain spots; or indeed, water at all, on the face of a dry press brick, is fatal to its life as a fine brick. On a common plastic brick it does not hurt, and these are always set on the top about 8 or 10 courses, sometimes more, on a plastic or stiff-mud yard. Repressed or face brick are always set in the middle of the kiln, and of course are not injured by the rain beating in under the roof, as dry pressed brick often are.

I know some yards that make hard brick to set up along the walls and over the top of their dry pressed brick to lessen the number of soft or salmon brick, but we are not figuring on making hand bricks at all, ours is to be exclusively a dry pressed brickyard, therefore we want a kiln that will handle these to the very best advantage. Such is, I claim, the down draft kiln.

Some of these kilns have arrangements (improvements?) whereby a double action is obtained, i. e. burn half one way, then reverse, and finish in the opposite way. Some of these arrangements are but a moderate success. Others are a dismal failure, and after one or two disheartening trials are discarded and the kiln worked on the simple down draft principle, in most cases successfully. Three of the "snags" encountered in the use of this double principle that have fallen under my notice, are burning out and sticking of reverse dampers and

choking of flues. Overcome these difficulties and the double principle will stand a better show of success.

Presuming that you will adopt the down draft kiln for your works, I want to caution you against building it too small. Kilns of so small a capacity that they are about equivalent to a good-sized furnace, are not the best, by long odds, in which to burn fine front or ornamental brick, and again, I would recommend you to build a flash-wall in your kiln, instead of the inconvenient and unsatisfactory "bag." Some, I know, object to a flash-wall on account of a loss of setting space i. e. space that could be filled with green bricks, but the advantages gained more than compensate for this small loss, if indeed it can be called loss, after considering the extra labor required to set around and between them, and the very inferior bricks generally taken out after burning. The flash-wall allows of straight and continuous setting, and insures an equal distribution of heat and consequently more even burns. It also acts as a combustion space for the gases leaving the furnace.

The bag-wall is ill adapted for this purpose, as the gases are too much confined, and the space too limited to allow of the expansion necessary for perfect combustion, consequently this action must take place, either in the body of your burning ware, or the gases pass still unconsumed out of your stack; either being unsatisfactory and unprofitable.

PRESS.

There is practical philanthropy in advertising. It tells all men how their needs can be most promptly supplied. The new invention, the new remedy, the new health resort, would fail of nine-tenths of their value if advertising did not tell this value to the world.—*Fame.*





Written for the Clay-Worker.

## PRACTICAL POINTS ABOUT PAVING BRICK.

### Ninth Paper.

BY D. W. STOOKEY.

#### THE MARKET.

THE market for paving brick, as well as of any other manufactured article, is of prime importance, and a few thoughts on this branch of the broad subject may not be out of order.

At present the finding of a market is not giving manufacturers much concern, and may not for some years to come, although this cannot be foretold with certainty.

Within the last few years popular favor has turned towards brick as a material for street paving, and as the country has been prosperous and times good, all cities and towns, of any considerable size, have instituted systems of paving and are using brick in the majority of cases.

In previous numbers of this series of papers, the advantages of brick as a paving material over others in use, was shown, and thus was demonstrated the wisdom of the people in giving brick the preference. The result of this movement has been an active demand for brick suitable for the purpose.

The conditions under which these brick are placed and the essential peculiarities of their construction are different from those of the brick previously manufactured, and used for other purposes.

New factories have been built in various parts of the country especially planned for the manufacture of paving brick.

#### MARKET IS UNCERTAIN AND FLUCTUATING.

Up to the present time they have enjoyed a good demand for their products, but observation and experience have already taught that the demand in any one place is uncertain and fluctuating.

Paving with brick is nearly all done by incorporated cities and under the instructions of the city authorities. The condition of the finances and the wills of the councilmen each exert an influence upon the amount of paving that may be done. No one can tell very

long before what action will be taken, although the subject may have been agitated and talked of for a long time. Finally the council orders certain streets and alleys paved, and instructs a committee to advertise for bids from contractors to do the work. One of the conditions by which the contractor is to be bound is that he shall complete the work within a certain time. The time given before the opening of bids is ample to allow contractors to look for places to buy brick, but the time within which the work is to be completed is not usually long enough to allow an ordinary plant to make the number

their plants on their hands and no home market for their goods. They then have left the choice of three things, shut down the factory, continue to manufacture brick and hold them for future sales, or go out into the world and seek a market elsewhere.

If they chose the first and stop manufacturing brick, they are without any occupation, or at least have lost this one. They are being deprived of the opportunities of making money that they expected when they built their plant and embarked in the business. Not only do they suffer the loss of the expected income, but the capital

which is invested in its business is tied up without giving any returns; neither can it be used by the proprietor to engage in any other enterprise. He cannot even mortgage it for all it is worth, and let it fall into the hands of capitalists, for no one of good business judgement will lend money on a factory that is dead because there is no market for its goods.

Capital is always readily obtained for enterprises that have the appearance of thrift and prosperity and that promise to give fair returns, but is very liable to be shy of anything that, to the casual observer, shows the opposite, and that is seeking the aid of new capital with the forlorn hope of adding new life to its already dead or dying boom.

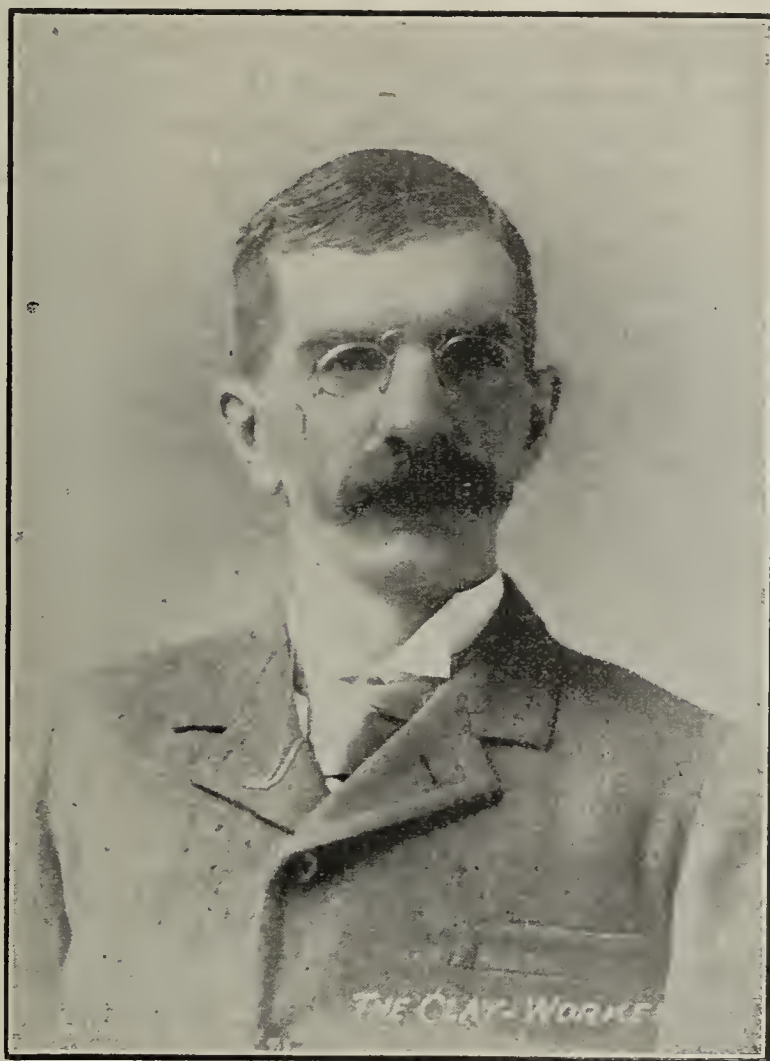
Should the manufacturers choose the second course, and continue making paving brick when they have no immediate market for them, they must store their product and hold it until a local market is created for them

through the actions of the city council.

Any one who has had experience with bodies of public officials, knows that they are very uncertain, and that no safe and sure predictions can be made beforehand as to their actions.

There are two elements of uncertainty to be met with here. One is the action that may be taken by the board in office, if they take any action at all upon the subject of paving, and the other is that the next election may place new men in office. It cannot be foretold who the new men will be, much less what views they may hold or what action they may take in the matter.

During all of this indefinite waiting,



J. A. SNELL, SUPERINTENDENT NEW ENGLAND STEAM BRICK CO., BARRINGTON, R. I.

necessary to complete the job. This creates a demand beyond the local supply and has a tendency, not only to lead those already engaged in the manufacture of paving brick to enlarge their plant at a considerable expense, but it also tempts new parties to invest capital in new plants. The city that creates this demand may not be in a condition financially nor the aldermen in the mood to do more paving immediately after the completion of the first contract, and in fact may not do much more for several years. This is not an unlikely state of affairs, and has happened in the past. Such action, or inaction, would leave the manufacturers with



the expenses of operating the plant must be met. This money is stored in the stock of brick on hand. Few of the average plants are owned by men who are strong enough financially to continue upon this plan for very long.

It is true that money might be borrowed to attain this end, but this would add the interest to the expense account and reduce the profits by the amount.

The third method, that of going out into the world and seeking a market elsewhere, has several objectionable features, and introduces several items of expense that must be taken from the price received for the brick. While it is customary at present to sell manufactured goods by means of traveling men, sent out by the manufacturers to call upon the prospective buyers and solicit their orders, it must be conceded that this item of expense must be borne by the manufacturers and added to their expense account, and apportioned to the goods sold.

#### THE MARKET IS OF LIMITED AREA.

The brick sold away from home must be transported from the producer to the consumer at a considerable expense, which must be either added to the cost to the consumer or deducted from the profits of the producer.

Brick are carried at a low rate of freight, but their weight is so great in proportion to their value that the cost of shipping by rail is comparatively much greater than that of other manufactured articles. This virtually excludes brick from the same advantages that are enjoyed by manufactured goods in general, whose cost of transportation is not such a large per cent. of their value.

It is commonly considered that the markets for manufactured articles are to be sought throughout the world, or at least in all parts of the country in which they are made, but paving brick cannot be considered as coming under this rule.

Because of the greater cost of transportation the makers of paving brick must look for their market wholly within a comparatively limited circle.

Probably all the paving brick that are made are sold within a few hundred miles of the factory. This suggests the thought that it may not be well to establish plants of too large capacity at or near the same point.

While at present it may be true that there is an active demand for paving

brick, beyond the supply, it should be remembered that in this, as in all other industries, over-production is a possibility.

It is not uncommon to hear of extensive manufactories running on short time or shutting down altogether for a time to guard against over-production and the attendant reduction in prices. Only recently the large milling interests were considering this very problem.

All are familiar with the actions of the "coal barons" of the East, and of various other large corporations engaged in different lines of business in solving this problem.

So long as those branches of the world's industries which find their markets in the daily needs of every home and throughout all countries of the globe have met and are compelled to cope with the question of the relative proportions, or dis-proportions, of supply and demand, it is not unwise for the manufacturers of paving brick, who have to seek their markets within a limited area, and who find their custom in the uncertain actions of municipal authorities to anticipate this matter and be prepared to meet it in all of its phases.

Written for the Clay-Worker.

#### CHEMISTRY FOR CLAYWORKERS.

##### Paper No. 9.

OF late years, and up to the present day, a great deal of interest is centered in the metal aluminum, because great things are expected of it. Some aluminum enthusiasts predict a revolution in ship building and engineering; it is the metal to supercede iron and steel in building both ships and engines. Some few years ago a statement went the round of the papers and magazines announcing the discovery of a simple and easy method of obtaining the metal in large quantities, in fact it was to be reduced as easily and nearly as cheaply as iron. It extolled the metal to the skies, almost, giving its tensile strain far above cast steel, it was as untarnishable and unchangeable nearly as glass, its ductility and malleability put all other metals in the shade, its compactness of structure gave it sonorous properties that bell metal could not approach, and its conducting power for heat and electricity were equal to that of silver, while its lightness commended itself for every purpose to which it might be applied,

being little more than one-third the weight of iron. Its specific gravity being 2.6.

Now a metal with all these excellent qualities would be a boon indeed, but recent carefully conducted examinations of the metal places it somewhat nearer its proper position. Its lightness and lustre are in its favor, its strength is far below iron, while its ductility and malleability do not rank with iron, nor its sonorosity with bell metal. It has many valuable properties, however, and would be extensively used if it could be manufactured cheaper. There is an alloy with copper called aluminum bronze, of a golden yellow color which is coming into use for jewelry and scientific apparatus.

Until recently it was all made by the sodium process, its price then depended on the price of metallic sodium. The rapid strides lately made by electro metallurgy has reduced its price to one-half or less.

The following interesting and instructive article was taken from *Cassier's Magazine* by the *Philadelphia Record*, April 4, 1892:

"Mr. E. P. Allen ventures the opinion that the new metal will never take the place of iron or steel for general purposes of utility. The cost is now prohibitive, and Mr. Allen insists will always be prohibitive. Iron he says is reduced from an oxide as well as aluminum; but oxygen has so much stronger affinity for aluminum than for iron that reduction requires an infinitely greater expenditure of energy. Energy *alias* power, costs money. As to price, aluminum will take rank with copper, tin, and antimony in point of cost of production. It can not be produced as cheaply as zinc or lead. The total production in the United States is not greater than 1,000 pounds per day; in Europe about 2,000 pounds. The grand total of the world's product is not over 3,400 pounds per day."

As a set off to the extravagant eulogy of the properties of aluminum given above, let me now give you a clipping from the *Evening Item* of April 16, 1892:

#### DRAWBACK TO THE USE OF ALUMINUM.

"The lightness of aluminum has induced the German Emperor to decree its use for portable apparatus, such as canteens, in the German army and it seems to be well adapted for the fittings of cameras, surveying instruments, etc. Nevertheless it has certain drawbacks



which ought to be pointed out. M. LeRoy, a French chemist, has recently shown that pure aluminum (containing 95 per cent. of the metal) is attacked when cold by sulphuric and nitric acids.

Herren Luebbert and Roscher, two German chemists, also find that it is to a certain extent dissolved in boiling water, and should not be employed in cooking utensils, as the dissolved metal may effect the viands. It is also attacked by preserves, pickles, and acid in presence of table salt, acetic, citric and tartaric acids. Bordeaux and Moselle wines, and even infusions of tea or coffee attack the metal, hence the application of the metal for army canteens is inadvisable. Carbonate of soda, soap, phenal, salicylic and boric acids, also injure the metal. Gilding or silvering the surface would, of course, overcome this drawback, but there is no good process for electro-plating aluminum."

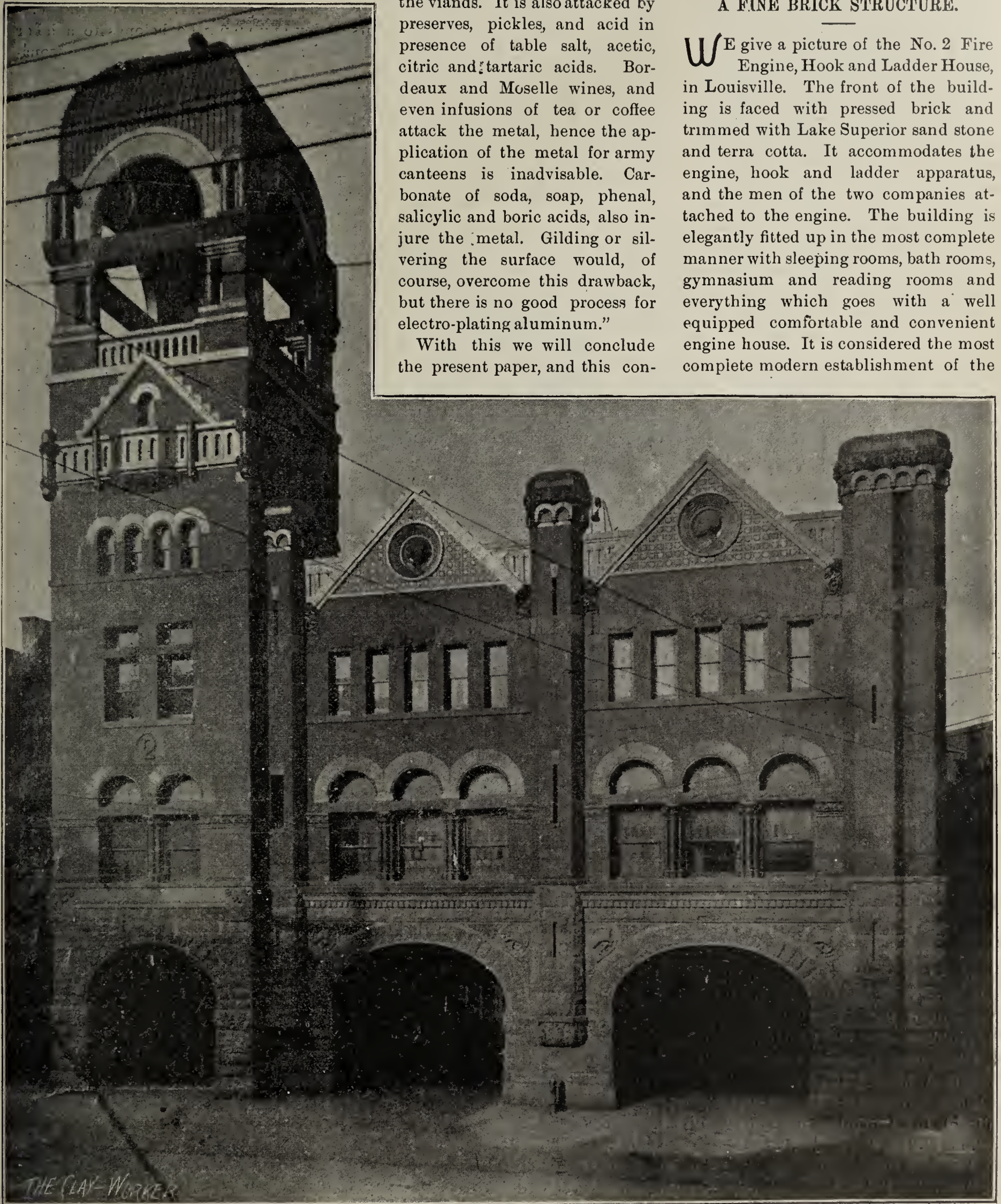
With this we will conclude the present paper, and this con-

stituent of clay also, and devote our next paper to the consideration of the other main constituent, Silica.

WM. WAPLINGTON.

#### A FINE BRICK STRUCTURE.

WE give a picture of the No. 2 Fire Engine, Hook and Ladder House, in Louisville. The front of the building is faced with pressed brick and trimmed with Lake Superior sand stone and terra cotta. It accommodates the engine, hook and ladder apparatus, and the men of the two companies attached to the engine. The building is elegantly fitted up in the most complete manner with sleeping rooms, bath rooms, gymnasium and reading rooms and everything which goes with a well equipped comfortable and convenient engine house. It is considered the most complete modern establishment of the



FIRE ENGINE, HOOK AND LADDER HOUSE NO. 2, LOUISVILLE, KY. McDONALD BROS., ARCHITECTS.



kind in the South. It was built two years ago from designs furnished by McDonald Bros., leading Architects of Louisville, and no necessary pains or expense were spared in making it the very best of its kind. It is a splendid exhibition of what can be done with burnt clay. The general character of the design bespeaks its use. It is very suggestive as to what the American people should do in the way of building to protect themselves from fire. Certainly the fire tax is the greatest tax which the American people pay. It is an unnecessary tax and it is one, which strangely enough they pay uncomplainingly. If all buildings were constructed like this one, if all were solid and substantial and had the same care put into them the fire tax would be largely reduced. If any of our friends should wish to see a well equipped fire engine house during the time of their stay at the Convention in Louisville, January 24th to 28th, this will present a good opportunity. The brick for the structure were furnished by the Louisville Hydraulic Press Brick Co., and the terra cotta by the Indianapolis Terra Cotta Co.

Written for the Clay-Worker.

#### THE LABOR QUESTION.

**N**O economic question has claimed so much attention during the twenty-five years in the United States as the relations of the employer and employed. The most common caption for articles on this subject is Capital vs. Labor. This has never seemed to me an appropriate heading. It presupposes that capital consists entirely of money or tangible property and ignores the fact that Capital may, as it does, consist of the brain, intelligence and muscle of the person employed as well as of the medium of exchange used by the employer to compensate the employed for his services. Again it may, and often does happen, that the employer has far less of this world's goods than the workman and that in this case the capital of the employer consists of shrewdness, and intelligence rather than money. It has come about naturally that writers on this subject assume that their references to labor, refer exclusively to so called organized labor or to an aggregation of laborers governed by a set of rules applicable to all members of such organizations alike. The majority of speakers and writers on this question take the position that it has become a necessity for laboring men to join a labor union

to enable them to force their employers to deal justly and fairly by them.

My object at this time is to endeavor to point out the fallacy of this position. Let me premise what I am going to say with the assertion, that I firmly believe that the laboring men of this country obtain better wages, work shorter hours and receive as a rule better treatment than they would have, had there been no labor organizations. As an employer of men, to labor under my direction for more than twenty-five years, who has during that time given the subject thoughtful consideration, I have come to the conclusion that employers themselves are to blame for much that they have suffered at the hands of organized labor, and that they need intelligence and common sense fully as much as their employes. This does not of course apply to all, but it certainly does to the majority. Employers as a rule are less independent, less willing to assert their rights than employes. They sacrifice their self respect by allowing outsiders, men whom they have never employed to interfere between their employes and themselves and then blame labor organizations for any difficulties which follow. My position is simply this; That so long as men are treated unjustly, so long as the employer treats his men as so many machines, so long as his sole object is to get all from them he can and give them in return the smallest possible remuneration, just so long may he expect like treatment from them. That so long as employers have reason to be afraid of their employes and show that fear by allowing dictation and interferences with their rights, just so long will they have trouble. On the other hand the employer who recognizes the man who works for him as a brother, who admits in all practical ways that his employes have rights, and who is as willing to treat his employe with the same consideration that he would a merchant or banker with whom he has business dealings, will soon ascertain that the employe is willing to treat him on the same basis. The employer who hopes to gain favor by catering to the wishes of the professional labor agitator soon finds himself entitled to, and having, the contempt of the laboring class.

My experience teaches me that no class of men appreciate fair, just and honest treatment more than those who earn their bread by the sweat of their

brows, and that if they join labor organizations and become the tools of designing men, it is because they are forced to do so in self defense, or at least because they think so.

In this age the employer of labor who takes the position that he will not employ any man who belongs to a labor organization is as narrow, as unreasonable, and unjust as the man who refuses to work on an equal basis with other men, who for reasons of their own refuse to join a labor organization. Neither position is tenable or in accordance with the spirit of equality guaranteed by the constitution of the United States. This is an age of trusts, organizations and combinations and the only safe course for an American citizen to pursue is to hold himself aloof from an alliance with others, that if strictly adhered to deprives him of his independence and self respect. The adoption of this plan and its successful carrying out should be primarily the work of the employer. He should have the ability and intelligence to be a leader. He should so conduct himself in his relations with those whom he employs as to inspire them with confidence in him. If he has ever been an employe, he should make it an inexorable rule to treat those in his employ as he would wish to have been treated in those bygone days. He must take an interest in his laborers other and greater, than that which pertains to their mere business relations. He must show them by his conduct and example that he thoroughly believes in a union of employer and employed which is stronger, better and more lasting than any possible combination which includes but one of the parties, and he must hold himself aloof from any organization of employers whose interests could under any circumstances be inimical to those of his employes. This ideal union of employer and employed should be governed by many of the rules now governing the better class of labor organizations, a set of rules, or, better yet, a yearly agreement with arbitrators to settle any infringement, selected before the agreement goes into force, being an essential feature. There are some men whose written word would not be taken at par by those who know them best. These men are to be found among employers and employed. There is no possible way for honest men to deal with such men and avoid trouble. The honest employer must refuse to hire them and



the honest employe refuse to work for them.

This is the solution of the labor question I am striving for, and I am happy to be able to say that those in my employ are as earnest in this work as myself.

D. V. PURINGTON.

Written for the Clay-Worker.

### HINTS ON BRICKMAKING. No. 71.

BY R. BRICK.

#### OPERATING A BRICK MACHINE.

 IN a former article the matter of properly setting up a machine, its foundation, etc., has been considered. After it has been properly set up, it must receive due care and attention daily, while it is in operation before any clay is put into the machine, it should be run slowly to see that every part is in its place and properly adjusted; all cog gear well lubricated with axle grease, and all bearings well oiled, during first few days the bearings should be closely watched as they are sometimes a little rough, or grit gets into them, they must be oiled frequently until they get to running smoothly, all caps should be kept loose at first and gradually tightened on the journal. After making sure that all is right, throw in a little clay and start up slowly, and have clay softer than you expect to have it to make good brick, many a machine has been broken at the start by filling it with raw clay, before starting the machine. The clay goes into the moulds without grinding, and puts a very great strain on the machine. As soon as it is filled and begins to turn out bricks, then gradually stiffen the clay until in the desired condition. The machine should be run slowly for several hours, before being put to full speed, this gives an opportunity to adjust any part that may not be just right before the maximum strain is put upon the machinery. Then after all is moving along smoothly and the work of setting up and starting the machine is completed, constant care must be exercised to keep it in order and prevent unnecessary strain and wear on the many parts; it must be held securely in its position all bolts kept tight, and all bearings and

cog gear well oiled and protected from clay and sand. All good machines now have housings of sheet iron over their gear, all fast running bearings that require regular and frequent oiling should have a "sight feed" oil cup, this insures a constant supply of oil and also saves oil, as well as the bearings.

The success, financially, of brick plants depend in a measure upon the management of the machine. A writer in the CLAY-WORKER recently, described a visit to the Purington-Kimball Brick Co. works at Chicago, he said the motto there is, "Whatever happens, make brick."



GEO. C. PATTON, PAVING BRICK MANUFACTURER, CLOVERPORT, KENTUCKY.

This is one of the main factors of the phenomenal success of this firm. The two essential things necessary to succeed in making brick is, have the machine to turn out its full capacity every day, dry and burn them without waste, that is, get all the bricks that come from the machine into the market and success is assured; to keep the machine turning out bricks to its full capacity, there must be kept an ample supply of clay at the machine and keep it full to the top, it will make more and better bricks than if but partly full of clay. Keep enough men at the clay bank, and enough feeders at the machine to do this; this is true economy. Have the clay

well prepared before it enters machine and it will come out thoroughly ground, it then makes a good brick and one that will dry without checking or breaking. This brings us to the

#### HANDLING BRICKS FROM MACHINE TO DRYING FLOOR.

The bricks must be carefully handled from the machine to trucks or cars, here again it is necessary to have enough men or boys to handle with proper care all the bricks so that there are none lost after they are moulded. Where cars are used, they are passed from machine and stacked on the car

this requires careful work to; prevent damaging the bricks where spring trucks or barrows are used they are lifted from machine or delivery belt and placed on them, and then taken to the drying yard or floor; on the latter they can be hacked on end and close together, one man can take from the truck and hack on the floor, in this manner, 20,000 in ten hours; when placed in hacks on the yard, an equal number can be handled. In handling bricks from machine with the hands, the hand should be flat against the brick, fingers at full length so there may be no finger prints in the bricks; they should be set down lightly either on the floor or hack, so that the ends or face are not marred; this applies to stiff clay bricks, all soft mud bricks must be either carried to the drying floor in the moulds, or dumped on pallets at the machine and carried to the yard.

Another important thing is the "tempering of the clay; that is, mixing of the proper amount of water as it enters the machine. If it gets too hard it is liable to break the machine, and the bricks are not perfect; if too soft the bricks will not keep their shape, this can only be regulated by an experienced man, as the clay may at one time need a considerable quantity of water, at another none. The proper man to do this is one of the feeders, within easy reach should be a throttle or globe valve, connected with pipe that runs to the mouth of the machine; he sees the clay as it enters and must decide quantity of water needed

Gentle reader, this is a good time to renew your subscription.





### OFFICIAL ANNOUNCEMENT AND PROGRAMME.

Seventh Annual Meeting of the National  
Brick Manufacturers' Association,  
To be held at Louisville, Ky.,  
January 24 to 28, 1893

To the Members of the N. B. M. A.:

GENTLEMEN:—As announced in the Official report of our last Convention, it has been determined to accept the cordial invitation extended by the Louisville Brick Manufacturers and hold the Seventh yearly meeting in that City, beginning Tuesday, January 24th, 1893, and continuing the balance of the week.

#### THE CONVENTION HALL.

The meetings will be held in the *Board of Trade Hall*, corner Third and Main streets. Tables will be provided in rooms adjoining the Convention hall, for the display of specimen brick, etc.

#### THE HOTELS

Selected for the accommodation of delegates and those who may accompany them are: *The Louisville*, located on Main street between 6th and 7th and the *Galt House*, corner Main and 1st streets. Their regular rates are \$3 to \$5; a special uniform rate of \$3 will be made to all delegates and their friends, who are requested to announce to the clerk when registering that they are members of the N. B. M. A. The hotels are centrally located and can be reached from all railroad stations by street cars, which pass the main entrances. The N. N. & M. V. and O. & M. depot is but one and a half squares from the Louisville Hotel.

#### THE LOUISVILLE HOTEL

Will be general headquarters and those who will be accompanied by ladies are especially requested to notify the hotel in advance of their coming, in order that suitable accommodations may be reserved for them. Those preferring to stop on the European plan are referred to *Seelbachs*, corner 6th and Main; *Rassimers*, 415 West Market, and *Rufer's*, on Fifth street, between

Main and Market, where lodging can be secured for \$1 per day.

#### REDUCED RAILROAD RATES

Have been arranged for on the certificate plan over all principal lines.

Each person desiring the excursion rate must purchase a first-class ticket and pay full fare to Louisville, taking a printed certificate from the Ticket Agent, stating that ticket has been purchased at the regular rate. This when countersigned by the Corresponding Secretary will entitle the purchaser to a return ticket at one-third the regular fare, thus making a two-thirds fare for the round trip.

Those desiring certificates should present themselves at the ticket offices at least thirty minutes before the departure of trains.

Should any ticket agent fail to have a blank certificate, a certificate or receipt for the amount paid, stating that it is for one first-class fare and bearing the agent's stamp should be taken, and will enable the Secretary of the Association to obtain the reduced rate returning which can not be done if proper receipt or certificate is not taken.

#### A LARGE ATTENDANCE ANTICIPATED.

The Louisville brethren are all actively interested and are going to do everything in their power to make the Convention one of the most successful yet held. The central location of Louisville and the fact that this is the second convention held south of the Ohio leads us to hope for a much larger attendance of Southern craftsmen than we have had since our memorable meeting at Memphis in 1888.

Indeed there is every reason to believe that the attendance from all sections will be unusually large, for with very few exceptions the craftsmen throughout the land have had a prosperous season and the prospects are favorable for a continuance of this happy condition which, as nothing else can, will stimulate a universal desire for better knowledge of better methods by which better products may be produced in greater quantities at less expense. In brief, this is the object for which our Association was formed—the advancement of the material interests of the craft generally.

#### ALL ARE INVITED.

This may best be accomplished by an exchange of experiences and opinions; and to this end every progressive brick manufacturer of America is earnestly invited to attend the coming convention and take an active part in the discussion of all practical questions that may be considered.

#### THE PROGRAMME.

##### FIRST SESSION, TUESDAY, 2:30 P. M.

Enrollment of new members and Roll Call.  
President's Annual Address,  
C. B. Pearson, Washington, D. C.  
Report of Treasurer,  
F. B. McAvoy, Philadelphia, Pa.  
Election of Officers.  
Installation of Officers.

1. Essay—"Enameling Brick,"  
Isaac Hardy, Aberdare, Eng.
2. "The Year's Record,"  
General discussion led by W. D. Richardson,  
North Baltimore, Ohio.

NOTE—At the close of each address or essay, the subject under consideration will be fully discussed.

##### TUESDAY EVENING, 8:00 O'CLOCK.

Fifth Annual Pow-wow, under the auspices of the Louisville Brick Manufacturers' Association, will be held in the Convention Hall.  
J. P. McCollum, Master of Ceremonies.

##### SECOND SESSION, WEDNESDAY, 9:30 A. M.

3. Address—"Burned Clay,"  
L. J. Howard, St. Louis, Mo.
4. Essay—"Association Among Brickmakers,"  
Alexander Prussing, Chicago, Ill.
5. "The Mistakes of Brickmakers,"  
General discussion, led by a member of the  
Western Pennsylvania Brick Exchange,  
Question Box. [Pittsburg, Pa.]

##### THIRD SESSION, WEDNESDAY, 2:30 P. M.

7. Essay—"The Professional Brickmaker,"  
Joseph Fairhall, Grape Creek, Ill.
8. Address—"Paving Brick, Their Manufacture  
and Use," W. S. Williams, Canton, O.
9. "How Best to Dry Brick,"  
General discussion led by D. G. Rhoads,  
Question Box. [Omaha, Neb.]

##### FOURTH SESSION, THURSDAY, 9:00 A. M.

11. Address—"Manufacture of Brick from Shale  
by the Dry Press Process,"  
J. R. Figh, Dallas, Texas.
12. Essay—"Old Foggy Brickmakers,"  
E. O. Glidden, Boston, Mass.
13. Address—"The Evolution of the Brick  
Machine," Cyrus Chambers, Philadelphia, Pa.
14. "The Fuel Question,"  
General discussion led by J. W. Carson,  
Question Box. [Brussels, Ill.]

##### FIFTH SESSION, THURSDAY, 2:30 P. M.

16. Essay—"Front Brick, Their Relation to  
Architectural Design,"  
James Taylor, Long Island City, N. Y.
17. "Burned Clay as a Roofing Material,"  
John R. Elder, Indianapolis, Ind.
18. Address—"Vitrification of Clays,"  
A. L. McDonald, Louisville, Ky.
19. Question Box.

Report of Committees.  
Miscellaneous Business.

#### FRIDAY.

There will be a free excursion to Cloverport, Ky., a natural gas town on the Ohio river, where there are three large paving brick plants which will be in operation. If the weather is propitious this will be a most enjoyable feature. Other side trips to various points of interest in and about the city will be made under the guidance of the Committee on Entertainment appointed by the Louisville Brickmakers' Association.

Members and visitors may have their mail addressed to them in care of T. A. Randall, Corresponding Secretary, N. B. M. A., Board of Trade Building, Louisville, Ky.  
Each member of the Association will be furnished with an appropriate badge.

#### HOW TO BECOME A MEMBER.

Craftsmen desiring a copy of the Constitution and By-laws of the Association or the Official Report of the last annual meeting, can obtain same by addressing the Corresponding Secretary, T. A. Randall, Indianapolis, Ind. The requisite of membership is an interest in the manufacture and use of brick and the payment of an annual fee of \$2.00. Craftsmen who are unable to attend the coming convention, but wish to identify themselves with the National Association and to secure a copy of the Official Report of the Louisville Convention, are requested to send their name and address to the Secretary for enrollment.

Respectfully,

#### THE EXECUTIVE COMMITTEE.

CHAS. B. PEARSON, *President*,  
THEO. A. RANDALL, *Cor. Sec'y*.



Written for the Clay-Worker.

### THE IMPORTANCE OF MAKING GOOD BRICK.

The Name of the Manufacturer Should Be Stamped upon Them.

BY J. W. CRARY, SR.

WITHIN the last ten years, brick-making has become one of the great industries of the country. It has made more real progress in the last decade than it did in all the 4,000 years before. Inventive genius, science, practical skill and capital, all have combined to improve and accelerate the brickmaking art and business. I have not the figures and statistics at hand to show the exact progress made in brickmaking, and it would be well for the next meeting of the N. B. M. A. to duly authorize the CLAY-WORKER to gather all the information that can be had on this subject, and have it published in that Journal in a concise, proper form.

We of the craft, and the general public, should be able to know pretty nearly the exact "output" of brick, the capital invested and the personal skill and character of the makers. Also, to what extent brick are used in paving streets and roads, as well the cost and efficiency of such pavements. This, and all other incidental information in reference to brick, should be published with the Annual Proceedings of the N. B. M. A. I do not think we can longer afford to ignore this important item in the great brick industry of the country.

#### THE PROPER AND BEST CONSTRUCTION OF WALLS.

Is another subject, not only legitimate, but necessary, for the N. B. M. A. to take into consideration and discuss with intelligent care, not only with a view to have brick properly laid, but to show and induce the best construction of buildings.

I know that it is the common idea of the brickmaker that he has nothing to say or do with the use of his brick; he does not care how they are used, provided he gets his pay for them in due time. This idea is good enough for the sale of general merchandise that is expected to be soon consumed or worn out, but when we make good brick we want them to have a fair test and proof of their excellence.

#### NOW LET US LOOK AT A FAIR EXAMPLE OF A CASE.

Mr. A. will make and deliver to the U. S. Government, a certain quantity of first-class brick; they are used in the walls of an important public building, they are well saturated with water just before they are laid, then the mortar is of the best cement and sand, and thoroughly tempered. If the work be *under ground*, the mortar is of the best hydraulic cement and clean, sharp sand. If it be *above ground*, the best lime and sand mortar is used, with an addition of 20 to 30 per cent. of hydraulic cement,



ALFRED MORGAN, SUPERINTENDENT ACME VITRIFIED BRICK WORKS, CLOVERPORT, KY.

well mixed with it, as it is carried on the scaffold. The brick are well "headed" and all the joints "flushed" with mortar. Care is taken to have the brick laid with best "Bond," both for lateral and longitudinal strength. The brick being wet, the "water of crystallization" is not absorbed from the mortar and it "sets" to the brick perfectly hard and solid, and in a few months the walls are as compact, strong and solid as a stone. Now this building will stand for ages to come, and every brick is a *card* of good skill and character to the maker, and he and his posterity can point with pride to this monument of their merit as perfect experts in the art of brickmak-

ing. Now, Mr. B. is just as good a brickmaker as Mr. A, but he has sold his brick to all sorts of builders, who build houses for present profit. He has furnished brick for a certain block of buildings that have been put up to rent. The walls are not well proportioned for strength; the brick were laid dry and careless, the mortar was "poor," and no proper care taken to *bed* the brick or *Bond* them, consequently, the walls will bear no sudden thrust or great pressure, and if the buildings burn down, the walls fall and the mortar leaves them, as they were laid up, in clay and ashes. Then the public say that the "brick were bad," and the brickmaker must stand much of the blame for defective work.

#### THE RIGHT WAY TO HAVE THE BEST WORK.

In the first place, brickmakers must get to that point in manufacture that will stop the common use of inferior brick. All true, genuine experts in the business must have, at least, a common implied understanding that they will not compete with nor countenance *botch* brickmakers, nor encourage *botch* bricklayers, or builders.

When a real true expert brickmaker starts to make brick, he should be in all essential ways, well prepared to make the very best kind of brick. He should burn at least 90 per cent. of his brick hard, and then hold them at a price that will pay him. If he has an "upstart" neighbor in the business that makes inferior brick, with the expectation of selling them under a fair paying price to cheap builders, just put down the price for inferior brick

so as to barely cover the cost.

For instance, say you have ninety per cent. of hard brick; of course, this includes "arch brick." Now, one-half of the arch brick are more or less cracked and marked by the fire, so you will have about 85,000 of good, selected hard brick, and about 15,000 salmon and arch, in every 100,000. Now, the salmon and arch put with 5,000 hard brick, will make a lot of 20,000 brick for all common building purposes, as good as the "*Kiln run*" of brick make by your green neighbor brickmaker. Now, say you want \$8.00 per M for your hard brick, but your neighbor pretends to sell his at \$6.00 per M, or he sells his "*Kiln run*,"



all together, for \$5.50 per M. Now, you sell the 20,000 second quality you have on hand, at just the cost, say \$3.00, this would *checkmate* the botch brickmaker, and he would have to quit the business.

There are two things that all good brickmakers should do for their own best interest. One is, to insist on better brick work. Show that an 8½-inch wall, built of hard, strong brick, is as strong as a 13-inch wall, built of half salmon and bats. This would be economy that all could see and understand. Four inches of ground would be saved, and the cost of an 8½-inch wall of first-class, would not be as much as a common 13-inch wall of inferior material, and this difference would run throughout all classes of brick work.

#### ALL REAL TRUE GOOD BRICKMAKERS

Should earnestly take up this subject. If you do not, the everlasting, self-conceited botch will start up all around you, just so long as people are satisfied with a low class brick and low class workmen to lay them. You must "Boycot" the botch builder and bricklayer, and run him out of the market, by offering inferior material at half price. Not only that, but it would be well to offer to do botch work for all who might want it, at a low figure. As soon as investors in real estate see that they can have the best work at about the same cost of bad work, they will patronize only the best mechanics. A first-class building will rent or sell for more than an inferior building; it is permanent and the insurance is less, both for the landlord and tenant.

IF YOU CAN MAKE GOOD BRICK PUT YOUR NAME ON THEM.

If brickmakers would adopt the habit of stamping their name on their brick, it would do much to advertise and recommend them.

Brick machine men could easily fix a stamp on their machines to put the name of the manufacturer on every brick, and as most thoughtful, intelligent people will notice a pile of brick as they pass along by them, they will at once recognize the quality and the name of the maker, if it be on the brick. It would be like a merchants sign and advertisement, and only the botch or unskilled brickmaker would ever be ashamed of his name on his brick. In fact, if all good brickmakers would adopt the practice of stamping their names on their brick, they would soon get rid of all the botch brick product. But aside

from the pecuniary reason for stamping brick, all brickmakers who have a laudable pride and ambition to perpetuate a good name, cannot fail to see this most extraordinary cheap and easy way to do it most effectually.

Old "Time" makes and unmakes all things. Not in the very far distance the 10,000 brickmakers, now at work, will have burned their last kiln. The N. B. M. A. or the CLAY-WORKER may tell the story of their lives in a few brief sentences, and their silent graves may have a tomb cut of marble, but time will change or obliterate all these, and the transient memory of the present will pass away into the restful, speechless oblivion of the future, but the good brick, stamped, will, at least, tell the name and skill of the maker, with credit to the last posterity.

#### A SPLENDID SHOWING.

□ **"NOTHING** succeeds like success." This adage has been fully exemplified by the wonderful popularity the "Simpson" Brick Press has gained among brickmakers.

All the different phases and conditions of the dry press process have been shown by the success the "Simpson" has had with different kinds of clay,—loamy clays, fire clays, strong clays, shales and soapstones, and even ground building slate are all successfully worked by this machine.

As an instance of working loamy clays, may be cited the success the "Simpson" has had in St. Louis, where six 4-mold machines are in operation at the following yards: Cote Brilliant Press Brick Works, Henry Brockschmitt's yard, H. C. Gillick's yard and Thaddeus S. Smith's yard.

It is well known among the brick men that St. Louis is headquarters for this process of brickmaking and that a machine that is successful in that city need not fear any other part of the country. The success attained by the above firms, using the "Simpson" Press, attests to the excellence of the Press, not only as to the quality of its products, but also to its superiority as regards strength and all that goes to withstand the constant wear and tear of a rushing and pushing brickyard.

In strong clays, the "Simpson" has equally as good a record. The most notable example is perhaps the extraordinary success of the Central Press Brick Co., at North Baltimore, Ohio, using three 4-mold "Simpson" Presses. We have attempted to convey to our

readers an imperfect idea of the interior of the plant by the half-tone engraving on opposite page. Prominent buildings in Chicago, Cleveland, Cincinnati, Pittsburgh, Detroit and Indianapolis are erected with brick from these works.

The Surgical Institute of the latter city, the front brick of which were supplied by that company, and made on the "Simpson" Press, is considered to be the finest specimen of artistic brickwork to be found on this side of the Atlantic. The many kinds of ornamental brick this company produces on the "Simpson" are especially remarkable for their beauty and artistic excellence.

The "Simpson" is being used on this class of strong clays at many other points,—Slidell, La., Terre Haute, Ind., Peoria, Ill., Newbern, Ill., Sparta, Ill., Canandaigua, N. Y., etc., etc.

At the brick works of the Platt Brick and Fire Proofing Co., the "Simpson" is equally successful in handling Fire clay. The fire clays from Zanesville, O., region are also handled successfully by this press.

One of the great features of modern brickmaking has been the use of shales and it is in this particular that the "Simpson" probably has made its mark. The machine may be seen in operation in this class of material at Cleveland, Ohio; Toronto, Milton, Beamsville and Port Credit, Ontario. At these different points eight machines are at work showing the adaptability of shales to the dry clay process.

It is however in the use of ground soapstone and building slate that the "Simpson" demonstrates its qualifications under trying conditions. Two 4-mold "Simpson" Presses are in successful operation in Pine Grove Furnace, Pa., on this class of material.

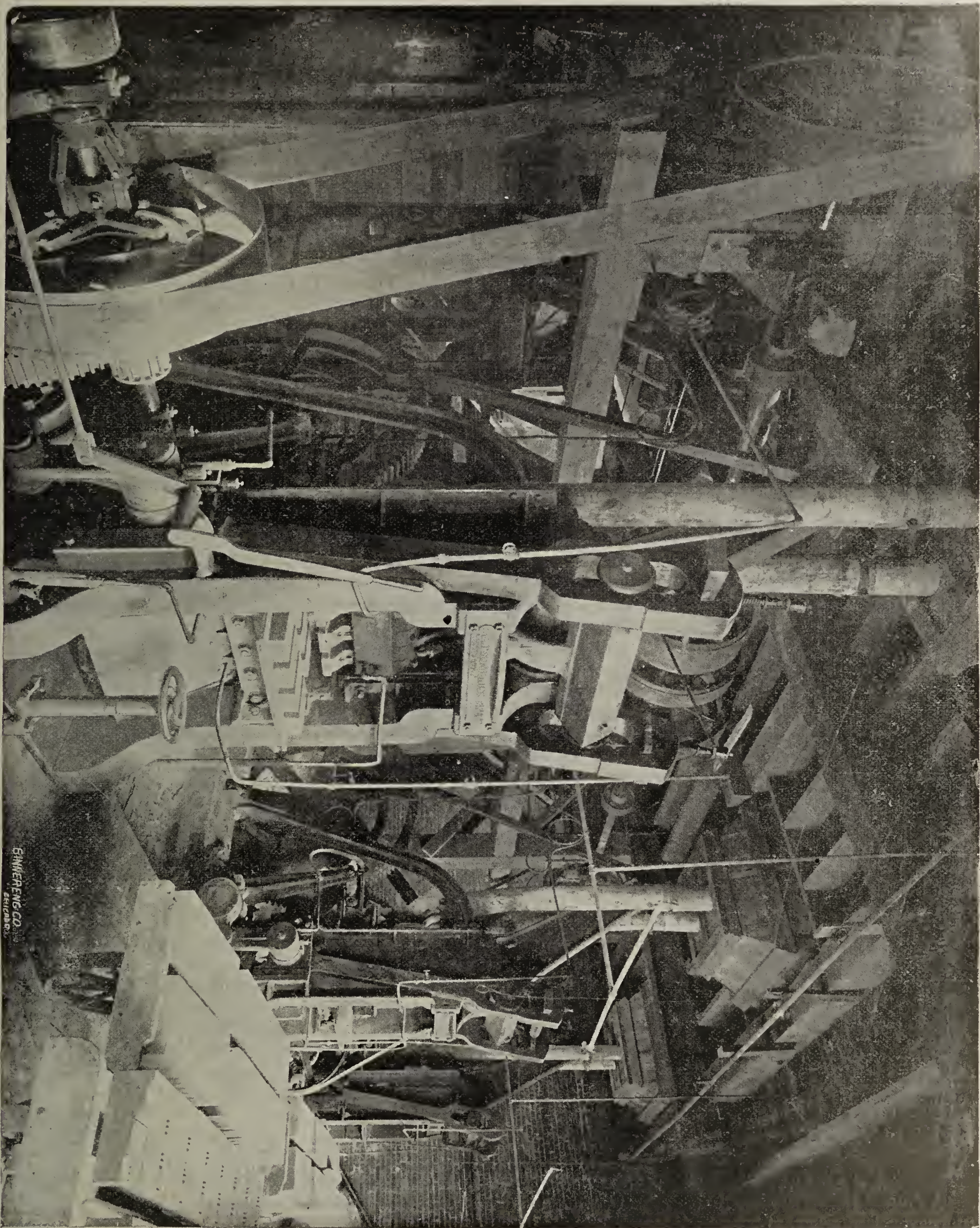
In the history of brickmaking during the last five or six years, nothing has been so marked as the progress made by the dry press process. This has been due largely to improved machines, and the manufacturers of the "Simpson" Brick Press are to be congratulated in attaining the top notch of efficiency in this class of machines.

It will be observed from the above record that the adaptability of the dry press method of making brick to the different kinds of clay is wonderful. It is not so many years ago since a record of this kind would have been considered unattainable.

The Simpson Brick Press Co., of Chicago, Ill., not only manufacture this well known and successful brick press, but are also prepared to furnish complete brickyard equipments and will contract to erect complete plants.

They are now issuing an elegant catalogue of 24 pages, which will give a great deal of valuable information concerning their machine and the construction of dry press yards. It will certainly be a great advantage to intending purchasers to correspond with them.





INTERIOR VIEW OF CENTRAL PRESS BRICK COMPANY'S WORKS, NORTH BALTIMORE, OHIO. THREE 4-MOLD SIMPSON PRESSES.

EMMERICH CO.  
CHICAGO



## THE PERPLEXED BRICKMAKER.

HERE dwelt in a city, of whom I now tell,  
A most wicked city, some men call it—well,  
The state of Illinois it contains, as you know,  
And Christian folks give it the name Chicago.  
There dwelt in this city, as I said before,  
This great windy city of classical lore  
And many things else; a man, thirty-six,  
Engaged in that high art—the making of bricks.

This man ran a yard on the side of a hill,  
A stiff mud machine and an antique pug mill,  
Left by his father, long years ago dead,  
Who from his own father had inherited,  
This model brick plant. But still I will say,  
It turned out an article—gravel and clay,  
For which the proprietor fondly would stick,  
And even sarcastically specify—brick.

But somehow or other things seemed not to do,  
For somewhere was loose, it is certain a screw.  
The contractors came, then went sadly away  
And purchased those brick that they make from  
dry clay.

The houses and factories went up all around,  
But in their construction was none of his ground.  
The street paving contracts like fire past him  
flew,  
He did not know what in the world he should do.

He mortgaged his house, his machines and his  
yard,

His wife and his children at laboring hard,  
He set them to haul and pile brick in the kiln;  
But things still from bad unto worse went on, till  
One day sitting down in most abject despair,  
He picked up a paper called the CLAY-WORKER  
And read, till his eyes beginning to gleam  
Concerning a wonderful, new style, machine,

Upon this machine brick as fine as dry press  
Were made at a cost most exceedingly less,  
'Twould make ornamentals, pavement or walk,  
In fact it would do almost all else but talk,  
And many who used it in working their clay,  
Were making big fortunes almost in a day,  
Reforming the brickmaking world, it is plain,  
The greatest invention since Adam raised Cain.

It was being sold the entire country o'er,  
Had brought wealth and happiness home to the  
door

Of many a poor and hard-working brick man  
Who tried to make brick on his grandfather's  
plan.

His trouble he found thus, in spite of his fears,  
Behind times he was just about fifty years,  
And what he should do, this, is easily seen,  
He borrowed the money and bought a machine.

And now, it is well just to notice the rest,  
This man with the greatest of pleasure is blest,  
His debts are all paid, he has thousands in store,  
His wife and his children are working no more,  
He owns a big yard and possesses some stock  
In several railroads, a large business block,  
Is reckoned a man of wealth, and they say,  
A member of the well known N. B. M. A.

Now brickmakers all, do you like this man,  
Use more modern methods, 'tis far the best  
plan,

The machine—well, 'tis no doubt quite easy to  
guess,

The "Raymond Columbian Power Re-Press;"  
'Twill make fine press brick at the slightest ex-  
pense

Of twenty-five cents for a thousand advance.  
If more of this marvelous thing you would know,  
Just write Mr. Raymond at Dayton, Ohio.

—ELLIS P. RAYMOND.

## AN APT ILLUSTRATION.

"A railroad train will move so long as  
the engine is attached. It will run into  
the depot, a short distance, on the mo-  
mentum of the detached engine, but

when it stops, practically side-tracked,  
it takes time, steam and labor to move  
it again. 'Tis just so with advertising.  
You can make a spurt, or stop  
a short time in your regular work, but  
when a long gap occurs it is practically  
like starting all over again, costing much  
more in proportion than if it had been  
kept up persistently."—*Fame.*

## THE YALE BRICK CO.

AMONG the new yards started last  
season, none has been more suc-  
cessful, or has a more promising  
outlook for the future, than the Yale  
Brick Co., at Berlin Junction, Conn. In  
the first place, they started in right,  
which is half the battle. They put in  
the most improved machinery and kilns,  
and made an unqualified success from  
the very beginning. They are putting  
up a fine new office from the product of  
their first kiln, and the New York, New  
Haven and Hartford Railway Co., are  
building a new depot from the same  
brick.

Mr. E. P. Yale is president and general  
manager of the company, and Mr. F. H.  
Allis is secretary and treasurer. Their  
success is all the more to their credit  
from the fact that neither of these gen-  
tlemen were experienced brickmakers  
when they started in, though both were  
practical business men. They have un-  
limited quantities of material, both shale  
and clay, which make fine red brick and  
command high prices in the market.  
They are also shipping in white clay  
from New Jersey, and intend to go  
largely into the manufacture of buff,  
mottled and other shades of fine face  
brick. In addition to all this, Mr. Yale  
has recently discovered and purchased  
forty acres of clay which has been tested  
to the depth of 60 or 70 feet, and is su-  
perior to anything ever found in that  
section for the manufacture not only of  
the highest grade of building brick, but  
unequaled paving brick.

The Yale Brick Company's plant has  
an easy capacity of 40,000 brick per day,  
being fitted up with two 4-mold Boyd  
presses, two dry-pans, and a complete  
outfit of elevators, screens, etc. They  
are building a plant of five Flood up-  
and-down-draft kilns, two of which are  
already erected. Their entire plant is  
of the most improved construction and  
arrangement, and there are none of  
those stoppages and delays which eat  
such holes in the profits of brickmakers.  
The Yale Brick Co., certainly deserve

the success they have attained, and a  
prominent place among the brickyards  
in the country.

But a little ways from the Yale Brick  
Works is the factory of the New Britain  
Architectural Terra Cotta Co. It is a  
plant of tender years, but very healthy  
growth; established little more than a  
year ago, they now have a good sized fac-  
tory that at the time of our visit was a  
veritable beehive of industry. From the  
well lighted modeling room presided  
over by the gifted sculptor, Mr. G. S.  
Barkentin, on through to the kilns and  
packing rooms every department was  
crowded with work. If their business  
continues to increase as it has been do-  
ing they will soon have to make substan-  
tial additions to their works. "So mote  
it be," for their productions are of an  
excellent quality.

Berlin Junction has long been known  
as a brickmaking center. Our old friend  
C. P. Merwin, whose name is familiar to  
all the readers of the CLAY-WORKER,  
and who has been one of the most promi-  
nent members of the N. B. M. A. since  
its organization, has run a large and suc-  
cessful soft clay yard at that place for  
many years. Mr. Merwin has made ex-  
tensive additions to his yard this past  
season and is doing a very flourishing busi-  
ness. Mr. Frank Stiles is also running  
a very successful yard near Berlin Junc-  
tion, at North Haven, and making a fine  
quality of building brick.

Berlin Junction is favorably situated  
for supplying both the New York and  
Boston markets, as well as the nearer  
towns of Hartford and New Haven, and  
is bound to grow largely in favor as a  
location for brickmakers, the materials  
in the vicinity, especially the shales, be-  
ing exceptionally fine.

## POSSIBILITIES.

We dream, we wake, we work! The  
world seems real only when it answers  
to our individual touch. Yet, beyond  
our touch, beyond our waking, beyond  
our working, and al-  
most in the land  
of dreams, lie  
things beyond  
our present  
thoughts, great-  
er, wider,  
stronger  
than those  
we now lay  
hold on.—  
*Fame.*





## INTERESTING READING FOR BRICK-MAKERS.

THE all important problem as to "How to improve upon the old methods of making brick, so as to obtain a *better quality* and at the same time *cheapen* the cost of production," is being practically illustrated at the works of the College Hill Press Brick Co., St. Louis, Mo. The office and works of this company, which is one of the largest exclusive dry press brick establishment in the country, are located on North Broadway and College Ave.

The information gained there is briefly as follows: The entire product of the establishment is made on the celebrated "Triumph" and "Challenge" Dry Clay Brick Machines, both being the invention of Mr. Jos. J. Kulage, the president of the company. Nearly all clays can be successfully pressed by either of these machines, and thus, if material is suitable, they yield a brick every one of which is a fine pressed "face" or "front" brick, commanding, of course, a much higher price than ordinary brick. Even the common brick made by these machines are superior both in quality and appearance to the best "re-press" brick. These brick do not require hacking out for drying. All the cost of drying apparatus, labor and yard space saved. They are set directly from machine into the kiln as high as wanted. The cost of making these superior pressed brick is less than that of "hand made", "soft mud" or "stiff mud" brick, and they can be burned in any old or new style kiln—or wherever common or any other kind of brick can be burned, and with the same or even greater ease.

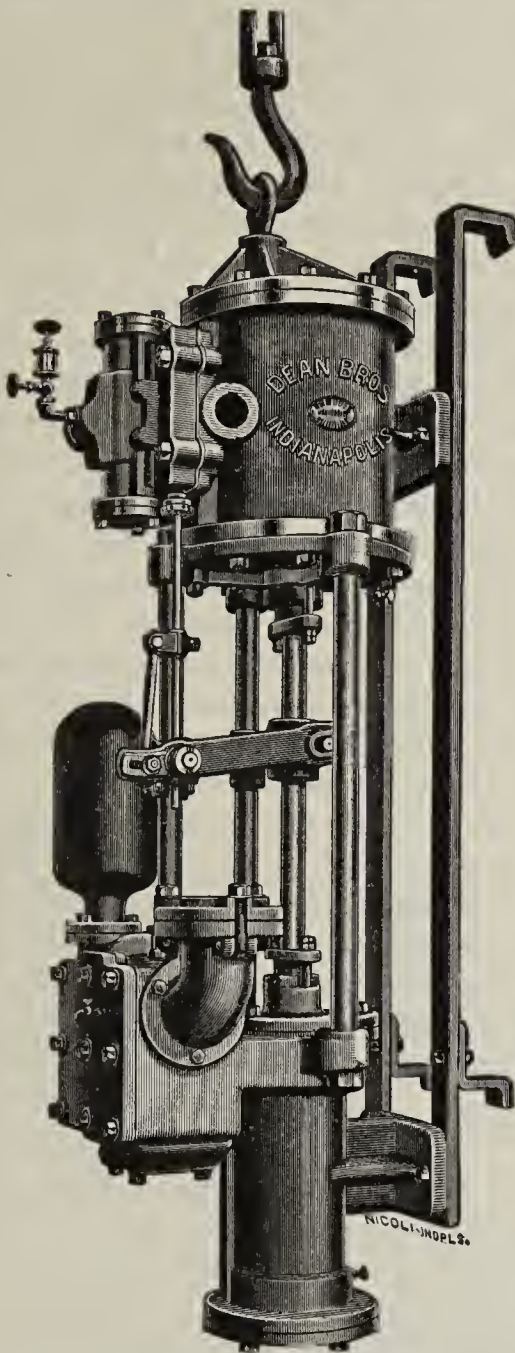
In addition to the plain brick, there can be made on the "Triumph" and "Challenge" machines, several hundred varieties of fancy shaped and ornamental brick, which command prices up to a hundred dollars and more per thousand, while the cost of making these high priced, fancy brick on either the "Triumph" or "Challenge" machine is less than \$2.00 per thousand set in kiln. Besides, these machines facilitate the making of brick independent of the weather—at night as well as day—and winter as well as summer—thus doubling capacity without increase or enlargement of plant.

From the aforesaid it is plain that, where suitable material is on hand the "Dry press process" must necessarily

supersede all other methods of making fine brick, and that every progressive brickmaker should find it to his interest to investigate the advantages of the "Triumph" and "Challenge" Dry Clay Brick Machines.

## A NEW STEAM PUMP.

THE accompanying illustration of a new vertical sinking pump will no doubt be scrutinized with interest by our readers. It is intended for use in mines, shafts, wells, quarries, pits or



reclaiming flooded mines or in any place where a portable pump is required. It is a single cylinder, direct acting pump occupying but little space. Being double acting it throws a continuous stream of water and can be operated suspended by a hoist or attached to side of shaft. In either case it works equally well.

It has a new noiseless valve gear with adjustable stroke which has proven to be the best device yet invented for operating the valves of steam pumps. They are made with a view to withstanding the rough usage to which they are sub-

jected, and are suitable for permanent use in mines. When required the water cylinder is made of gun metal or bronze to resist the action of bad mine water. The pumps are made in a variety of sizes and combinations.

All pumps are made under consecutive numbers and all parts are made interchangeable and are thoroughly tested and inspected before leaving the shops.

The pump shown in illustration has steam cylinder 14 inches diameter, pump cylinders 8 inches diameter, stroke 12 inches, suction 6 inches, discharge 5 inches. The manufacturers, Dean Bros. Steam Pump Works, Indianapolis, make five hundred varieties and combinations of steam pumps, and will be pleased to give any information desired in regard to any of them.

## THE LARGEST DRY PRESSED BRICK PLANT IN THE WORLD.

A RECENT visit to the Jarden Brick Company's yard at Philadelphia finds them literally "all torn up." Everything is in the greatest confusion, building unroofed and partly torn down, machinery dismantled, carpenters hammering and machinists pounding on all sides. The genial president of the company, Mr. H. C. Webster, explained that they were simply in the transition period between the old and the new; that they had bid farewell to the traditions of their forefathers, and were fitting up their plant with the most advanced of the modern systems of brick-making.

This company evidently does not do things by halves. As soon as they became convinced by practical demonstration of the superiority and economy of the dry press process over the time-honored methods of brickmaking, they at once placed their order for \$75,000 worth of dry-press machinery of the latest and most improved type, and started in to reconstruct their entire plant to accommodate it. One of their mammoth Boyd machines is already on its foundation, having been in use for several months past. Two more are now being placed along side of it, and three others are on the way. In addition to this formidable array of giants, they will put in one smaller machine of the same kind for making ornamental brick exclusively. Large dry-panns are now being erected on the grounds, one for each press, and a complete system of elevators and screens will carry the clay from



the pans to the presses. A gentlemanly representative of the Boyd Company showed us the plans made by his people for the reconstructed plant, which will be the largest dry press brickyard in the world, and one of the best arranged and equipped as well.

The Jarden Company are also putting in a new plant of kilns of the latest and most improved design, to be used in conjunction with their new machinery. These are the Flood patent, the same as used on the McDonald Brick Company's yard at Louisville, which were described in the last CLAY-WORKER as being peculiarly adapted for the burning of dry pressed brick. One of these kilns has been completed and burned, and six larger ones are in course of construction. The entire plant is expected to be in operation before the first of March, and in addition to being the largest dry pressed brick yard in the world, its product will certainly be the finest, if one may judge from the brick now in stock on the yard.

#### BURNING DRAIN TILE.

Rapid Work at the Works of Stewart Bros., Mt. Victory, O.

ACCORDING to previous arrangements some fifteen tile manufacturers, representing the States of Ills., Ind., Mich. and Ohio, met at the factory of Stewart Bros., Mt. Victory, Ohio, to witness the setting and burning of a kiln of tile in their new "Diurnal Kiln."

The weather was very cold, with occasional squalls of snow. With a comfortable fire in their new office, recently built of hollow brick, the visitors were made comfortable and passed the time pleasantly, discussing various topics, and not unfrequently was the little office made to ring with laughter of the merry set. By no means was the little office the place of all the enjoyment, for, when meal time came, we were escorted to the residence of Mr. Robert Stewart, where the guests were royally dined. The hospitality of Mrs. Stewart will long be remembered by all who sat around her festal board. We almost forgot we were there to witness the operation of the new kiln.

The filling of the kiln proceeded in the ordinary way and shortly before 4 o'clock the filling was completed and door bricked up.

At 4 P. M., Dec. 20th, fire was kindled in the furnaces and from that hour the work of burning progressed.

At 10 A. M. the 21st, commenced firing hot, or raising fire, water-smoke still coming in quantity.

At 1 P. M., or 21 hours from setting fire, water-smoke off, and tile in kiln at this time, cherry-red two courses down. At 5 P. M., four top courses light-red, showing red in bottom.

At 5.30 P. M., blaze coming out of chimneys. At 10 P. M., last fire made and kiln closed up, making 30 hours from first to last fire.

At 6 A. M., 22nd, kiln door taken down and some tile taken out. Two hours later a wagon load or more of tile had been taken out, showing the tile were well burned from top to bottom of kiln. In fact, harder than necessary. Quite a lot of sample tile brought by the different visitors, come out in first-class condition, excepting one which showed to be over-burned.

Size of kiln, 12 x 14 feet inside measure, set with 3-inch tile, cut 15-inch long, six courses high. Amount of wood used for the entire burn 6¾ cords.

It is due Stewart Bros. to say that, owing to the dampness of the tile, caused by salting the clay before moulding into tile, the damp, cold weather at time of burning, and the kiln not having been burned in for more than a month, the water-smoke held on for eight to ten hours longer than it would have done under favorable circumstances.

A sample tile taken from the shed and thoroughly dried was found to lose in weight 5¼ oz.

The visitors expressed themselves as being highly pleased with the operation of the kiln, and the results of the burn.

Stewart Bros. have quite a lot of tile on their yard all of which shows they have been having successful burns. We found less soft and cracked tile than is commonly to be found on other yards we have visited.

Thanking the host and hostess for their kindness, each departed to his allotted station.

J. W. EVERAL,

Westerville, O.

#### BOATS THAT CARRY BRICK.

Cargoes of brick have to be stowed in the most careful manner, says the *Philadelphia Record*, or else the vessels carrying them will founder in the mildest weather, owing to the strong tendency of the brick to absorb the water caused by the leakage which necessarily occurs on all wooden vessels. The brick will absorb the water as fast as it runs in

from an ordinary leak, and the increased weight of the brick causes the vessel to settle until she makes the final plunge; and the crew are frequently at a loss to know the cause. To new shoals, defective work in the vessel's construction, and other causes are attributed the disasters.

#### PRESTIGE.

IN an interesting paper on the subject in *Fame*, Mr. Milton J. Platt says:

"Here is a simple question. Do advertisers for high class patronage pay sufficient attention to the prestige of the mediums they use?"

"Prestige is not of mushroom growth, it cannot be bought; it must be earned; Space in the medium possessing it is worth to the seeker for a high grade of patrons an incalculably greater sum than space in the medium without it. This is also true even though the latter's circulation equalled that of the former, and even though it were claimed for it that 'it goes to the same class of readers.'"

"Webster tells us that prestige at one time meant 'delusion; trick; illusion.' Those definitions are no longer applicable to the word itself, but they very nicely express some of the qualities attaching to more than one publication which claims kinship with those commonly known to be above suspicion. The present use of the word implies weight of influence drawn from past successes; expectation of future achievements founded upon those already accomplished. This is the prestige the wise advertiser will look for, and the names of the magazines or other publications possessing it will at once occur to him."

#### INSIDE AND OUTSIDE.

*Publishers' Clay-Worker:*

Enclosed please find postal note for \$2, of course I want it continued.

Since the first appearance of the CLAY-WORKER I have been papering the inside of my skull with the information contained and now you send a calender to paste in the inside of my hat.

Thanks.

J. W. McMILLAN.  
Milledgeville, Ga.





## BRICK YARD SKETCHES.

In and About the Convention City.



LOUISVILLE, Jefferson Co., Kentucky, is a notable city. By virtue of her age, her wealth, her culture and her vast and varied commercial and manufacturing interests, in some lines of which she leads the world, Kentucky's metropolis has gained a place in the front rank of American cities. We believe it was President Grant who once said that in three things the "Blue Grass" state could not be excelled: "Her women, her horses and her whiskey." He might have added a fourth—the fragrant weed that, her statistics would prove, gives solace and comfort to countless thousands the world over. Louisville is the greatest leaf tobacco mart on the globe. The sales now amount to more than 150,000 hogsheads a year. The sales of leaf tobacco in the city and state during the past quarter of a century aggregate over three hundred millions of dollars. Think of it ye smokers and chewers, \$300,000,000, and then figure up what per cent. of that vast sum you have con-

tributed, sent up in smoke—or worse. Those of our readers who attend the seventh annual Convention of the N. B. M. A. the 24th, and from all indications the town will be full of 'em, may gain still a better idea of the magnitude of the tobacco traffic by a peep into any one of the many great warehouses that are devoted exclusively to the housing of this useless and expensive luxury.

Louisville is also said to be the largest market in the world for Bourbon Whiskey. There are sixty odd distilleries in Jefferson Co., to say nothing of the moonshiners in the outlying townships. She excels not alone however in these non essentials, but is also credited with being the largest market in America for Kentucky jeans clothing, cast iron water and gas pipe, oak tanned leather and mules.

Louisville's eminence in commercial matters is due in no small degree to her favorable geographical location which makes her a natural gateway from the north to the fertile Mississippi Valley.

Approaching Louisville from the north we get the first glimpse of her smoking chimneys from across the Ohio river which is very wide and rugged here, being broken by a series of rocky rapids that while very picturesque are decidedly undesirable from a navigators

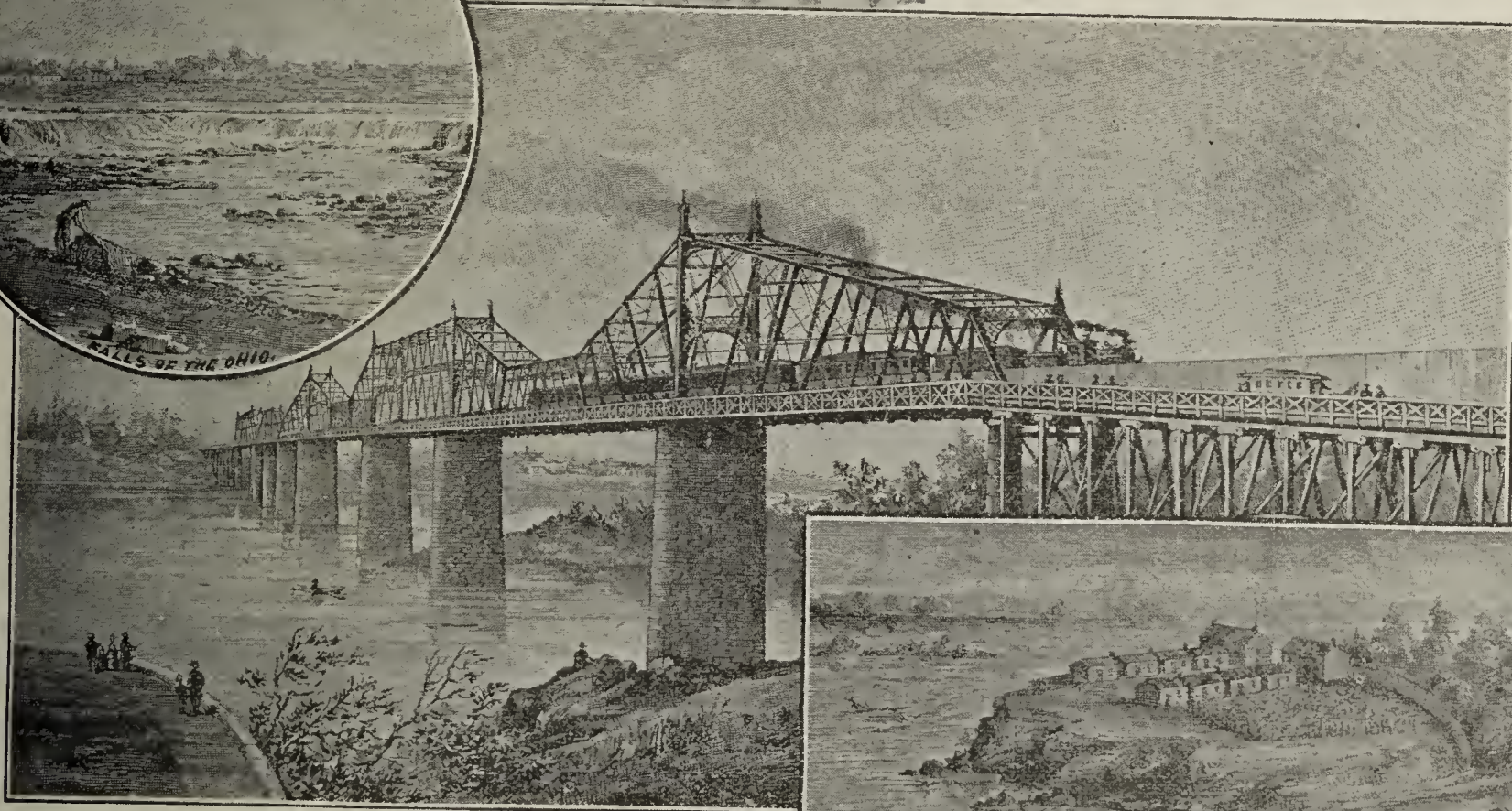
standpoint. It is this feature, however, that has given her the name "Falls City." A great government canal, constructed around the falls, admits of navigation by all sorts of river craft. Several lines of boats ply between Louisville and Cincinnati, Evansville and other large river



AN OLD KENTUCKY HOME.

towns the year round, affording cheap transportation and, in the summer, an inexpensive and pleasant source of recreation.

The city now embraces an area of eighteen square miles and from a builder's standpoint is essentially a brick city consuming annually in round numbers, 200,000,000 brick, which are all made within her borders. In the last issue of the CLAY-WORKER we gave an account of a trip among her brick yards. Now



KENTUCKY AND INDIANA BRIDGE.





we shall devote a little space to some of the out of town works.

#### THE LOUISVILLE FIRE BRICK WORKS.

This plant lies four miles south of the city on the main line of the L. & N. Ry.

Somerset, Mass., are the American agents. From the car the clay is passed into a Carlin's Sons wet pan or a Johnson dry pan as the case requires and is thoroughly ground and mixed and then conveyed

ware is burned in round and square down draft kilns, the former being built from plans furnished by E. M. Pike of Chenoa, Ill., and which are highly commended. They also have two round down draft kilns of an unusual character. They have the usual outside furnaces but have a round stack built in the center of the kiln. The stacks are 28 inches in diameter and extend nine feet above the top of the kiln. A good draft is obtained and the ware is burned thoroughly and economically.

The success of this plant is due largely to the wise and careful management of the superintendent, Mr. Alfred Crossley, a name quite familiar to our readers for he has furnished the CLAY-WORKER with many interesting and instructive papers. Mr. Crossley, whose portrait was shown on page 535 of our last (December) issue, is a thorough clayworker having learned the business in England, his native home. He has but recently returned from a short visit to the "old sod" and promises to tell our readers something of what he saw among the brick works on the "other side," in the near future. We are pleased and anticipate something very interesting, for Mr. Crossley is not only a master workman but an able writer as well.

#### CLOVERPORT, KY.

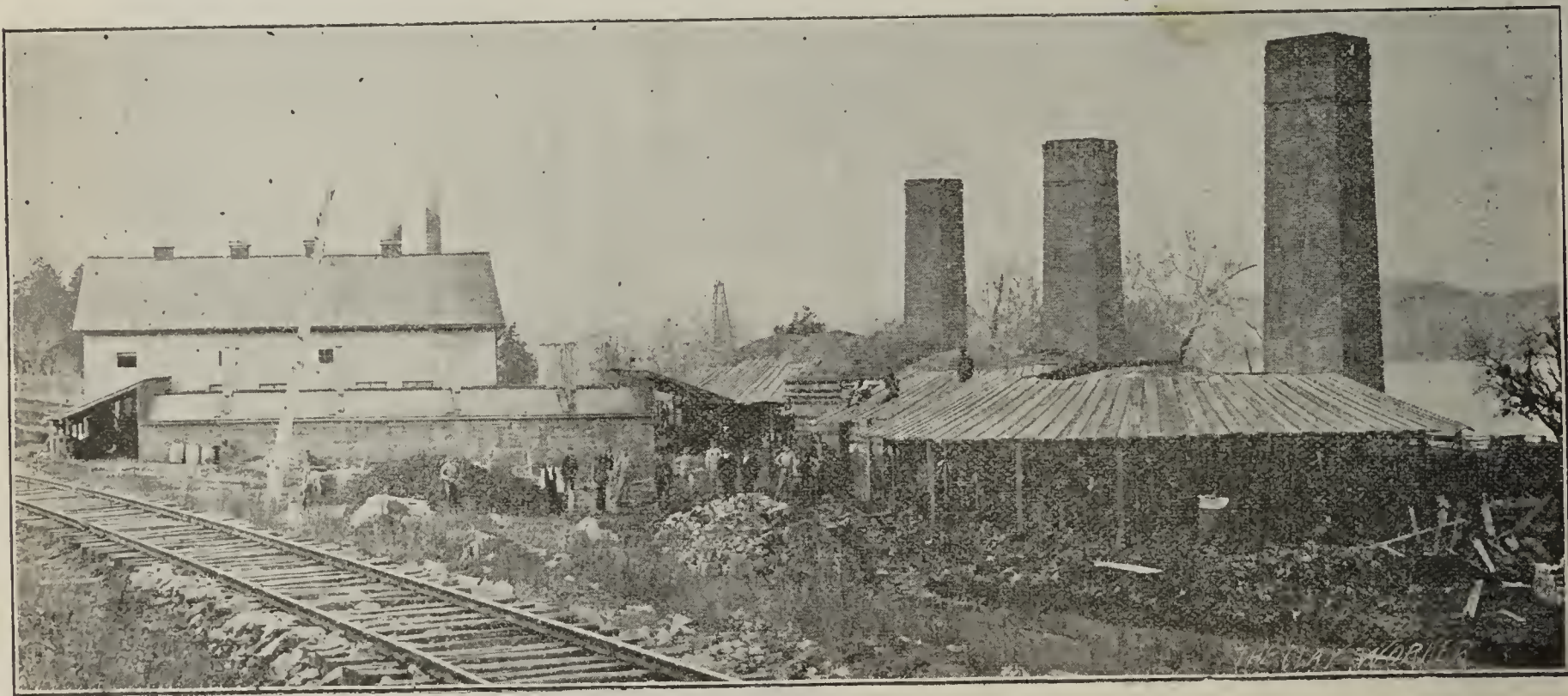
Is now a very prosperous little town of some 1,500 inhabitants, thanks to the Creator for extensive deposits of fine shale and the capital and enterprise of Mr. J. K. McCracken, general manager of the L., St. L. & T. Ry., which runs from Louisville, west to Henderson, Ky., a dis-



LOUISVILLE FIRE BRICK WORKS, LOUISVILLE, KY.

It was established in 1890 by the present proprietor Mr. K. B. Grahn, who owns a valuable fire clay deposit in Carter county, Ky., from which point, 184 miles distant, the crude clay is shipped by rail. The works are not large, having a daily capacity of 15,000 fire brick of various kinds. They usually run the year round and the common or ordinary size brick are made by machinery, imported from England, known as the Johnson Universal, semi-plastic brick machine for which the Somerset and Johnsonburg Manufacturing Co., Som-

erset, Mass., are the American agents. From the car the clay is passed into a steam repress—also imported—from which the brick are taken and deposited on a hot, furnace heated, drying floor 50x100 feet in size. Above this is a one story dry house heated by steam in which the large furnace-blocks, and other ware which must be molded by hand, are made and dried. A new hot-floor dryer 80x30 feet will be built during the winter to enable them to increase their capacity which is now insufficient, as their trade is growing constantly. Their



CLOVERPORT PAVING BRICK WORKS, CLOVERPORT, KY.



tance of 140 miles, Cloverport being midway between the two. Some two years or more ago Mr. McCracken's attention was directed to the clay lands about the little town and an investigation resulted in the establishment of

up the work when but a lad, in the old country. He left the Cloverport Paving Brick Co., and began the erection of the Acme works in April, '92, and has succeeded in establishing a model plant. They were not making brick at the

dumped from a platform into side-dump cars. These are hauled by steam hoist cable over a long, high trestle to a platform, on each side of which is a large dry pan, into which the clay is dumped. It passes through the pan into a



ACME VITRIFIED PAVING BRICK WORKS, EAST VIEW, CLOVERPORT, KY.

the Cloverport Paving Brick Co. A plant was erected under the supervision of Mr. Alfred Morgan and was soon turning out vitrified pavers. The attention of other capitalists was soon attracted and two other companies were formed and now have fine paving brick factories in operation, employing hundreds of hands and adding materially to the world's wealth by the production of an almost indestructible commodity.

At the time of our visit the

#### CLOVERPORT PAVING BRICK CO.'S WORKS

Were not in operation, having closed down for winter repairs, so we contented ourselves with a hurried glance and a "snap shot" as we passed by the plant. It seemed well located and arranged being conveniently near the main line of the L., St. L. & T. Ry., and the south bank of the Ohio river. They have a daily capacity of about 25 M. brick, which are burned in eight round down draft kilns 28 feet in diameter and one Eudaly square kiln 18x82 feet. So far they have not repressed their brick but will probably put in a power press for that purpose in the spring.

#### THE ACME VITRIFIED BRICK CO.

Has the largest and newest plant. It, too, was planned and built under the supervision of Alfred Morgan, who is still in charge and, as he may well be, is very proud of the entire equipment. He is a little Englishman, as full of energy and ideas as an egg is of meat, and, as indicated by the portrait on a preceding page, he has grown old and wrinkled in the brick business, having taken

time of our visit, having shut down for a few days to make some additions to their dryer, but from the boiler-house, where they have a splendid 300 h. p. battery, through the engine-room, to machinery, dryers and kilns, everything was orderly, clean and convenient, showing good, careful management. The clay bank is some 600 feet from the works and is taken from the side of a great hill. There are four or five grades of shale in the hill, all of which are used. In order to mix them thoroughly, for by this means the best results are obtained, a portion of each strata is wheeled in barrows and

chute, through which a boot elevator passes and takes it up to the floor above and deposits it into a shaking screen, which sieves it into another chute. Beneath the sieve and above the chute are several steam heated pipes. The clay falls over and through these pipes and is warmed considerably, which Mr. Morgan thinks is quite an advantage, as the clay works much easier and better than when cold. Through the bottom of the chute a spiral conveyor works it forward and into an open top iron pug mill ten feet long. Here hot water is added in sufficient quantity to temper thoroughly,

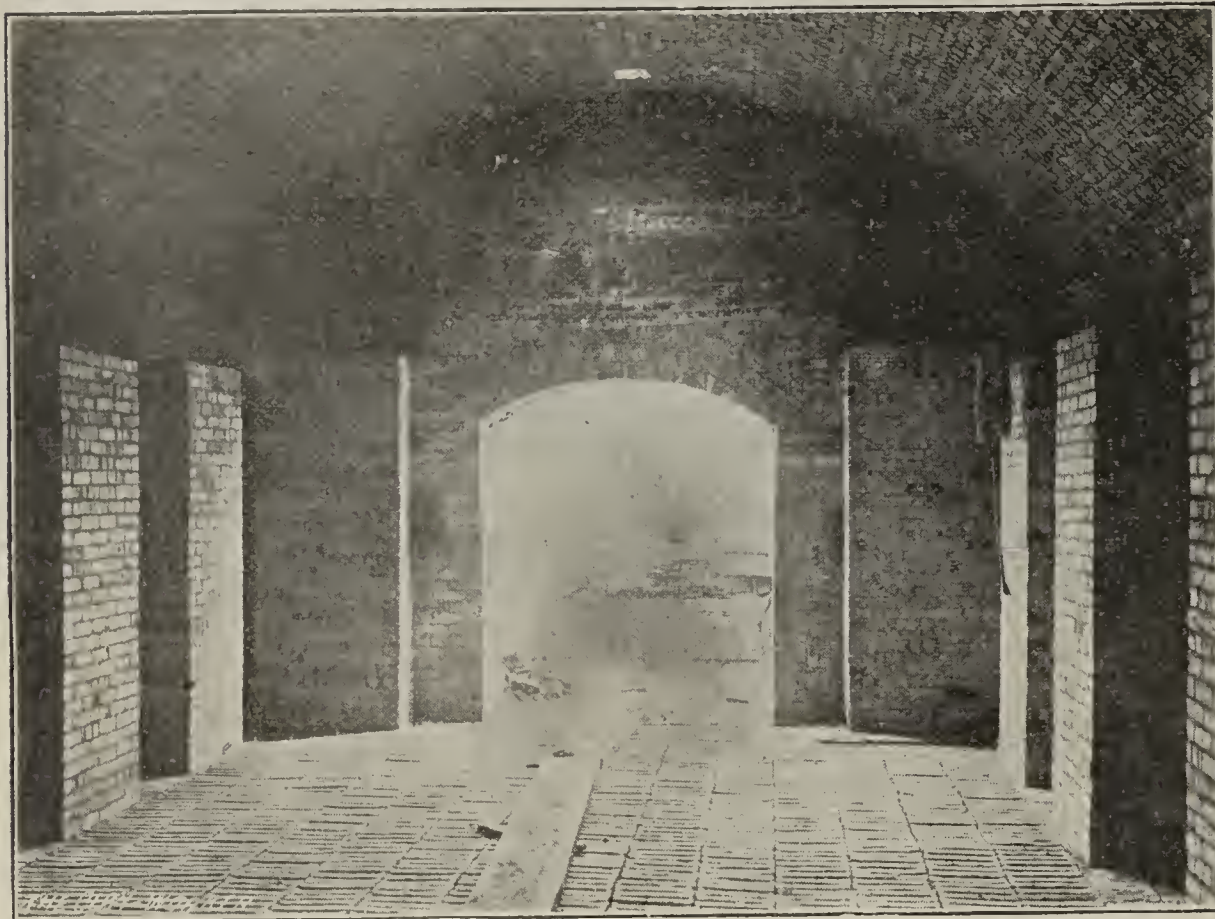


CLAY BANK, CLOVERPORT BRICK WORKS.



and it is then fed into a Giant stiff clay side-cut machine. After being cut the brick are carried by belt in front of two 2-mold Eagle represses, which have automatic feeding devices, and deliver the brick on the opposite side, where they are piled on cars and run into steam heated tunnel dryers. The brick crack badly if exposed to much draft at

THE PATTON BRICK WORKS,  
Located about a mile from the other two plants. Here, too, we found them "shut down," but caught Mr. Patton just as he was hurrying off to catch a train. He bade us a cordial welcome and expressed regret that the works were not running, which we echoed heartily.



INTERIOR OF KILN—PATTON'S BRICK WORKS, CLOVERPORT, KY.

the beginning, so that they fill a tunnel and then close dampers and warm up the brick slowly.

In about 24 hours the brick are warmed through and through, then the dampers are opened gradually and in about a hundred hours the brick are bone dry and go to the kiln. They have four square Eudaly down draft kilns. Also two Eudaly-Morgan kilns, which are the same as the first, except they have done away with the outside furnaces, which they think is an improvement. An additional kiln of the latter sort is being built and others will probably follow. Water-smoke with wood and coke in 3 to 4 days, and finish with coal in 7 to 8 days, averaging 11 days from start to finish. The brick are dark red,  $8\frac{1}{4} \times 4\frac{1}{8} \times 2\frac{3}{8}$  in size, very heavy and tough. All in all, the plant is splendidly arranged and equipped.

The machinery was furnished entirely by the Frey-Sheckler Co., Bucyrus, O., and under the master hand of the superintendent, runs like clock work.

Accompanied by Mr. Morgan, who kindly acted as guide, we next visited

run through a pair of large rollers, running at differential speed, thence to pug mill and into machine, from which the brick are carried 30 feet on an off-bearing belt to the represses. They are dried on iron cars in an Iron Clad Steam Dryer, and burned in large square kilns, holding 200,000 each. The clay is of a tender nature and has to be dried slowly and burned carefully.

Mr. Patton has his own blacksmith-shop and does his own repair work—a feature that might be adopted by many craftsmen with advantage.

Mr. Patton's brick, like those at the neighboring factories, are a handsome dark red color.

#### A GREAT PAVING BRICK CENTER.

Cloverport is destined to become a great paving brick center, for there is plenty of material and room for still more factories. At present, Louisville is the principal market, and brick are sold at \$12.50 a thousand. The present advantages may be largely increased in the near future by the possession of Natural Gas, which has been found in the immediate vicinity, but, so far, not in sufficient quantity to justify its use by factories.

In all probabilities, those attending the coming Convention of the N. B. M. A., at Louisville the 24th, will be invited to visit Cloverport and inspect the brick plants that have sprung up there within the past two years. All of them will probably be in operation at that time.

#### THE EVANSVILLE PRESSED BRICK CO.

Continuing our journey we reached Henderson in time to catch the boat for Evansville, where we had a couple of hours between trains—long enough to hunt up Messrs Morris & Lant, the well known brickmakers of that thrifty city. We found them both at work on the yard, of course, and after a cordial greeting, was shown through the plant, which is now a mixture of the soft clay rack and pallet system, which they first



WORKS, EVANSVILLE (IND.) PRESSED BRICK



adopted, and the stiff clay steam dryer method afterwards put in. In the spring they expect to adopt the dry clay process and put up a modern dry press outfit for the manufacture of front brick. Their clay burns a beautiful dark red, and they will no doubt make a success of the new venture, as they have of the old ones. They are making an excellent grade of paving brick on a Chambers machine, dry them in an Iron Clad Dryer and burn in square down draft kilns of their own building. The entire equipment, they say, is most satisfactory.

The kilns, of which they have eight, and will build more, have the advantage of being simple in construction and are easily burned. They are 50 feet long and 15 feet wide and hold 100,000 brick. The walls are 4 feet thick and run up 7 feet, at which point the arch is turned. There are nine furnaces on each side, built in the wall with flue for each, running up in the wall and coming out where the arch commences. There is a 2-foot, 6-inch flue beneath bottom and in the center of kiln, extending its full length and entering the main stack at one end. At the other end of kiln there are two stacks, one in each corner. These stacks extend up 8 or 10 feet above top of kiln, and afford ample draft. They water-smoke very slowly with coke, using about 300 bushels, and finish with coal, consuming about 1,500 bushels. The firm are members of the N. B. M. A. and will be represented at the Louisville Convention.

#### THE OHIO ASSOCIATION.

THE fourteenth annual convention of the Ohio Tile, Brick and Drainage Association will be held in Columbus, O., Tuesday and Wednesday, February 14th and 15th, 1893.

An excellent programme has been arranged and the meeting promises to be of special interest. Members of the Association are requested to bring a sample of their ware for exhibition at the convention hall, where room has been provided.

Special hotel rates have been secured, also reduced railroad rates have been provided for on the certificate plan over all

principal lines. Full particulars and programme will be given in a circular letter to members about Feb. 1st.

Clayworkers everywhere are cordially invited to attend.

#### BRICKMAKERS' LOCAL ASSOCIATIONS.

FROM many quarters come letters and inquiries from those engaged in the manufacture of brick, for information that will aid them in forming local associations for mutual benefit and protection.

The advantages of such organizations are very apparent, and the only reason they are not more universal is the difficulty encountered in maintaining and enforcing the rules and regulations agreed upon upon all members. Where this can be done very few craftsmen question the good effects of local associations.

These difficulties can largely be overcome by judicious government, which depends very much on the laws and rules adopted. To aid those who are now studying this subject with a view of forming local organizations, we give the Constitution and By-laws adopted by the Louisville brickmakers two years ago.

Not that these rules are considered by the "Falls City" craftsmen as perfect, for they do not so consider them, but simply as a form to be changed as local conditions seem to require.

The Louisville brethren will be pleased to advise with any seeker after knowledge on the question of Local Organization. The coming Annual Convention of the N. B. M. A., to be held in Louisville, Jan. 24th to 28th, will discuss the matter, and all who are interested are cordially invited to submit their views.

#### RULES AND REGULATIONS OF THE LOUISVILLE BRICKMAKERS' ASSOCIATION, OF LOUISVILLE, KY.

##### ARTICLE I.

We, the undersigned Brickmakers, of Louisville, Ky., have formed ourselves into a corporation organized under charter 56 of the General Laws of Kentucky, for the purpose of improving the art of brick-making, and for mutual protection to ourselves and customers, as set forth in articles of incorporation.

In conformity with the above, the following By-laws are adopted for the government of the Association:

SECTION 1. The annual meeting of stockholders shall be held on the third Monday in April, for the election of Directors.

SEC. 2. Regular meetings of the Board of

Directors shall be held on the third Tuesday of each month for the transaction of such business as shall come before it. Regular stockholders' meetings shall be held on the second and fourth Tuesday in each month. Special meetings of either the stockholders or directors shall be held at any time upon the written request of three members.

SEC. 3. Five Directors shall constitute a quorum at any Director's meeting.

SEC. 4. A majority of all stockholders shall constitute a quorum at any stockholders' meeting.

SEC. 5. The duties of the President are, that he shall preside at all meetings, and shall call special meetings at any time as set forth in By-law SEC. 2. In the absence of the President the Vice-President shall assume his duties.

SEC. 6. The duties of the Secretary shall be to keep a true and correct record of the proceedings of each and every meeting, and all matters of interest to the Association, and shall notify all members in writing of each meeting. He shall collect all dues, fees and fines, keep a correct account thereof, and turn same over to the Treasurer at each regular meeting. If so decided by the members of this Association, an assistant Secretary may be elected, whose duties shall be the same as those of the Secretary, under whose directions he shall act.

SEC. 7. The duties of the Treasurer shall be to receive all dues, fees and fines and to keep a true and correct account of same, and to take a receipt for all moneys paid out for the Association; and all moneys paid by the Treasurer shall be only upon written orders signed by the President.

SEC. 8. The initiation fee shall be twenty-five dollars (\$25) for each member, the monthly dues shall be one dollar (\$1), and fines for non-attendance shall be one dollar (\$1) for the first absence, two dollars (\$2) for the second, and three dollars (\$3) for the third successive absence, and so on, regardless of excuses.

SEC. 9. There shall also be a fine of one dollar (\$1) for any member who shall be ten minutes late at any meeting, regardless of excuse. Members of regular or special committees shall be fined one dollar (\$1) for non-attendance at committee meetings after due notification by the Secretary.

SEC. 10. In case any member refuses, or does not pay, for any cause, any fees or fines imposed upon him within thirty days after written notice from the Association to do so, then he shall forfeit all claims to whatever he has paid into the Association, not excepting his shares of stock, and have no claims for any balance in the treasury, and forfeit his membership.

SEC. 11. In order to insure a full attendance at all meetings, each member shall be entitled to and receive one dollar (\$1) for attendance.

SEC. 12. In case of dissolution of the Association, all debts shall first be paid,





and all funds then on hand shall be divided pro rata among the membership then belonging to the Association.

SEC. 13. For the general protection of all members of the Association, it shall be considered a violation of these rules, should any member furnish any bricks to a job in dispute, to a contractor or party, who has any dispute or trouble either in regard to quality, quantity or payments with any member of the Association, before said dispute or difference is satisfactorily adjusted with said member. Nor shall any member furnish any brick to any party where another member is delivering, without the written consent of the member who first began delivering.

SEC. 14. For further protection all members shall furnish to the Secretary a list of any party or parties, who have failed within the last two years to settle satisfactorily any bill for bricks furnished, and the Secretary shall furnish to each member of the Association, a book showing said list, giving names of party or parties who have not settled, names of the members reporting, and also amount of claim. And no member of this Association shall credit any party, whose name shall appear on the list, until he settles said bills, and the member reporting same shall advise the Association.

SEC. 15. All bills are due and payable each Saturday before 12 o'clock M., for all bricks delivered up to Friday night.

SEC. 16. Architects and others who give orders instead of checks or money, are requested to have the orders ready for delivery before eleven o'clock each Saturday, for any brickmaker who makes his wants known not later than Friday at 3 o'clock.

SEC. 17. For delivery after January 1st, the following minimum prices are adopted for the year 1892:

|                           |        |              |
|---------------------------|--------|--------------|
| Face Brick. . . . .       | \$8 00 | per thousand |
| Paving " . . . . .        | 8 00   | "            |
| Rough Hard Brick. . . . . | 6 00   | "            |
| Salmon Brick. . . . .     | 4 50   | "            |
| Octagon " . . . . .       | 10 00  | "            |

These prices to hold good without discount or rebate of any kind. Should any member sell any brick at a less price than above, and it is so proven, he hereby agrees and binds himself to pay to the Association \$2.00 per thousand for all bricks sold in violation of this agreement.

By the term Face Brick is meant brick sufficiently hard and perfect in shape to be used on an outside wall, but does not contemplate the selection for exact color or the packing in straw, or any other device used in the trade of stock brick.

Paving brick shall be held to mean such brick as the city of Louisville will accept for the paving of side walks.

Rough Hard Brick shall not contain any brick fit for use on outside course of wall.

Salmon brick are brick which are hard enough to stand transportation and handling, but not hard enough for use on outside walls.

The above classification, prices and penalties shall hold for all brick delivered

within the city limits from any yard in this Association.

SEC. 18. No paving brick shall be delivered at any building where bricks were sold for building purposes at less than paving brick prices.

SEC. 19. All persons not regular customers in good standing, purchasing less than five thousand bricks, shall be required to pay cash before delivery.

SEC. 20. There shall be appointed by the Directors an Arbitration Committee, whose duties shall be to adjust all differences or troubles between members, or with builders and contractors. If any member of this committee is at any time interested personally in the matter in dispute, the President shall appoint another committeeman to serve in his place to help settle the misunderstanding.

SEC. 21. Each member making less than 3,000,000 bricks per annum shall subscribe and pay for one share of stock, and each member making over 3,000,000 bricks per annum, shall subscribe and pay for two shares of stock.

SEC. 22. If any member desires to withdraw from the Association in order to quit brickmaking, then he shall be refunded his pro rata of all funds belonging to the Association; but if any member should withdraw for any other reason, he agrees to relinquish any claim to any of the Association's funds, not exceeding his shares of stock.

SEC. 23. No share of stock or membership shall be transferable except to a successor when the owner agrees to quit the business of brickmaking in favor of the successor whom he proposes.

SEC. 24. Any of these rules may be changed at any regular meeting upon a two-thirds vote of all the members present.

#### LIST OF MEMBERS.

AKERS BROS.,  
BERGER, M.,  
CONAHUE, P.,  
DUMESNIL BROS.,  
HARLAMMERT, WM., JR.,  
HARLAMMERT, WM., SR.,  
HILDEBRAND & REDEMAN,  
HOFMEISTER, J.,  
HYDRAULIC PRESS BRICK CO.,  
KENTUCKY PRESS BRICK CO.,  
KRUPP & BOHMER,  
KRUPP, LAWRENCE,  
McCULLUM & BRO., J. P.,  
McDONALD BRICK CO.,  
NIST, C.,  
PERKINS, F. E.,  
POEHLEIN & CO.,  
STONE & YANCEY.

#### BOARD OF DIRECTORS.

#### DUTIES.

#### Article II.

SECTION 1. They shall manage all financial affairs of the Corporation, and all moneys expended shall be only upon their instructions.

SEC. 2. They shall appoint an Arbitration Committee of their members whose

duties shall be as set forth in SEC. 21 of By-laws.

SEC. 3. All applications for membership shall be brought before the Board and their action shall be final.

SEC. 4. The Board shall also have power to remove any employe of the Association.

#### Missed His Calling.

#### Publishers' Clay-Worker:

I enclose with this a few lines which I believe fully sets forth the brickmaking interests of this section. I hope some day to get out of the mess and into a better country, at which time I expect to be able to renew my subscription to what I consider the most valuable paper devoted to the brickmaking interests of this country. A. J.

#### A LAMENTED BOOM.

I hear a voice from snow capped peaks,  
Where the moon beams slanting lie;  
And to my saddened soul it speaks,  
Of days long since gone by.

It tells of the time before a boom,  
Had swept this beautiful land;  
Before my future was wrapped in gloom  
And my crew was full of sand.

It tells that bleak old winter is near,  
And the bright summer days have gone;  
And with the thought there comes a tear,  
For I'm as a "lamb that's shorn."

I hear the wolf's most pitiless howls,  
Borne on the wings of night;  
Ah! now he sits at my door and growls,  
While his eyes shine 'gainst the light.

There could not be a fairer spot,  
For my "castles in the air;"  
But I sigh for a land where booms are not,  
From the depths of my despair.

Brickmakers, beware and don't enthuse,  
For fain would I advise you:  
Boom towns need brick in naught but flues,  
Therefore, they do not need you.

#### SIMPLICITY OF LIVING.

It may be that the times have changed, and that the manner of life could never be reduced to the simplicity of earlier times, but that is no reason why it may not be much more simple and inexpensive than it is. When it is, the temptation to extravagance, that bane of social life in all ranks and in all countries, will be reduced to a minimum; and moderate incomes, the inevitable lot of the great majority, will be ample for all reasonable wants.—*Christian Advocate.*

Mary had a stocking once,  
And it was made of wool:  
And on that merry Christmas morn  
That stocking it was full.

How came that stocking to be full?  
Because at Christmas dawn,  
When Mary rose and dressed herself,  
She pulled that stocking on.

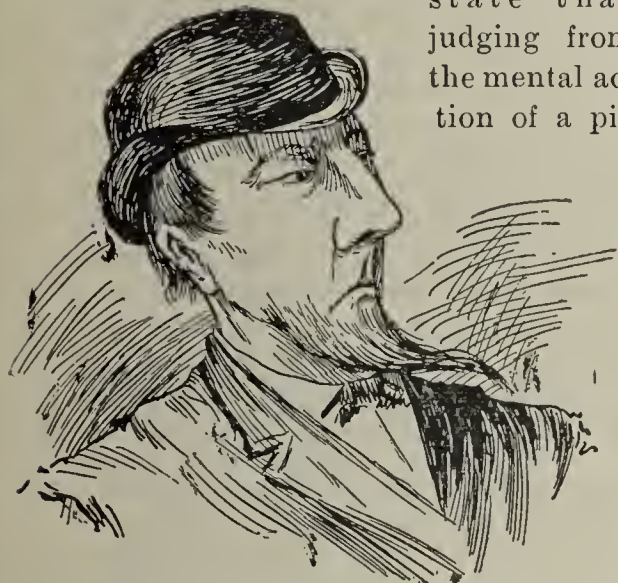
—[Scissors.]



# HOW IT ALL HAPPENED.

**E**BENEZER JONATHAN is a down east Yankee, and lives upon Rumstick Point in the state of Rhode Island. He is also a down right pig-headed brickmaker, and if there is an ass upon God's green earth, it is one of the class above named.

Webster defines a "pigtail" as "the tale of a pig," and we shall define anybody that is pig-headed, as having the brains of a pig. We will furthermore state that judging from the mental action of a pig



EBENEZER JONATHAN, RUMSTICK POINT, R. I.

his brain must be located near his stern and likewise from the action of many brickmakers like Ebenezer, it is only reasonable to suppose that their brains might be found in the same quarter.

Now having vented our spleen on Ebenezer in particular and pig-headed brickmakers in general, we will proceed to describe that class of individuals as seen through our glasses.

The average man may be divided into two classes; those who more or less "horse sense" and those who have none. A man who has ever so little horse sense will go forward when he sees something desirable in the distance ahead of him, and retreat into his cyclone hole when the funnel shaped cloud reaches down after him.

Not so with the pig-headed brickmaker. His creator undoubtedly meant it

all right, but his parents must have made a mistake and issued him into the world with his mental face set the wrong way on his mental body. He is pig-headed; sees everything through a pair of obstinate cross eyes. Travels forward in everything hindwardly, as it were, and like a pig, if you want to get him anywhere you must place yourself in front of him and run backwards. Just so with lots of brickmakers, if you want to sell them a dry press machine you must begin by running that kind down as worthless, and if you want to coax one of them to attend the National Brick Manufacturers' Association Convention, you must set out to convince him that all the fools in the business will assemble at that gathering. It was the ignoring of this fact one day down at Rumstick Point, that led to our trouble with Ebenezer, and being laid up some two weeks for repairs.

Now Ebenezer Jonathan as we said before lives on Rumstick Point, and is a pigheaded brickmaker. There is no rum on the Point, as might be inferred from its name, and the only rummy thing to be found about there is Ebenezer, and goodness knows he is rummy enough for anything.

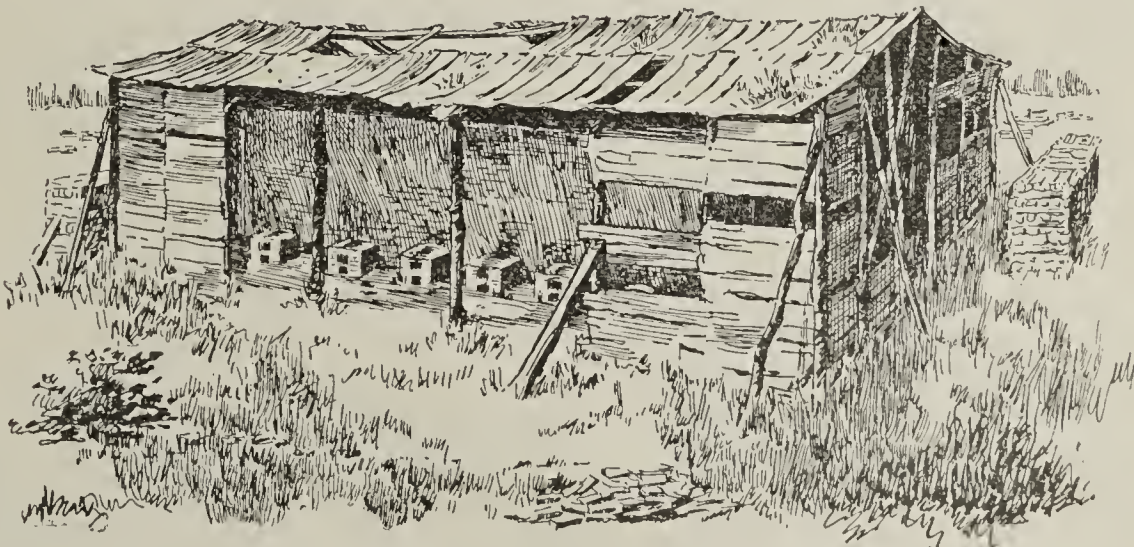
And Ebenezer's brick yard; isn't it a dandy though. We sneaked in the other night and caught a picture of it through our Kodak and here we give you a bona fide view of it.

As Ebenezer does not take the CLAY-WORKER, we will risk his "catching on," for we don't want lightning to strike in twice from that quarter.

As you will see, Ebenezer's kiln has been built upon the continuous plan, *i. e.*, continually falling down, and as he believes in the old adage that "it is cheaper to move than to pay rent," and cheaper to build another kiln than remove the rubbish from the old one, his yard has the same general appearance as we have seen in some of the pictures of the old Roman Causeway.

Ebenezer makes brick on the same yard as did his grandfather and in the same way. At some unknown time in the past his ancestors had stopped using straw when making brick, but no other change had occurred in their process since old Pharoah had run the children of Israel into the Red Sea, and like others of the craft that we know of, the good old way of his granddad, was a good enough way for him.

Years ago, when a young fellow at college we took it into our head to go out on a log boom in the river and take a bath. We had spent a little more money entertaining the girls than our bank account would warrant, and therefore when we wanted to entertain the prospect of a bath we had to go down on the bank of the river to do it. Among the lot of us who went out on the boom that day, was one fellow who could not



EBENEZER JONATHAN'S BRICK KILN.



swim even a little bit, but when the rest of us dove off into 30 feet of water he did not propose to be left and dove likewise, when however the rest of us came up and struck out for the logs, our friend after coming up gave a yell and struck out for the bottom. It was not long before he came up the second time and was spurting like a whale, and when he did so, one of the boys seized hold of his long black hair and pulled him out on the boom, while the rest of us pulled ourselves together and had a great laugh at his expense. Now this fellow didn't have the least bit of "horse sense" but he was pigheaded like Ebenezer, and as we swelled with laughter, he swelled with wrath and wanted to give us all a good licking one by one. Now pig-headed Ebenezer is just the same kind of a brick-maker that our



CLOSING THE ARGUMENT.

fellow student was a swimmer. He doesn't know a thing under heaven about brickmaking, but he acts as if he knew it all, and does not want anybody to undertake to pull him out of the river of ignorance in which he is drowning.

This fact we also overlooked the day we went down on Rumstick Point, and it was another cause of our trouble with Ebenezer. You see we took it into our head to go over there and invite Ebenezer to go with us and attend the next convention of the N. B. M. A., at Louisville, and when we found him among his heap of ruin, we started in with, "Hello, Ebenezer; how are you? How is business? How many more brick

than bats have you made this summer? How much money have you made, and how much are you going to spend taking in the National Brick Manufacturers' Association at Louisville."

"Not a goldarned cent," says Ebenezer "and look here, if you've come, thinking to get me tramping down there among that howling set of numbskull brick-makers, your astraddle the wrong mule, and the quicker you hed her back t'wards that fool brick yard of yourn the safer it'll be fer yer."

Now we have always tried to live up to the golden rule and love ourselves better than our brickmaking neighbors, and if he wants to set down on us, why all right, but when he lights on the N. B.

M. A., we are going for him tooth and nail. In the spirit of that kind of

that, that disgrace would be more than we could bear.

Now we have not even yet been able to understand why it should have so come to pass, but while during that little speech of ours, we had been cooling off as it were, we noticed that Ebenezer had been getting hot, and remembering "that he who fights and runs away may live to fight another day," we began to back up towards what old P. T. Barnum used to call "the place of egress."

Had that place of egress been a little nearer, or had our legs been a little longer, the rest of this tale might have been told more to our credit, (and at the time our comfort,) but there is where the rub comes in, it wasn't

There is no use of our trying anymore to give you the details straight, for about that time we became so mixed up with brick bats, untempered clay, and the toe of Ebenezer's boot, that we have not become fairly straightened out yet, and if when we get down to the Convention anybody wonders why our trousers bag in the seat, they can know that the swelling is a good deal less in our head than when first we commenced to talk with Ebenezer, and more—further down.

We do not know just when the foot ball game did end, but we do know who made the first touch down and kicked our goal—or something else—and when we go hunting again for new members for the N. B. M. A. it will be in the opposite direction from Rumstick Point, and from personal experience we can now sing with Bridget about "the Bowery,"

"For they say such things, and they do such things,  
That we'll never go there anymore."

J. A. S.

#### A LARGE QUESTION.

To each a world opens; to everyone, possibilities are present. Columbus need not stand alone in his discoveries or in the fulfillment of his faith. There are lands of thought, of effort, of opportunity yet undiscovered. Aristotle, Archimedes, Galileo, Columbus, Watt and Fulton are of the past—Edison is with us; what of the future?—*Fame.*





Written for the Clay-Worker.

## MAKING BRICK IN JERSEY.

### CIRCULAR PITS.

THE last two letters have given some idea of how yards are laid out and furnished. Also the way that the pits are filled with clay.

By an oversight, I forgot to mention that where circular pits are used, some wheel the mud over the curbs, while others have a gate for the pit shovelers to wheel the mud to the machines. It saves the use of long wheeling planks which have to be changed from time to time as they remove the mud. When the gate is used the shoveler "breaks in" at the gate, so that he is working back. With the plank on the curb he is working toward the machine. In setting circular pits at present, they are located close to the machine. The method in vogue a few years ago was for the horses to go around the pit and dump over the curb. When filling around the island, planks were laid down for the horses to back the load of clay over, and many a good horse was ruined by the driver backing him off the planks, causing him to struggle to free himself and often breaking cart and harness. On the side of the pit next to the road that leads from the bank there is a gate where the cartman can drive his horse with the load of clay into the pit, then back him around on the other side of the pit, having good solid pit bottom to back on. When the pit is nearly full, he can turn him out on the road and back him down the slight incline.

Certainly this way will recommend itself, as it is easier on the horse. If the load is not dumped just as the temperer would like, he will growl, as he does not like to do any work, but it is right that he should do some of the work as he has plenty of time to place the clay in shape before the next cart reaches the pit.

### RUNNING OUT A PIT OF BRICK.

The laborer on the brickyard has an idea that the yard should be run to suit him. The machine gang will yell for steam so they can get through early. It makes no difference to them whether the brick are dumped good or not. In summer on a hot day if there should be a greenhorn trucker, they will run him for all he is worth. He may stick to it until breakfast time, he will then take to the turnpike. When the machines start after breakfast, the truckers will call for another man as they are one short. The foreman will ask one of the brick wheelers if he will truck, and be answered in the negative; after while he may find one that will truck, if so, he will tell the engineer to run a little slower, although they are only running out 12 moulds a minute. It will possibly make twenty minutes or a half hours difference in getting out the pit, and how the machine gang will

growl. It will keep the four truckers busy to keep up, and when the dumper empties his truck and starts back, it will be at a "Nancy Hanks" gait. Just such things change all the foreman's plans for the day. He breaks up his gang of brick wheelers to furnish a trucker and sometimes the foreman, the second hand and a brick setter will all be trucking to get out a pit of brick, as that is what counts. To have a gang of men at work without turning out green brick runs up the cost of manufacture very fast.

### NUMBER OF MEN ON YARD.

The brickyards of to-day do not have any extra men around. A few years back, it was the custom, if the brick in the hack did not dry fast enough, in order to keep the hacks clear, to wheel them off and pile them under the shed and set them in on rainy days. The foreman that has not reached a more advanced stage than that in the manufacture of brick is not in demand. The only brick that are piled under the shed is double coal for platting and heading course. He must double his hacks if he can not get them off. That very item of piling has caused many a manufacturer to wonder how it costs him more to make his brick than it did his neighbor. When the brick are taken from the hack and set, that work is done, but when taken from the hack and piled under the shed it is only partly done. A setter and 3 wheelers will set in a pit of 23 or 24 M. Three men at \$1.75 a day will wheel and pile them under the shed to be handled again, and no man can handle piled green brick as fast as he can handle them from the hack. One man to the thousand is considered the quota. If that was followed there would be no trouble in running a yard. Your neighbor is doing his work with less men and you must do the same. On a yard that runs two machines a day, of 23 to 24 M to a machine, if 44 men were engaged the foreman would have no trouble to keep his work up, while it lasted. He would have no work for his shed hands half of the time. No production, no work, is the rule. If there are no brick to set or boat to load, there are a great many times during the season when the machine gang will be at work while the rest of the gang will have nothing at all to do. From 38 to 40 men, all told, including the engineer, is the number used, and from day to day there are some that will loaf. The foreman is expected to keep all his brick set, the kiln walled, brick loaded for shipment, and when burning, use what men he needs around the kiln.

### HOW MEN ARE HIRED.

It may seem strange to some of your readers that all men on the yard do not work every day, and wonder how the men are hired. They are hired by the day, with one exception. There is one firm that hires by the month; that is, they pay so much a month and board. When it rains so that they can-

not mould or wheel in brick, they are out the "Board" of those men. On the other hand, if they do not mould, but have men at work, what do they gain, as the same work would be done when the whole gang is at work. This firm has moulded many times when the other yards did not, simply because they would have to feed the men, but by moulding they have often had washed brick. They may be millions in it, but the majority don't see it that way.

### WHAT THE MEN DO.

The second hand sets brick, tosses out when loading boat, or with another setter, sets all the brick for a two machine yard. One setter, with three wheelers, set in a pit of brick of 23 to 24 M, with all double coal used in the bottom of the head for platting whether on edge or flat, as the case may be, with the hard or pale, that the arch is started with. As your readers are probably aware, in a arch of brick there is starting an arch, or all middle or top to be set. At whatever stage of the kiln it may be, they must finish all brick that are required, as well as the pale brick platting of two over one, or hard brick on edge. It is at this point that Friend Cray's peculiar laboring men appear. Set the three wheelers and setters in a pit of brick, say nothing to them, but let them alone and they will not get the pit out that day. As the day grows shorter tell them that you will dock them if they do not get it in, and they will hurry and get it in.

### IS STENT WORK A BENEFIT?

Some people say that there are necessary evils in this world. The stent system of to-day is an evil that exists to a great extent. Those that have their work done that way compel many to have work done that would not otherwise do so, but they have to do as their neighbors do or they could not keep men. When men get through at two o'clock P. M. they walk from yard to yard and if on any of the yards there are men at work without stent, as soon as they see these men, become dissatisfied. In all probability, the next morning when it is time to go to work, there will be a man or more missing—gone to a yard to work where he can get a stent. If any man connected with the trade visits the different yards and finds them full handed, he is safe to believe that stent work prevails there. Walk through the different sheds and look at the green brick that have been set that day and it is no hard matter to pick out the kilns that have been set by stent work or by the day. After the kilns have been burned, make the same tour and the difference will be observed at once. Arch after arch, from top to bottom, from head to head, is uniformly burned. In the other case where there has been stent work, one arch may be as nice brick as one would care to see, the next rather on the light order, the next a spot of very badly swelled. You may have the curiosity of the Yankee to see



why this is. You get up on the middle or top bench and you see that the setter has set the two inside brick tight together, with the result that the fire could not work past that spot fast enough. Look at the spot of swelled brick. Take one in your hand. Can it be possible that it is a double coal brick, or, in other words, 64 of them have been set in. Why should this occur? Stent work is the cause. The setter, no doubt, sent one of the wheelers for double coal to start a head, another wheeler thinking he was sent, brought double coal, saying nothing of the fact to the setter, who does not see the mark, as it takes all his time to set the brick from three wheelers. There are other signs that the practical man will see as he visits each yard. The large pile of swelled brick outside the shed and the larger number of pale piled on the kiln-ground is the result of stent work.

The peculiar boss is to blame for it. He says, "See how cheap I am making brick, which costs my neighbor such a figure." Yes, but his neighbor has no surplus pale brick to send to N. Y. Market at \$1.50 or \$3.00 per M and pay \$1.25 per M freight and 12½ cents commission. There is no sale at all in the N. Y. Market for swelled, but they wait until a country customer comes along and sell them for \$2.00 per M at the shed. Who makes brick the cheapest?

#### HOW WORK IS DONE.

As I have said before, on the major portion of the yards, there are three wheelers to one setter. Each wheeler wheels 64 brick to the load. In case of a stent they will put on as many as the barrows will hold.

On other yards where stent work does not rule, where green brick are handled, and they run out 32,000 to a machine; they use one-setter and two wheelers, or two setters and four wheelers to a pit of brick. On some of the yards, they wheel 80 green brick, on others, the usual 64. The brick goes in the kiln in good shape, as the men take their time when loading off the hack. A handful of four brick each is laid down at a time. With stent work they pick 8 at a time and lay on the barrow. During the brickmaking season when a vessel is to be loaded, that is, a sailing vessel carrying 50 to 75 thousand, there are generally men enough to get at it and get it out of the way in half a day. When barges are used, there is no specified time, as men do not like to wheel burned brick two days in succession. The foreman may set ten men to work on her after dinner, and there may be some loafing or they may stick at it all afternoon, but the next morning the barge will be off. If a vessel carrying 60 thousand is to be loaded, set 6 men to work at it and she will be loaded by quitting time, as the men do not like to handle green brick after loading a boat. Set the same gang to work on the vessel, tell them that when the vessel is loaded they can go home, and when the whistle blows

for one o'clock there will not be a man in sight, and they will have her loaded. Only half a day's difference, whether working on their own time or the bosses.

After the brickmaking season is over, all the brick that are loaded are paid for at so much a thousand, generally 20 cents per M. Then the men will work as if their life depended upon it. "Hurry!" is their cry. Rush out with 120 brick on their barrows. If the men on the vessel have not the barrows unloaded for them, they will grab a handful, put them on the tier, seize the empty barrow, come ashore on a run, growl at the men under the shed because they do not hurry, pick up bottom, help move pale brick,—in fact, he cannot do too much because he is his own boss.

#### NEW YORK MARKET.

Jan. 2nd, 1893. All shipment of brick has ceased from points along the Hudson and Hackensack rivers, not because the manufacturer has money enough, as that has never been known to be the case.

The ice king has laid his hand on the water and both rivers are as tight as a drum. During part of October there was a slight advance in prices, as Haverstraw was not sending freely. As soon as the raise in price took place, there was increased shipment. With a drop in price, Hackensacks, that were bringing \$5.50 per M, dropped to even money, as well as all grades from other places, with a very slow demand.

Some of the owners covered their barges that were landed, with boards to protect the cargo from the weather, then towed them to winter quarters, ready to be delivered during this winter. About a week before the closing of navigation there was a reaction in price. Haverstraw best, \$5.87½ and \$5.25; Hackensack, \$5.50; Up rivers, \$5.00 and \$5.25. Only think of it, market closing at that figure, means at the opening of navigation in the spring the same rates will prevail, if not lower. A. N. OLDTIMER.

#### ARE YOU GOING TO THE CONVENTION

##### Chicago to Louisville.

Those going to Louisville from points north should be sure and see that their tickets read via Louisville, New Albany & Chicago Ry. (Monon Route), as that is the shortest and best line from Chicago to Louisville and all points South. The through trains consisting of Pullman Sleeping and compartment cars on night trains and Dining and Parlor cars on day trains, represent the perfection of modern Railway accommodation. Their fast trains are vestibuled throughout, the coaches being luxuriously furnished and equipped with every approved appliance for the comfort and safety of passengers. For time card giving mileage, Rates of Fare, Etc., Etc., address James Barker, Gen'l Pass. Agt. L. N. A. & C. Ry., Monon B'l'k, Chicago.

## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

#### CONVENTION POINTERS.

##### Talking Too Much and Talking Too Little.

Editor Clay-Worker:

As the meeting of the N. B. M. A. will occur now in a few weeks, it seems to me it would not be out of place to say something about "talkative members of the Convention." It has been my observation that during every convention there has been quite an amount of criticism from a good many members regarding the time occupied by certain talkative brothers who being of the *hair trigger* pattern—always set, ready to go off at the touch and who bob up serenely and too quick for many of the old reliable *flint lock* kind, who had come loaded for bear, but the powder in the pan would be so completely dampened by the hair trigger man; that the spark that had been flashed would lose its effect and the old reliable wouldn't shoot, but if it did finally explode it was with a powerful kick.

There is no doubt but these criticisms are just to a certain extent. "Keystone" opened up the ball on this subject after the last Convention held in Washington, by an article in the February number of the CLAY-WORKER; he took to task three particular members, and he not only kept count of the number of words uttered by each of those three members, but of all that was spoken during the Convention, so he says. Now I do think the most of us go to the Conventions not only to attend to the business in hand, and to learn what we can from each other, but to meet and get acquainted with each other, to lay aside for a week the hard work of the year and have a sort of a round up, as it were, and if "Keystone" kept actual count of the words spoken in the Convention, and particularly of Purington, McCain and Eudaly, I think he undertook the biggest contract of the season; why, keeping the run of the latter gentleman alone would turn even Jesse Adams hair gray, and Bro. Pike bald headed.

Now, what are we going to do about this thing? Talking before a body of men is not only a gift but a matter of practice, and more the latter than the former; comparatively few of those who attend the Conventions are in practice; they know as much, and many of them possibly more than some who do so much talking, and they come loaded, with their minds made up as to just what they want to say, but when the time comes and quick action is necessary, the "Buck ager" strikes them: the powder has been spilled out of the pan and the spark fizzles. Now these very



same men will sit down with a few friends where all are giving experiences and will detail their methods of work, building kilns, burning, etc., etc., in the most interesting way, telling the very things we want told before the Convention, but to get up before that body and talk is exceedingly hard, as they are fearful they will not express themselves, in just as good language as some others who *always* talk, and who are in the habit of jumping up so quickly that there seems no chance for any one else; the consequence is these men leave the Convention feeling disgruntled, saying it was run by a few who had some ax to grind. They get a wrong impression of the real object, and this sort of thing should be overcome if possible.

Now to have an interesting and profitable Convention things must move along with life, a programme must be cut and dried, and carried out; papers must be read and discussions follow, and to do this *somebody must talk*, and talk lively and to the point; we can't all set like "a bump on a log" and say nothing; however, the *hair triggers* and *breech loaders* must not be permitted to do all the shooting; fire and fall back should be the order.

There has been a growing feeling among a certain class of members against the brick machine manufacturers, patent kiln and dryer men, etc.; this is all wrong, as these men have a right to become members of the N. B. M. A., and a right to take part in the discussions where it is not in an advertising way. They must remember it is a Brick Manufacturers Association, and they have no right to use the body of the Convention as a place to blow their horn to advertise their wares.

We are fortunate in having the next place of meeting so centrally located; there is no reason why we should not have a very large gathering, and especially a better representation from the south, as Louisville is so accessible to that section, and I hope all will come loaded with talk, and see to it that they get in their share. DEACON TIDD.

#### Another Voice From Dixie.

Editor Clay-Worker:

It is with great pleasure that I read the article in last number of your valuable paper from the gifted pen of my young friend John W. Sibley, of Birmingham, Ala., and which you were pleased to title "A Voice From Dixie," and now will you kindly permit a voice from the Crescent City to be heard from, with a view of reiterating every sentiment as expressed in Mr. Sibley's letter, and to further urge our brother brickmakers throughout the south to attend the National Convention which will be held the latter part of January in Louisville, Ky., and I warrant for those who will be present, that, like myself, they will never miss another.

As one of the charter members of the

Association and who was honored with its first vice-presidency I am in position to know whereof I speak in thus calling upon my southern brethren to attend the convention and listen to reading of valuable essays on every branch appertaining to the clay interest, and then to have them discussed and deliberated over by intelligent and practical men. Then the fact that our sunny south has for a second time been selected as the place of meeting ought of itself be sufficient reason for a large addition to our membership from the south. Further I want to particularly appeal to those of my southern brethren, who, like myself, in years gone by have worn the grey, to come to Louisville and meet our northern brethren who have worn the blue; it is worth the trip alone to accept their friendly and hearty grasp of hand, for it is pleasant indeed to talk it all over with them and rest assured when we return to our homes, that the many pleasant recollections will make us all feel better and bring about a more patriotic love and respect for our flag and glorious country.

Let us turn out in full force, have a few days of good time and become the wiser for it.

Wishing you a happy and a prosperous New Year and hoping to meet you and yours in usual good health and spirits at Louisville. Yours truly,

J. A. BLAFFER,

New Orleans, Dec. 31, 1892.

#### No Telling What the Future Will Bring Forth.

Editor Clay-Worker:

Your very able and prolific correspondent, "A. N. Oldtimer," in his interesting sketches of "Jersey Brickyards" in Oct. issue says: "When one compares the time required to batten at present, with the old way, it would seem as if main strength and stupidity controlled their actions. Time is money. Now it would seem as if the old way were more to kill time than celerity of movement."

Will not exactly the same be said of the present system in another generation—is it not said already by those who have dryers, or even a good pallet shed, and have not to worry themselves as to whether there is two or a three-inch plank between their bread and butter and certain destruction. One-inch, more or less, of pine plank, seems to me a very slender thing on which to risk the profits of a season's business.

I agree with your correspondent on one point. If a piece of machinery has been thrown out for any legitimate cause, such as "insufficient capacity," "not suited to the clay," etc., etc., and is of standard make and in good order, I do not see why anyone should hesitate to buy it, if it is what they require, because it is second-hand. In fact this might almost be considered an advantage in some instances, as it is a kind of guarantee that there are no weak or defective parts.

I notice your correspondent quotes best Haverstraws \$5.37½, Pale \$2.00 to \$2.50. Considering that the freight and charges are the same on both classes, would this large percentage of margin not repay for re-burning?

Wishing you and your readers all the compliments of the season,

R. M. GREER,

Tuxpam, Mexico, Nov. 20, 1892.

P. S.—Would some of your correspondents kindly say if sand from the sea shore is suitable for making mortar and if not, why not? I have been asked this question, but do not feel competent to take the responsibility of answering it.

If any of your many readers who have any peculiar clay wish to do me a favor they can do so by forwarding me by mail a small sample of an oz. or two, with particulars of same attached.

#### Prosperous and Cheerful.

Editor Clay-Worker:

Enclosed please find check to cover subscription to your valued CLAY-WORKER. We wish to thank you for the pleasure and valuable information we have derived from your magazine.

Our company has enjoyed a very prosperous year. Our prospects for 1893 look very bright. We have found a very valuable bed of buff clay,—the finest in the state—and will soon be rushing them out in fast order. With a large amount of additional capital we will have a daily capacity of 50,000 pressed brick per day. By an improved arrangement, we will bring our buff clay from our mine district to our pan and be able to mine it for 50 cents per 1,000 brick; cheaper, we believe, than the majority of brick plants.

We have just finished a new Griswold Patent Kiln, and our last burn, being the first in the new kiln, has proven a dandy, and hard to beat.

Hoping to see you at the Convention next month and wishing you the compliments of the season, we remain,

THE OAKLAND PRESS BRICK CO.,  
Zanesville, Ohio, Dec. 28.

#### Annealing Brick not a New Discovery.

Editor Clay-Worker:

In the CLAY-WORKER for November, page 433, Mr. J. W. Crary, Sr., refers to his former writings and says: "Several writers speak glibly of annealing brick, and seem to want it understood that they had just made the important discovery that brick, like iron, can be annealed."

Farther on, "I would not notice innocent, ignorant plagiarism when it may be fairly thought and said that the writer was too ignorant of current literature to know when he did steal."

Now, firstly, "plagiarism" and "steal" are ugly





words, and should be used carefully even by those who are entitled to end their autographs with a Sr.

Secondly, granting that he had discovered the value of annealing brick independently, and out of his own "inward consciousness," or by his own independent reasoning and experimenting has evolved the theory and invented or discovered the *modus operandi* of annealing, he must also grant that it was known before he discovered it. Many others have done the same thing in the ages past, during which brick have been made, and good brick too, as the structures and ruins of the old world testify.

I beg to be informed quickly if the gentleman has a patent on writing papers on the subject of brickmaking.

Shall others be accused of "plagiarism" and stealing, simply because they chose to write upon the subject, even if they do run very near what has been written?

I, for one, learned of annealing by "bitter experience," and entirely independently of the discoveries of others.

Again I quote, "I have used the annealing process in brick burning, now since forty years past."

What is this to the ages past, during which brick have been burned? Without fear of contradiction I will say that the value and methods of annealing have been discovered independently at least forty times within the last forty centuries.

Will the gentleman accuse me of "plagiarism" if I refer to the brickmakers of Suinar, who burned and annealed brick forty centuries ago?

D. W. STOOKEY,

Cedar Rapids, Ia.

#### Arrangement of Rack and Pallet Dryer.

*Editor Clay-Worker:*

Inclosed find \$2.00 for subscription to CLAY-WORKER. You have sent me several sample copies, which I have enjoyed and which have enabled me to find the manufacturers of machinery, etc., that I have needed. As I am a beginner in the business of brick manufacture, I find many little points that are quite puzzling and you will doubtless often find me an applicant for information. Just now, I am anxious to know how to lay off my rack and pallet yard, so as to obtain better results in the future than I have had the past season in the way of drying.

Will you or some of your readers kindly advise which direction the racks should run, from north to south or east and west, so as to dry the brick fastest? They are now east and west and dry quickly on the south side, but scarcely at all on the north side.

Again, how far apart should the racks be? Do you think the difference in the time required for drying would justify the labor and expense of changing the position of the racks? I have only limited drying room, being hampered by the streets, though the streets

are not used at all, (being in some of our "developing" lands,) and consequently want to get the largest amount of drying in the available space.

In an article in a recent issue by J. W. C., headed "A Natural and Economical Dryer," there is a good description of method. Can you give the usual cost of drying the brick per thousand or rather how much coal would be required per day to dry 10,000?

C. C. COCKE.

#### Reply to Above.

*Editor Clay-Worker:*

Your subscriber does not give dimensions of his drying ground which he says is limited, therefore it is impossible to figure just the number of brick it could be arranged to accommodate. I have found it best for continuous work without interruptions, to arrange dry room for six days output; this gives seven days drying, counting Sunday. The average time may be only three to five days, but there are times, especially in early spring or late fall, just when you want every hour to count, that rains are frequent and the atmosphere filled with moisture, when it will require the full six or seven days to dry properly for the kiln.

There is no doubt but setting the racks north and south is far better than east and west. The sun has its full force in the middle of the day directly upon the run ways between the racks, keeping the ground dry and warm, thus preventing a damp, cold atmosphere which arises in case of setting east and west, greatly retarding the drying on the north side. If I was starting the yard and it was positively necessary to set east and west, I would adapt the Hacking Pallet system in preference to the Rack system, for in that case your hacks are not so high. The pallets set in a single row, five feet apart, and the sun and air have nearly as much power as if set the other way.

In the rack system, if the matter of space is not a question, I would set six or seven feet apart, two pallets only, side by side, seven inches apart in the racks, so the bricks could be edged up to hurry the drying if necessary, and ten pallets high. Of course, if yard room is limited, the racks could be placed five feet apart, but that is very close and drying will be slower. In constructing the racks, the cross-pieces which tie the whole system together should run through about every six feet, or length of two pallets, and should pass under the edge of the covering, just low enough to admit an inch board, which should be twelve inches wide at least; this board is turned on top of the roof through the day, and let down at night, or when storms come up; it forms a splash board, preventing the rain from driving into the racks to do any material harm, also catches the water from the cover, causing it to fall in the centre of run way, which should be properly

drained so the water can pass off quickly and not soak into the ground.

Mr. C's present arrangement is certainly the best so far as the labor is concerned, and it is a question whether it would pay him to change or not. This is a point upon which he certainly should be the best judge, but from what he says, if it was my yard, I think I would make the change and set my racks north and south, even though the trucking was not so well equalized.

A. LYTTLEMAN.

#### Philadelphia News.

*Editor Clay-Worker:*

The year just closed was not the greatest year for the number of building operations, but taking all the work together, the value exceeds that of 1891's operations by \$6,817,400. There has been several large operations such as the Reading terminal, Betz building and the new Pennsylvania depot, which will increase the average to a very large degree. There has been 7,492 buildings erected exclusively for dwelling purposes during 1892, and during the same period other buildings erected made a grand total of 10,397, at a cost of \$26,825,649.

With the opening of the new year Director of Public Works intends beginning a war against vitrified brick for any purpose except little side streets where there is but slight travel. When the streets which are paved with them were laid, it was claimed that it would stand all the travel for which a street is used, but on many it has been far from a success.

There is no doubt but that a pavement laid with strictly first class vitrified brick will stand the wear and tear reasonably expected of them, that is, if contractors would use care in selecting brick and not substituting brick of an inferior character and made in this city. Then again it is quite natural that in burning bricks those which are next to the fire should become harder, and when put into pavements they stand the wear, while the softer ones soon break. If the contractors would only use the harder bricks the pavements would naturally last much longer. This may increase the cost to a great extent, however, and it is probable that the pavements would hardly be worth the increased cost. The pavements are certainly very good for the lateral streets, and there seems to be no reason why they should not stand a heavier pressure, that is if proper brick are selected. If this is not done there is every probability that vitrified brick will be doomed under the present administration.

The brick yards throughout the city have as a rule drawn their fires, as there is very little doing on account of the extreme cold weather. The past year has been a moderately good one although prices have been unmoderately low. Large quantities of fancy colored and special sized bricks have been sold the



last year, and at reasonably good prices, notwithstanding the keen competition for all the work to be had.

It is said by prominent contractors that the New Cumberland, W. Va., vitrified brick is the best that comes to this market, and if contractors would hold strictly to their use and not substitute Philadelphia stretchers for about one-third of the brick used, there would be no trouble about wear and tear, as the first brick from that quarter some four or five years are now to be seen in West Philadelphia, with scarcely a break in the road bed.

The Jarden Brick Company continue busy on old contracts. They now turn out more brick than any other concern in the United States, and in all probability throughout the world. This is saying a good deal, but it is true.

ANON.

#### Ohio Valley News.

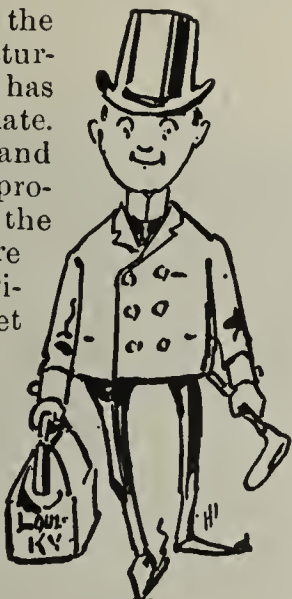
##### Editor Clay-Worker:

Business with the sewer pipe manufacturers and brick men has been very good of late. There is a fair demand for each of these products, and many of the brick works are stocking their material in order to meet the demand which will undoubtedly occur in the spring.

The brick business from present indications will be unprecedented. Mr. E. A. Freshwater, a prominent New Cumberland brick manufacturer and paving contractor, says that he never before saw the number of inquiries about paving; cities taking the preliminary steps to the letting of large paving contracts.

The late rise in the Ohio River enabled many of the river pipe and brick manufacturers to complete large contracts for Southern cities. On account of the suspension of navigation the delivery of the brick was delayed over four months.

The John Porter Co. has been a target lately at which all the local papers in and about New Cumberland, have fired numerous, and most descriptive adjectived vituperations. This company has lately made a reduction in the wages of their common laborers of about ten per cent., necessitated, they claim, by close competition. Many of the old hands refusing to accept this reduction, their positions are being filled by Hungarians. This is the cause of the newspaper attacks, and the wrath of the people in the neighborhood. The drinking water for the new hands has, on several occasions, been found to contain croton oil, and a valuable horse used by the office force suddenly died,



as is supposed from the effects of poison. Some of the employes are censured for this, as a means of retaliation for their treatment by the company.

This company has just resumed operation at their various works after a two week's shut down for repairs. They expect to run all winter, thus accumulating an immense stock for the trade in the spring. It is reported that they are negotiating for the purchase of the Clifton Brick Works in New Cumberland, a finely located and splendidly equipped plant.

The Akron (O.) Beacon of Dec. 8th, describes at length what they term an "unprecedented run" of pipe at the plant of the National Sewer Pipe Co., of Barberton, making 701 18-inch pipe from 1 P. M. to 4 P. M. This statement has been the cause of much amusement among the pipe manufacturers in this Valley, as their daily reports show that the "unprecedented run" does not even equal the average run of their factory in the same length of time.

The pipe manufacturers of this region have reduced the price of finishing 2½ feet pipe. This work will now have to be done for the same money as the 2-foot lengths. A general reduction in all branches of this business is anticipated in the near future.

The Phoenix Fire Clay Co., of Malvern, Ohio, which has been in the hands of a receiver since September, '91, was on Dec. 20th, offered at Sheriff's sale, for the first time under the second appraisal. The works were appraised at \$14,000, and there were no bidders. The works are well located, on a railroad, has plenty of clay privilege and has the most modern and improved machinery. The works cost about \$75,000.

The State Mine Inspector has just concluded his inspection of the mines of the various clay works on the Ohio side of the river, and reports them all in most excellent condition, making but few recommendations for better merits.

The River Side Paving Brick Works, at Rush Run, Ohio, has passed into new hands and will be put in running order by April 1st. It is to be hoped the new purchasers will have better success than their predecessors, as it has well earned the title of being the "Jonah" works of the Valley.

The clay shaft is being sunk and the ground broken for the new brick works at Hamiltown, W. Va., under the personal supervision of John Portor, the pioneer brick manufacturer.

BUCKEYE.

#### Important Improvements.

##### Editor Clay-Worker:

Inclosed herewith find N. Y. Draft for \$2.00 in payment of subscription to the CLAY-WORKER to Dec. 1st, 1893.

The output of brick in this city the present year has been 30 per cent. more than last year. Our city has never been

boomed, nor had a boom; its growth is conservative, being healthy, vigorous and substantial. Our new outlet sewer is progressing finely, the construction of which will require about eight million of brick, the first two and a half miles of a tunnel (now complete.) through rock, the bottom of which is laid with a brick invert; the balance is to be an open cut laid up with brick and stone. The whole, when completed, will be eight miles in length, and will drain nearly the whole of the east half of the city. The drainage from this portion of our city has been for years a menace to health and outlying property, which this sewer will eradicate.

The construction of same is under the supervision of a commission, consisting of the three members of our Executive Board and a joint committee and three citizens. The estimated cost, when completed, is one million dollars.

Bids were opened the 23rd inst. for a new conduit line which is to increase the water supply for our city; the line will run from Hemlock Lake, 29 miles distant. The first two miles is to be a tunnel, lined with brick, the balance of cast or wrought iron pipe, three feet in diameter. The estimates have not been completed; I am, therefore, unable to state the quantities of brick required. When completed, the capacity of our water supply will be more than double. Our bonded indebtedness will also be increased. The estimated cost of construction is one and one-half million of dollars, which amount will undoubtedly be consumed.

W. H. ROGERS, Treas.,  
Rochester, N. Y., Dec. 29.

#### A Grinding Mill for Glaze Ingredients.

##### Editor Clay-Worker:

Having noticed "A. Buckeye's" letter in Dec. CLAY-WORKER, will say in reply, that many years of my life were given to the manufacture of enameled brick. I would advise him to be sure he is all right before spending any great amount of money, as many good men have been stranded by taking the advice of wisecracks who are looking for a situation.

You can build a grinding pan by getting an old mill stone (burr) which has been thrown out of a flour mill, put a couple of arms on the shaft and either drag or push the chasers (also burr).

The kiln is a question on which all men differ. Some use a common pottery kiln, others a down draft. Up draft is the most simple and easily operated and less liable to sulphur or smoke the ware.

FLUORSPAR.

#### A Peculiar Experience in Burning.

##### Editor Clay-Worker:

I would like to ask for information through your Journal, of any one who may have had the same experience in burning. What is the cause of brick



bursting on 5 or 6 days burning? After that period they cease to burst or make any noise. While burning, during the period mentioned, we can hear the noise of bursting fifty feet from the kiln.

After the kiln is cooled and opened you will find those bricks in hundreds of pieces. There are no stones or anything else in the clay to cause them to burst. The brick are made with an Ohio machine—end cut brick.

The clay bank is nine feet deep and very nice to work, except about eighteen inches, which has to be cut up to get it through the crusher. Very little water is used to mix the clay.

When dry and ready to go in kiln, the brick are very brittle and easily broken, but after burning, they are hard to break and very tough, have a nice ring, but a pale color, but if dipped in water they turn red.

I have burned a great many kilns, but this is my first experience of this kind. W. A. R.

#### Paving Brick Being Introduced in Scotland.

*Editor Clay-Worker:*

You may remember that I wrote you some months ago, when I stated that I was doing all I could to introduce vitrified brick as a material for street paving here.

During the months of July and August last, there was a great deal of correspondence in the city papers on the street paving question, which arose out of a discussion as to what material should be used to repave one of the principal streets in the city. This street, Buchanan Street, was recently paved with wood blocks, but is any thing but satisfactory.

On Aug. 29th, through the columns of the *Glasgow Herald* I introduced, for the first time, I believe, to the general public vitrified bricks, as being superior to all other kinds of pavement.

The *British Clay-Worker* has also been doing admirable work in this line, and you will be pleased to know that the matter is soon to have practical demonstration.

As you will see from the Dec. number of *British Clay-Worker* authority has been given to allow an experiment with vitrified brick as a material for street paving. Some time ago one of the numerous fire clay companies here erected works for the manufacture of red building bricks from a peculiar kind of clay, which is, in fact, an imperfect hematite

ore. They have lately found, however, that with extra burning the iron and other constituents become so fused together as to result in thoroughly "vitrified" brick, which I think will compare very favorably with any of the brick used in the United States for paving purposes.

If this brick is put in the street with a proper foundation and made thoroughly water-proof, the experiment should be a success. To make the pavement water-proof it is proposed to insert between the bricks thin slips of wood, over which cement will be spread.

I cannot say that I think the use of wood slips for this purpose is commendable. My opinion is, that the wood should not be used, but that the cement should fill the joints from top to bottom.

As I have not heard of any of your correspondents making use of wood

ally, you may be sure, by the clayworking fraternity of this country.

Although at present brick suitable for paving purposes have only been produced at one place in this country, I have no hesitation in saying, that should the demand arise, as I believe it assuredly will, these bricks will be manufactured throughout the country.

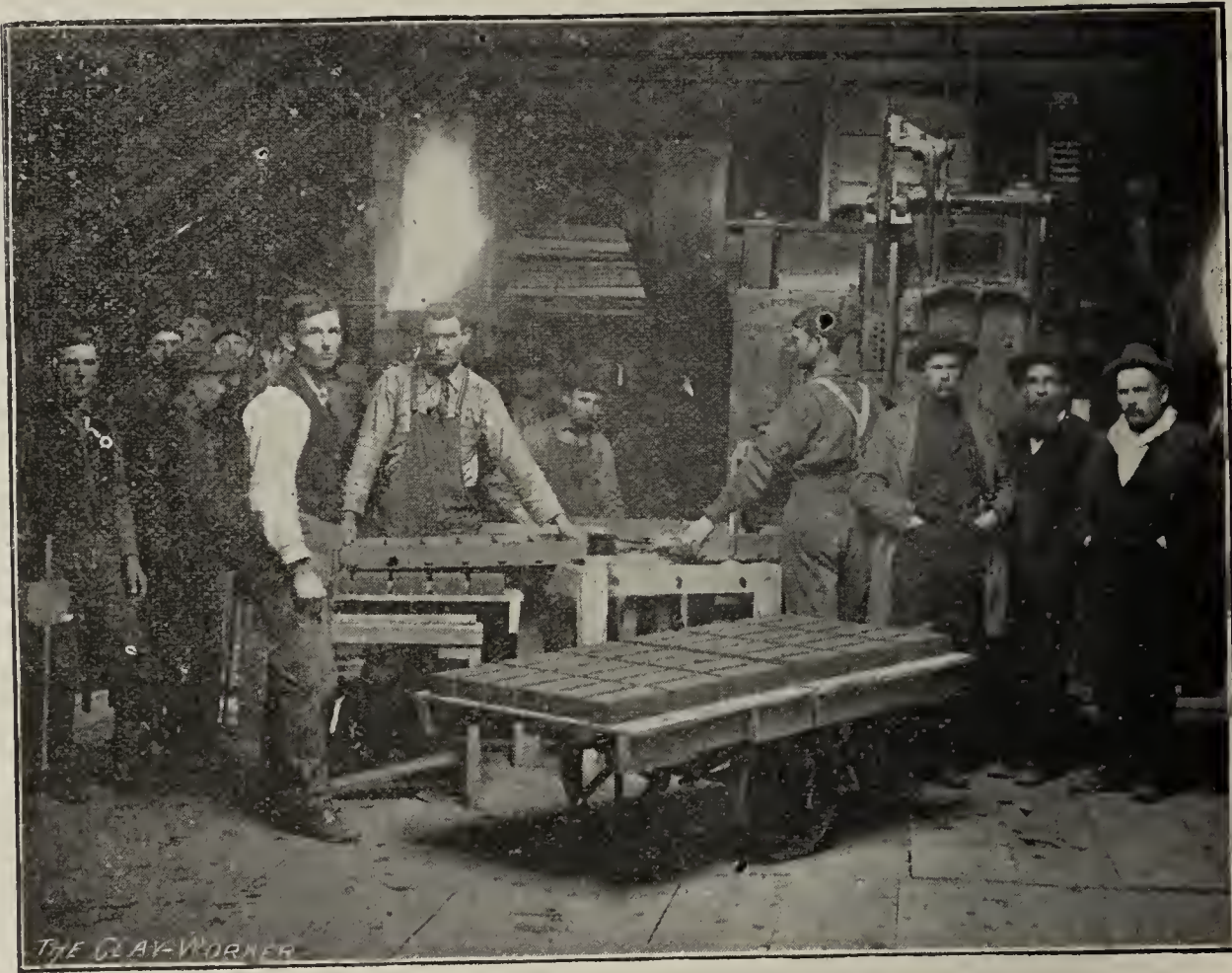
There are a great many different kinds of clay in this country which, if properly handled, will make an excellent paving brick. G. R. A.,

Glasgow, Dec. 21, '92.

#### A Good Start.

*Editor Clay-Worker:*

We herewith enclose Photo. showing our first truck load of brick made on our new machine. We started to erect our new plant about the 15th of Nov. and made our first brick on the 15th of Dec. Our plant is located at Swayzee,



THE FIRST TRUCK LOAD OF BRICK FROM A NEW MACHINE.

slips for this purpose, I will be glad to have their ideas on this point, as I think it is one of the most important.

To put the bricks to a test, they are to be laid in that part of Buchanan St. outside the Caledonian Railway Co's Depot, where the traffic is exceptionally heavy. They are also to be tried on a part of Gordon Street, where the traffic is much lighter.

The result of this experiment will be watched with considerable interest, not only by the general public, but especi-

Grant Co., Ind., in the heart of the gas region. We shall use gas for drying and burning both. We have three drying sheds, each holding a day's work of 30,000 brick. We use portable racks, which are loaded at the machine, then rack and brick are trucked to drying sheds. The floor of this shed is raised about five feet above the ground. We have gas-pipes laid on the ground, the space between floor of shed and ground gives us good circulation, and we have no trouble drying in 36 hours, with no



loss from cracking. With the portable racks we have every advantage of the iron cars, as the brick are not touched or handled until they are dry and ready to set in the kiln.

We use a Potts Horizontal Stock Brick machine, No. 2 "A" Disintegrator, Mold Sander and Elevator. We set and started the machine without assistance from C. & A. Potts & Co., and everything is running smoothly. The machinery started off without a hitch of any kind. We formerly used a vertical machine and extra-pug mill at our yards at Fairmount, Ind., but must say that the Horizontal is far ahead of the old machine, both in quantity and quality of brick made. It is a pleasure to go on the yard now, as we have no fear of finding our machine broken, or making bad brick, while with our old vertical machine we were always in fear of breakage, or, if away from the yard, that when we returned we would find our men gone, or waiting to be told what to do to remedy the trouble, and when our men are waiting, it is always at our expense, of course.

We are more than satisfied with our machinery and plant, and can now see a bright future before us.

We herewith enclose \$2.00 to renewing our subscription to the CLAY-WORKER. We could not afford to be without it any more than we could good machinery and appliances for making brick. We consider it as much a part of our plant and as important to us as the machinery.

Wishing you a Happy New Year, we are  
Yours Truly,  
Swayzee, Ind. CASTLE & MOORE,

#### Press Brick Plant Needed.

*Editor Clay-Worker:*

I have gone out of the brickmaking business but I am still in the building business.

We have lately had natural gas furnished this city. I understand the gas company is going to give gas to dry and burn brick, at the rate of \$1 per thousand brick.

Along the Ohio River above this city we have as good clay as there is in any part of the country and a press brick plant is badly needed here.

All signs point to a busy season next spring.  
C. M. KEENAN.  
Parkersburg, W. Va.

#### WANTS A CLAY MACHINERY EXHIBIT AT THE WORLD'S FAIR.

*Editor Clay-Worker:*

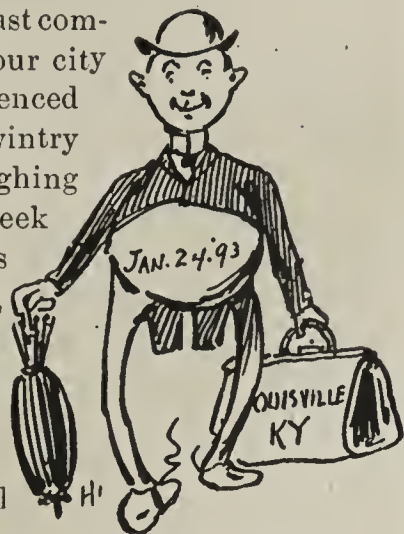
Since my last communication our city has experienced some very wintry weather, sleighing for the past week or ten days has been good, and the ice dealers are to commence harvesting their annual crop of sewerage to-morrow, so our democratic friend the *Herald* tells us.

Christmas has come and gone once more and now the most momentous year in America's history enters upon the boards. The most momentous, first because each year brings forth more of genius and culture, and finer designs in buildings. Secondly, 1893 ushers in the *greatest* World's Fair that has ever taken shape. But oh, my country, to think of it, with all those tremendous buildings in the "windy city" (larger no doubt than the so-called "big feet" of the female population we hear so much about), there appears to be no room left for an exhibition of machinery that forms the majority of building material used all over the world. Can it be possible that those brick machine fellows—those fellows who by the way show such persevering energy in trying to induce some old fashioned fellow to keep up with the procession by putting in the "latest improved,"—can it be possible, I say, for them to have been asleep ever since the Fair became an assured fact, or why have they been "quietly informed" that if they—the machine men—desire to exhibit, they will have to furnish their own building.

Really to me this is a great disappointment, the exhibition of brickmaking appliances would be one of the features that would take the ——— mud.

But I venture to say that Simpson or some of those fellows who are right at home in Chicago, will be on deck with a "Down Draft," "Dry Press," or rather, I should say, an *Up* and Down Draft. But say, have you seen one of those perfect pieces of machinery making brick yet?

The visitors to Selden's yard have, during the past week, been delighted by the sight of the most beautifully shaped



and finished bricks, ever made in this city. If the brick go through the kiln successfully no doubt their fortune is made.

Mr. Harmon of the Simpson Brick Press Co., and whose headquarters is in Pittsburgh, spent a few days in this city last week, visiting his brother who is connected with N. A. Watson's Injector Works.

By the way. What foolishness some machinery men show in introducing machinery, to recommend an old, worn-out engine to do more work than it would be able to do if in first-class order! Is it a fear that the possible cost of additional power would scare the intended purchaser off the track? Any person who has ever driven a dry pan up to full speed with elevators, brick machine, etc., knows that a 20 h. p. engine is unable to accomplish the task. 'Tis a big mistake and an aggravation to the soul, to have to tear out and rebuild an engine-bed, and replace engine after everything else is ready to run. Luckily, Erie is blessed with shops that keep in stock large quantities of engines and boilers, so when our turn came we had only to tear out the old and replace the new in short order.

If it did not sound like advertising, I could tell you some big yarns about the product of Erie Engine Shops. One in particular has a capacity to build 230 engines and nearly 400 boilers per month. It does not seem possible that all these engines could be used, not counting the smaller shops in this city and almost every other city in the United States where engines and boilers are made.

But Erie, like East Liverpool, Ohio, and Trenton, New Jersey, has grown into the engine business, like the two latter cities have into the pottery business. "From small beginnings, large plants grow."

The yearly report of buildings erected here, shows 450 odd houses of all kinds, at an expenditure of nearly one million dollars. A large percentage has been dwellings, showing a tendency towards the laborer owning his own home. Many new structures are talked of for the New Year, and doubtless more new buildings will go up during '93 than in the year past; if so, the brickmakers should be happy and contented.

We must close and get to bed, or the dry press may not move early enough to-morrow morning.  
W. R. O.  
Erie, Pa.



## THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, JANUARY 15, 1893.

Entered at the Post-Office at Indianapolis,  
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Subscribers when ordering a change of  
address should give both the old and the new  
address.

ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL & CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

### THE NEW YEAR.

In looking forward into the new year, no one can see anything disturbing in the business prospect. Last year was a great one for clayworkers; we can see no reason why the coming year should be any less fruitful. There is nothing of a questionable or gloomy nature affecting the character of any industry. During years past there has been a gradual increase in the volume of business done by clayworkers. There are several reasons for this; among them the improved quality of the clay work itself and the reduction of its cost through the use of machinery and devices of recent invention; and again because of the disposition of people who build and use claywork to improve the character of the investment. As the country grows older, there is more disposition to build solidly and well. These conditions have directly to do with the use of material. There are others which are influenced by the general material condition of the country at large. There are rarely or never backsets in business progress without full and adequate cause, there is rarely or never a stationary condition. The general movement must be either towards an increase or a decrease in the volume of business. There being no immediate cause for the decrease—nothing which effects the general prosperity of the country—it is natural and proper that we expect, during

the year 1893, a material improvement over the very good business of '92.

### A BRIGHT PROSPECT.

At the time of writing all Hoosierdom is snow bound. We have had good sleighing for nearly two weeks—an extremely rare occurrence, and the thermometer is constantly hovering very near the zero mark. We are pleased because we like seasonable weather and more particularly because it presages a milder, pleasant season during the week of the Convention. Mr. A. L. McDonald, one of the most active of the Louisville craftsmen and who has sampled Kentucky weather for many years, says we will have fair, pleasant weather Convention week and we believe him. Weather, or no weather all who attend the Convention will have a jolly time. Come and see.

### CONVENTION NUMBERS.

This number of the CLAY-WORKER, and the one to follow are essentially Convention numbers. The current issue looks directly toward the Convention, doing what may be done to prepare the way for it. The following issue will contain the report of its proceedings. It is the natural province of any trade journal to look to the material interests of those with whom it is associated. On the other hand, there are various ways of doing this work. It may be in a manner only too common; doing only that which appears to be immediately necessary and without distinct regard for the distant future. While we are not altogether unselfish in matters of this kind, we think the judgment of our patrons will be that we do not stop on the line of absolute necessity. The columns of the present issue certainly justify this assumption and for the Convention report, we promise all that may be done not only to give the exact proceedings but also to reflect matters of direct and indirect benefit which may grow out of it. The numbers of a conscientiously conducted trade journal, form a veritable encyclopedia of the progress of the art which it represents. It is our purpose and intention, as far as possible, to make a record each month which brings the knowledge of clay work up to date. As a reflex of that which comes from the Convention, the February number will be a veritable text book of clayworking information. Workers in clay are exceedingly liberal in presenting their

views before our National Conventions. They are broad enough and liberal enough, to see that it pays. It has been shown that the best progress is made in this way. The clayworkers of the country, who are doing the largest business, improving the most rapidly, are those who are most liberal in the interchange of experiences. As stated before our efforts will be in the direction of giving to our readers, not alone the letter, but the spirit of the Convention and all that may grow out of it.

### OF WHICH ARE YOU?

We have two classes of subscribers. In the first, and, luckily, much the largest class, are those who renew their subscription promptly each year. In the second, and very numerous class, are those who neglect this important ceremony and by so doing cause us much unnecessary trouble and expense. Perfection is a condition seldom realized and we do not hope to escape an occasional thorn. Our pathway while not strewn with posies, leads through pleasant ways and we are striving to gather a goodly portion of the sweets of life. Our subscribers in generous numbers are contributing to our happiness and usefulness. We are duly grateful to them one and all, but we are mortal and love most those who most love us. They are of the first and larger class. Reader are you in it?

### THE POWWOW.

The utilitarian spirit which possesses Americans, in a measure, precludes our full understanding of the real benefits to be derived from the distinctively social affairs of life. The Powwow, which is a feature of each year's Convention of clayworkers, is, we judge, often looked upon as a species of mere amusement or general entertainment without any distinctively practical value. This is a careless and mistaken view. The good fellowship; the pleasant feeling which it develops; the general kindly regard which comes from it, is largely instrumental in developing a spirit of confidence or openness between the members of the association, which is very fruitful. After the Powwow, the brethren are much better acquainted and the idea grows that all are good, jolly fellows, with interests in common. The spirit of fellowship thus established is easily apparent in the following meetings. There



is a directness and freedom of expression a friendliness of intercourse, which tends to bring out the best there is in everything.

The importance of the proper social relation and understanding in dealing with serious business affairs is more generally appreciated by the people of Foreign countries than by ourselves. The best work of a diplomatic character by the governments of the old world is accompanied by good dinners, good stories and splendid entertainment.

We find, even in the municipal buildings of all towns and cities in Great Britain and on the Continent, splendid banqueting halls, which have distinct and, in the end, serious business use in connection with the affairs of those communities. Thus it is with our Powwow; it is not merely entertainment, having no great usefulness. Its serious consideration shows it to be worthy of a higher interpretation.

#### A MISTAKEN IDEA.

Our contemporary, the *Clay Record*, in a recent issue gives expression to an idea as coming from one whom it has interviewed, which should not stand without correction. It runs like this: "You cannot build a good house without a stone foundation, and the same principle will apply to pavements."

Our friend ought to know that a good house can be built without a stone foundation, and should not spread such a statement on the records. The brick house with the stone foundation had its origin in the days of soft brick,—fish-worm brick,—those dried in the sun. But all this has been antiquated by modern methods of brickmaking, and an advanced spirit in manufacture, which have lifted brickmaking to something higher than a road-side industry. This invites a higher grade of Trade Journalism than one which will admit that a primitive condition in brickmaking belongs to the present time. Our contemporary should know that many of the best buildings in this world are on brick foundations; that in building sea walls, foundations for buildings resting in the seas and harbors in many places in the old world, brick are very largely used. It should be known to one who is undertaking to advance the interest of the worker of clay, that modern methods have brought the standard of brickmaking to such a state of perfection, that stone foundations are no

longer essential to a good house.

With hard brick, vitrified brick and glazed brick the world could well do without stone. We are not at all certain but that the building world would be improved by the change. Remember the age in which we live—the clay age.

#### THE QUESTION BOX.

Our readers will find by reference to the Programme of the Seventh Annual Convention of the N. B. M. A., given on page 28, that the "Question Box" has been assigned a place on each day's proceedings.

This is a wise provision on the part of the Programme Committee, and, if the members will make a proper use of it, will result in the discussion of various questions dealing with the little details of the work of brickmaking that do not seem of sufficient importance to justify the preparation of formal papers or essays and yet are of vital importance. Indeed the observance or neglect of these little details oftentimes marks the dividing line between success and failure.

To those who want information on points seemingly not embraced by the regular programme, the Question Box offers a sure way of drawing the attention of the general membership to any special topic and that too, if the question is properly put, in a way most apt to elicit the information desired.

Gentlemen of the N. B. M. A., use the Question Box. Use it intelligently and it will prove a source of much instructive discussion.

#### CIRCULARS COSTLY ADVERTISING.

This is the time of year when many people are getting ready to waste large sums of money in sending out circulars. The waste baskets are yawning. Our attention was directly called to this topic by a communication from a manufacturer. He says: "My experience confirms the statement that the mailing of circulars is an expensive and ineffective method of advertising." Another manufacturer who has given some attention to this matter says: "Circulars are a pest. A good catalogue, carefully edited, well arranged and indexed, is usually preserved; but the circulars which come by every mail, I never keep. I have no doubt," he continued, "but that I let many good things get away because of my disregard for circulars. On the other hand, I know that I save lots of trouble and time

and chance of failure in taking up with that which is novel. Nearly every manufacturer subscribes for a number of journals bearing on his line. By referring to the advertising columns where information and addresses are compactly arranged, he can readily secure needed information. If something more specific is wanted, he writes."

We wonder if any one ever thinks of the difference in cost and the difference in value per thousand of advertising by circular or through trade journals. Certainly the first cost by the latter method is less, and manifestly the value is greater. Every trade journal worth subscribing for at all is preserved by those who receive it; and this is done, not alone on account of the reading matter but also on account of the fact that it contains, in compact form, a large amount of information in its advertising columns. The descriptions are short, terse and to the point. Where one is specially interested in any one thing he writes or telegraphs for special information. Who is it that preserves circulars in this way? Or who is it that makes special information so attractive in itself or through association with the matter with which it is brought in contact, in a trade journal? Let those who send out circulars examine their own files and see what proportion of the circulars which others have sent them, they have preserved. How much attention does the sender of circulars pay to those which are sent to him?

#### THE MORE BRICK THE BETTER.

The passage and enforcement of a building law in our own city has had a great deal to do with increasing the amount of brick used. No brickmaker or bricklayer had anything to do with the formation or passage of that law, but naturally when such a law was framed, the attention of people with knowledge of building experience was brought to bear upon this question and this meant an increased use of brick. The gentlemen who originated the building law of Indianapolis were not extremists. They did not go too far in their requirements; some of us believe, not far enough. Nevertheless, it has worked out an improvement in the character of our building. It will take a long time to atone for the bad work of the past. It is not an uncommon thing in some of the older buildings of our city to find brick walls four and five stories high, 12 inches thick. The new law has



changed all this. It requires a proper thickness; insures a solid and careful construction of flues, and makes necessary the use of brick in places where less substantial material was used in times past. Thus it is that twenty to forty per cent. more brick are required in the structures built under its general requirements. The clayworker who interests himself in the passage of a building ordinance in a city or town is working no hardship upon any one. In truth he is adding more than the increased cost of building to the material wealth of that community. It is one of those places where one may work directly with a selfish motive, and at the same time with the consciousness that he is benefiting his fellows.

On another page it is stated that the fire tax, which is the largest tax paid by the people of this country, is paid uncomplainingly; it is taken as a matter of course, which is altogether improper. The cities of the Old World, notably those of Great Britain, whose construction is not of a high order at all times, have nothing like the fire tax to meet, which is common with us. For instance the city of Glasgow with its seven or eight hundred thousand people, has fire losses which are probably no larger than that of the city of Indianapolis with its 125,000 or 130,000 inhabitants. The Glasgow law is no better than that of our own city, but it is enforced, and there is a spirit abroad in that country which leads to substantial improvements and a high regard for the details of good construction. The liberal use of brick and other clay products under proper direction and will have much to do with the lessening of the fire tax.

#### WE ARE INDEBTED

To the Mathews-Northrup Co., Buffalo, N. Y., for a copy of a beautifully illustrated specimen book of the various styles of engravings made by them. Copy will be forwarded by them on receipt of price \$1.00.

To the Main Belting Co., Chicago, for a neatly framed photo of some mammoth Leviathan's, the largest of which is 1,280 feet long, 12 inches wide and 8-ply thick. The Leviathan belt is the best for clayworking machinery. See ad. on page 76.

To the Platt Brick and Fire Proofing Co., Des Moines, Ia., for a beautiful calendar. Also to D. J. C. Arnold, manufacturer of brick and tilemakers sup-

plies, New London, O., E. M. Pike, proprietor of the New Discovery Kiln, Chenoa, Ill., the McLagon Foundry Co., New Haven, Conn., and Henry Gleason, Secretary National Fire Brick Manufacturers' Association, New York, for similar favors.

#### COMING CONVENTIONS.

Illinois Brick and Tile Association, Springfield, Ill., Jan. 17th and 18th.

National Brick Manufacturers' Association, Louisville, Jan. 24th to 28th.

Iowa Brick, Tile and Drainage Association, Des Moines, Feb. 1st and 2nd.

National Association of Builders', St. Louis, Mo., Feb. 14th to 16th.

Ohio Brick, Tile and Drainage Association, Columbus, Feb. 14th and 15th.

#### NOW IS THE TIME

When plans are being considered and work mapped out for the coming season. For good and sufficient reasons many reliable, capable workmen are now seeking employment for next season. Their present situations may not be as remunerative as their abilities deserve, or some feature having no bearing whatever on their work may make it necessary for them to leave present quarters. To such—to those seeking employment and those wanting competent, experienced workmen we commend the services of our "Wanted, For Sale, Etc.," columns. Read them and use them and profit thereby.

#### REDUCED RATES FOR THE LOUISVILLE CONVENTION.

FOR the Seventh Annual Convention of the National Brick Manufacturers' Association, to be held January 24th to 28th at Louisville, Ky., the Baltimore & Ohio Lines will grant greatly reduced rates. A complete service of first-class vestibuled trains with Pullman service, maintained between Boston, New York, Philadelphia, Baltimore, Washington, Pittsburgh, Columbus and Cincinnati, making direct connections with lines for Louisville.

For through rates, time of trains and other particulars call on or address O. P. McCarty, G. P. A., B. & O. S. W., Cincinnati, Ohio.

Chas. O. Senll, G. P. A., B. & O., Baltimore, Md.

A. J. Simmons, A. P. A., B. & O. Boston Mass.

C. P. Craig, Gen. Eastern Agent B. & O. New York, N. Y.

James Potter, C. P. A., B. & O. R. R., Philadelphia, Pa.

S. B. Hege, C. P. A., B. & O. R. R., Washington, D. C.

E. D. Smith, D. P. A., B. & O., Pittsburgh, Pa.

W. E. Reppert, D. P. A., B. & O. Columbus, Ohio.

#### EDITORIAL NOTES and CLIPPINGS.

The Chattanooga (Tenn.) Pottery Co., want a flower-pot machine.

H. B. Yingling & Son will build a new brickyard near Allentown, Pa.

The Day Brick Works, Belleville, Ill., will be overhauled and enlarged.

The Bessemer (Ala.) Fire Brick Co. writes that their trade is very good.

The Jonesboro, (Ind.) Brick Co., has been incorporated. Capital, \$75,000.

Washburn Bros., Glasco, N. Y., will put in an additional soft clay machine.

P. J. McHenry will probably build a brick plant at Muncie, Ind., in the spring.

The Ironsides Pottery Co., Trenton, Pa., has been incorporated. Capital \$24,000.

The Clinton Paving and Building Co., Clinton, Ind., has been incorporated. Capital \$50,000.

Wm. Hislop, Dowagiac, Mich., wants to buy a brick machine—prefers a side-cut stiff clay machine.

The Ohio Valley Fire Clay Co., Toronto, O., will put in new boilers and enlarge their plant.

The Canton (Ohio) Tile and Hollow Brick Plant was badly damaged by fire early in December.

Ed. Brown's brickyard near Saranac, Mich., was partially burned Dec. 16th. Loss, \$2,000. No insurance.

C. Paye, 1021 Buena Vista St., Los Angeles, Cal., wants to purchase a good soft clay brick machine and outfit.

The stable of the Union Brick Co., near Chicago, was burned Dec. 21st. Twelve horses were burned. Loss, \$2,300.

Reynoldsville, Pa., is thought to be a good point for the location of a paving brick manufactory. W. C. Elliott will give particulars.

Alfred Yates, North Cambridge, Mass., writes that he is building six more kilns for the Blandford Brick and Tile Co., Russell, Mass.

The Jeffrey Mfg. Co., Columbus, O., are now sending out their new catalogue. If you have not received a copy write them for one.

Philip Gibson writes that a mammoth plant for the manufacture of brick and terra cotta of all colors is being erected at May's Landing, N. J.

W. H. Beckwith, has severed his connection with the Eureka Fire Brick Co., Uniontown, Pa., and will probably start works at Stewarton.

J. George Stamm, Butler, Pa., writes that he expects to be at the Louisville Convention and hopes to quaff something refreshing from the "Old Town Pump."



Sayre & Fisher, extensive brickmakers of Sayreville, N. J., suffered a loss of \$400 by burglars Dec. 16th. The office safe was forced open. No clue.

Samuel Cowgill, the well known Hoosier tilemaker, of Summitville, Ind., furnished the tile used in draining the World's Fair grounds.

O. H. Sweitzer, Elkhart, Ind., writes that he has sold his brickyard to J. P. Heasley and is now looking for a desirable location for a small brick plant.

The Canton (Ohio) Stoneware Co., write that their trade has been very good, and they are now enlarging their works to double the present capacity.

The boiler at the works of Gillespe & Jacob, near Wheeling, W. Va., exploded recently, doing considerable damage, but fortunately no one was injured. Cause, probably, leaky boiler.

The North Vernon (Ind.) Tile Co., write that business in that section has been very good the past season. They will enlarge their plant to double their present capacity and change from wood to oil as a fuel.

T. B. Moffat, sec'y Pittston, (Pa.) Brick, Tile and Terra Cotta Co., is looking for a location for brick and tile works. Will be pleased to correspond with those having suitable site to offer. West or South preferred.

J. P. Brown, Connersville, Ind., thinks there is an abundance of good shale suitable for making paving brick, near that town. He proposes to have it tested and if results are satisfactory a company will be organized to erect a plant.

The Wabash Clay Co., Veedersburgh, Ind., have just duplicated their order with C. W. Raymond & Co., Dayton, O., for another Columbian Special (Double) Re-press, making the second order from this company during the last six months.

The Pauline Pottery at Edgerton, Wis., is a stock company, under the management of Mr. Jacobus, while his wife, for whom the pottery is named, has charge of the decorative department. They employ about 40 hands in the busy portion of the year.

E. G. Silver, Athens, Ohio, writes that that town is a good place for the establishment of a good brick plant. There is a great abundance of shale and fire clay, plenty of cheap fuel, water and excellent shipping facilities. He will be glad to give further particulars.

In renewing his subscription Mr. M. R. Forney, brickmaker, La Porte, Ind., says: "The past year has been a very fair one for our business. Could have sold twice as many brick had I made them, but I am getting too old to push the work. Would like to sell my yard and good will and retire."

The Rose Brick Co. of Roseton, N. Y., shipped recently in a single shipment to the New York City market over

2,000,000 brick. This is the largest shipment of brick ever made from any one brickyard along the Hudson river. It took eight large barges to freight the stock which made up a single tow.

P. L. Youngren of Oakland, Cali., has just completed the erection of a new continuous kiln of 40,000 daily capacity for the San Jose Brick Co., of San Jose, Cali. It is one of the largest single system continuous kilns in this country and perhaps on the globe.

During the heavy rainstorm in December last, the plant of the Remillard Brick Co. at Pleasonton, Cali., was inundated. The water destroyed about a million green brick, washed away 20 carloads of coal and extinguished the fires in the continuous kilns. Damage about \$6,000.

The brickmakers of Washington, D. C., have formed a local association for mutual protection. The admission fee has been placed at \$500. The rate for the minimum price of brick per 1,000 has been scheduled as follows: Lowest grade press, \$10; selected red, \$10; paving \$9; hand-made red, \$8.50; red, \$8; arch, \$7, and salmon, \$6.

Hezekiah Crowell, a well-known and highly respected brickmaker of Goshen, Ind., dropped dead suddenly, while attending to his business, Dec. 22nd. He had been in good health apparently. Heart failure is supposed to be the cause. Deceased had recently passed his 62nd birthday. He leaves two sons, Charles and William, who will continue to operate the brick works.

John Mist, an employe of the Imperial Brick works, Canton, O., met with a horrible accident last Friday. He was in one of the pans of the shale crusher cleaning it out when a fellow workman started the machinery. His right leg was broken in two or three places and his knee crushed. His left foot was ground to a pulp. He was otherwise badly injured and his life is despaired of.

Geo. Westlake, a designer and molder in the New York Architectural Terra Cotta Co's Works, Long Island City, N. Y., died Dec. 18th of heart trouble. His wife had been deranged for a few days and the doctors forbade him seeing her. On her recovery he was notified that he might visit her and the news so overjoyed him that it brought on a fatal attack of heart disease, with which he had been afflicted for a long time.

W. H. Barnett, of St. Louis, Mo., proprietor of the Standard Brick Works, is making some extensive improvements, and will, the coming season, have one of the best works in the West. He has discarded all of his old machinery, and is putting in the new Ross-Keller 6-mold machine, which is illustrated on page 7 of this issue. Mr. Barnett says this new press is the only one he ever saw that came up to his idea of what a press brick machine should do. His works will start up by Feb. 1st.

The new Lock Joint T Brick form to be manufactured by the Briggs Brick Co. of Philadelphia, Pa., will be repressed on 2 large Raymond Special Columbian Re-presses. These machines are now being built at Dayton, O. They will have an estimated capacity of 12 to 15,000 blocks per day, and at the same time be able to make building and paving brick, at a rate of 20 to 25,000 per day.

On page 58 will be found an illustration of a new brick cutting device that is now offered the trade generally. The inventor, Mr. J. A. Snel, is a successful brickmaker, and the cutting table represents the results of much patient work on his part, in devising and perfecting a means to cut automatically and handle brick more accurately and expeditiously than has been done heretofore. The cutting table has several novel features which will commend it to those wanting to make a high grade of brick. For full description of this valuable device, see ad. on, better, write for illustrated circular.

J. W. Crary Sr., our well known contributor of Bluff Springs, Fla., in a letter of recent date says:

"I would like to be at the next meeting of the N. B. M. A., but I have passed out of my 78th year and look at 79, and I can hardly risk myself at Louisville at this season of the year. You can remember me kindly to the Convention. I feel my inability to do them much good, but what little I can do I will do most cheerfully, with my best wishes for the present and future good of the craft."

The Frey-Sheckler Co., Bucyrus, O., write that they have sold an Acme Brick Machine outfit to the Sioux City Paving Brick Co., Sioux City, Ia.; a complete plant, comprising brick machine, crusher, pug-mill, cutting table, elevators, trucks, etc., to the Columbian Brick Co., Connellsville, Pa.; No. 2 Bucyrus Giant Brick Machine outfit to H. N. Zapel & Bro., Chicago, Ill., making the twelfth outfit of machinery shipped to Chicago since January, 1892. A Mascot Machine with hollow block outfit to A. J. Haws & Sons, Johnstown, Pa. This is the second outfit sold to these people in the past year; a Steam Power Re-pressing Machine to B. Kreischer & Sons, Perth Amboy, N. J., being the second press sold to them in the last six months. They also received an order from the Fort Smith Paving Brick and Fire Clay Co. of Fort Smith, Ark., for two of their Steam Power Re-pressing Machines. Their new and handsome Catalogue for 1893, was ready for distribution on the first day of 1893.

The Lexington (Ky.) Brick Co., will enlarge the capacity of their works by the addition of new machinery, etc.

The Industrial Brick Co., of May's Landing, N. J., will have their \$100,000 plant in operation by March and will make 50,000 bricks a day.



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## \$2,000 BRICK HOUSES.

8 Complete sets of Plans, Elevations, Details, and Specifications, published in our Special November and December Double Number. Sent postpaid for 50 cents, or

## Free to New Subscribers

For 1893.

Subscription price per year, \$2.50.

THE BRICK BUILDER,

P. O. Box 3282.

BOSTON, MASS.

Halbert E. Paine,

Story B. Ladd.

Ex-Commissioner of Patents.

## PATENTS AND PATENT CAUSES.

Paine & Ladd,

Attorneys at Law.

Loan and Trust B'd'g.

WASHINGTON, D. C.

## BOOKS FOR BRICKMAKERS.

It is pretty generally conceded that wonderful progress is being made in the ancient and heretofore unprogressive art of brickmaking. Among the best evidences of this is the fact that the brickmaking craft is no longer without a literature of its own. There are now some good practical books treating on the manipulation of clay—the making, drying and burning of brick. The list is not so large but that every brickmaker can afford to have them all. Get them and read them.

“BRICKMAKER'S MANUAL,”

Morrison and Reep, \$3.00

“BRICKMAKING AND BURNING,”

J. W. Crary, Sr., \$2.50

“TABLE OF ANALYSES OF CLAYS,”

Alfred Crossley, \$1.00

“DURABILITY OF BRICK PAVEMENTS,”

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.



**21,600 Per Day.**

VEEDERSBURG, IND., October 29th, 1892.

C. W. RAYMOND &amp; Co., DAYTON, OHIO.

GENTLEMEN:—We take pleasure in telling you that our double die Columbian Special Re-press, which has now been in operation over a month, is giving us perfect satisfaction. At the speed we are running, it turns out thirty-six elegant pavers every minute, and does it without any apparent strain on any of its parts.

Yours very truly,  
WABASH CLAY CO.,  
By R. D. CULVER, Pres.

**24,000 Per Day.**

MIDDLEPORT, OHIO, November 1st, 1892.

MESS. C. W. RAYMOND &amp; Co., DAYTON, OHIO.

GENTLEMEN:—We are very much pleased with the work of the Columbian Special Re-press (double die). It is strong and positive in its work, and we are now re-pressing 24,000 blocks per day of ten hours. The press is doing the work with ease and perfection. We have had frequent opportunities to examine other power presses, but very much prefer yours to any Re-press on the market, and believe you have reached the point where it would seem to be impossible to improve.

Very truly yours,  
MIDDLEPORT GRANITE BRICK CO.  
R. D. McMANIGAL, Pres.

**26,000 Per Day.**

LINCHBURG, VA., October 31st, 1892.

C. W. RAYMOND &amp; Co., DAYTON, OHIO.

GENTLEMEN:—We have your letter of the 28th inst., asking our opinion of the new double die Columbian Special Re-press. In reply, we beg to say, that the work of this Machine is perfection itself. We are re-pressing without difficulty 26,000 paving blocks per day, employing for this purpose two men and three boys. We congratulate you on your success in producing such a perfect Machine.

Yours very truly,  
VIRGINIA VIT BRICK & SEWER PIPE CO.  
By J. G. PAYNE, Sec'y.

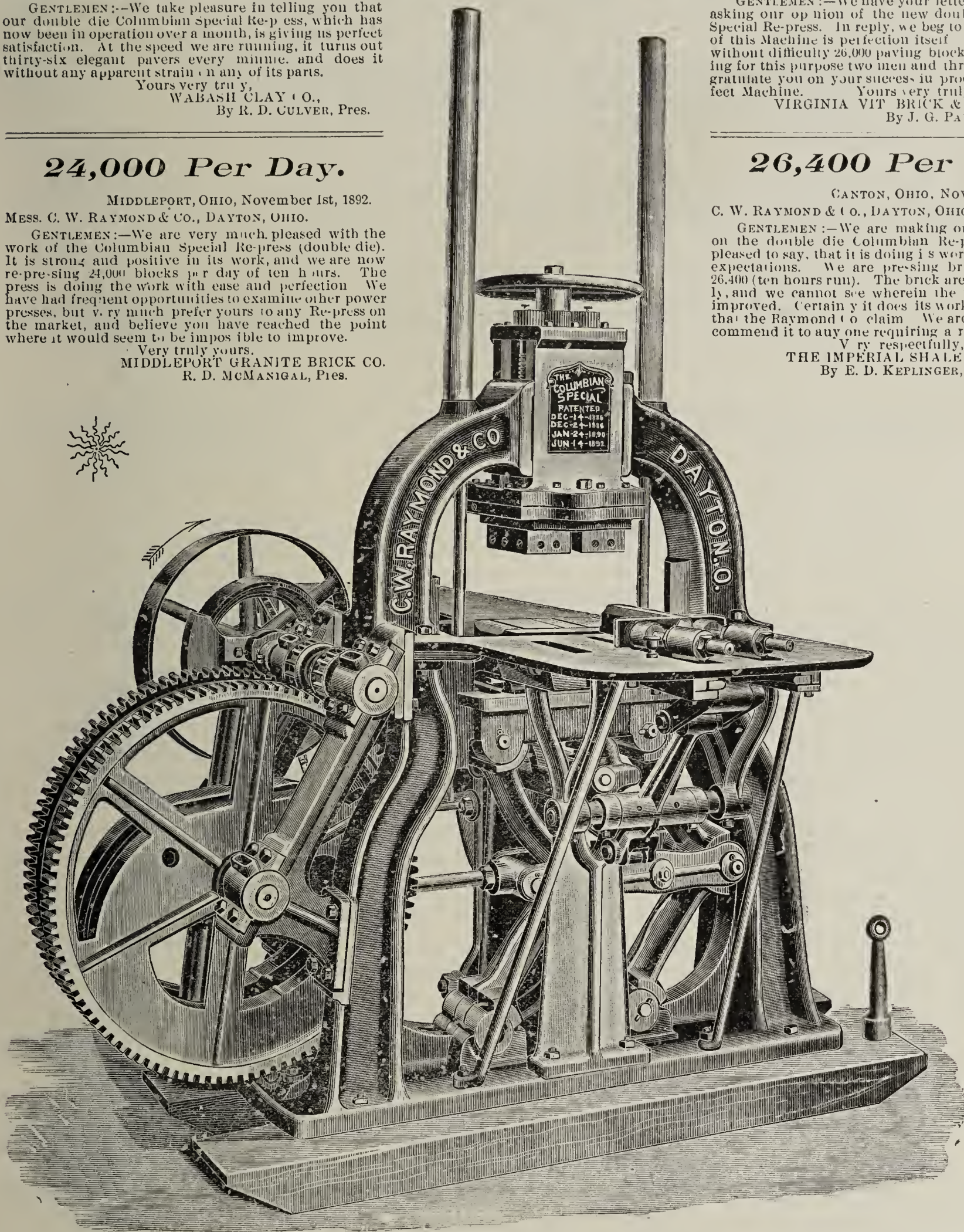
**26,400 Per Day.**

CANTON, OHIO, November 5th, 1892.

C. W. RAYMOND &amp; Co., DAYTON, OHIO.

GENTLEMEN:—We are making our Imperial Block on the double die Columbian Re-press, and we are pleased to say, that it is doing its work even beyond our expectations. We are pressing brick at the rate of 26,400 (ten hours run). The brick are pressed thoroughly, and we cannot see wherein the machine could be improved. Certainly it does its work perfectly and all that the Raymond Co. claim. We are well pleased and commend it to any one requiring a re-press machine.

Very respectfully,  
THE IMPERIAL SHALE BRICK CO.  
By E. D. KEPLINGER, Sec'y and Treas.

**THE COLUMBIAN SPECIAL RE-PRESS (Double).**

Capacity 20,000 to 25,000 brick or 10,000 to 12,000, Furnace or Cupola Blocks per day. Weight nearly 8,000 pounds. Actually exerts 90,000 pounds per square inch, pressure. Adapted to any kind of pressed work.

**C. W. RAYMOND & CO., DAYTON, OHIO.**



Written for the Clay-Worker.

### CANTON PAVING BRICK AND OTHER CLAY INDUSTRIES.

The success of any trade paper is commensurate with the interest awaiting each ensuing number, and the avidity with which its contents are scanned. Hence we are free to say the CLAY-WORKER is a grand success, for in moving among our clayworkers here we find that no other paper begins to compare with it, as all claim to have received benefits many fold the cost of subscription not alone from the reading but also from the its advertising columns.

Now, as you have pleased us, you no doubt will be pleased to learn what is being done at this center of clay products—Canton, Ohio.

Up to within a few years, our people regretted that we should have so much heavy, cold clay, or shale land lying just south of our city; of course it was underlaid with coal and lime-stone, but the soil would not respond freely to the farmer's call, so the farmers were listed as second quality land on the tax duplicate.

One poverty stricken farm was owned by H. S. Belden, who, finding it difficult to support his family on an 80-acre farm, and being of an inquisitive turn of mind, observed some "rock" taken out from underneath the coal vein crumble to pieces, and finally, with rains and dews, become totally disintegrated, showing plasticity. He loaded a wagon with it and drove 30 miles to a pottery and had it tested, when to his surprise it was pronounced a No. 1 article of potters clay. Result: Within a year two large potteries were built and this clay mined, manufactured and shipped to all parts of the country.

Having launched this industry successfully, he next turned his attention to the material above the coal, which we had always known as "slate," soon established a hollow brick and drain tile works. Result: Three large works in operation, and another \$60,000 plant going up.

Next the paving brick attracted his attention. Tests were made, several kilns were burned, and a number sent to Pittsburgh, Pa., to test their power of resistance by hydraulic pressure, when it was found to excel anything ever tried of that nature, even granite itself.

Thus again encouraged, a plant was erected, and "Red Granite," "Iron Rock," and "Canton Pavers" were manufactured

at the rate of 40 M per day. This was three years ago. Result: Six paving brick plants with daily capacity of 200 M throughout the year, or 60 million. But this is not all. Underneath the potters clay lies a fine body of fire clay, so a fire brick works with daily capacity of 20 M is turning out beautiful white brick that bring \$15 00 per M.

Think what this one man has wrought for Canton! Adding millions of ultimate wealth to the city and giving employment to more than 300 men.

This farm was one of the poorest in this section. Had it only been moderately productive, these wonderful changes might not have been wrought. Surely, in this case, "Necessity was the Mother of Invention," and man's extremity proved God's opportunity to manifest unto the children of men what he has in store for them.

I have recited the above somewhat at length to show what is possible, not only here, but throughout the length and breadth of this land.

The principle thing lacking is the man who will put to use the faculties given him by his Creator.

Although not directly interested in the foregoing, yet I cannot but behold the wonderful possibilities the future has in store for us, hidden away in our hills. It needs no prophetic eye to see the clay industries lead all others in the near future.

With what complacency we behold the advances made within a few short years, in our brick yards. Brick made by the ancient and most crude process, all dependent upon the weather. Now how is it? The best is hardly good enough.

One improvement following another in each department, whether machinery, process of drying, or kilns for burning.

For instance, the drying. There are no less than six different processes in use among the different plants here. Yet I have no doubt they are all agreed that the last two plants put up are the most complete, working with least expense and best results, and they use the Iron Clad Drier.

In the construction of the kilns, with the exception of the last two plants, they started in with the round down draft, and worked into the square kilns of larger capacity.

There is no denying the fact that the Eudaly gave the best satisfaction, until along comes the Yates, which is giving better results, viz., *more pavers with less*

*fuel*, a consummation most devoutly to be wished.

Our railroads are acknowledging the immense addition to their freight by the shipping of pavers to Terre Haute, Ind. west; Boston, Mass., east; Detroit, Mich., north, and Lexington, Ky., south. No less than 30 cars per day go out to these or intermediate cities. Hence they accord all facilities possible, knowing full well that with our thousands of available acres for clay industries they are laying a sure foundation for a steady inflow of revenue.

J. F. N.

Canton, O.

### MY PHILOSOPHY.

JAMES WHITCOMB RILEY.

I ain't ner don't p'tend t be  
Mueh posted on philosophy;  
But there is times when all alone,  
I work out ideas of my own.  
And of these same there is a few  
I'd like to j'st refer to yon.  
Previdiu' that you don't object  
To listen clos't and reckollect.

I allus argy that a man  
Who does about the best he can,  
Is plenty good - nough to suit  
This lower mundane institute;  
No matter ef his daily walk,  
Is subject fer his neighbor's talk,  
And erlie minds of ev'ry whim  
Jest all get up and go fer him.

I knowed a feller one't that had  
The yaller janders mi hty bad,  
And each and ev'ry friend he'd meet  
Would stop and give h'm some receet  
For eurin' of 'em. But he'd say  
He kind o'thought they'd go away  
Without medicine, and boast  
That'd get well without one doste.

He kep'a yallerin' on, and they  
Perdieu' that he'd die some day  
Before he knowed it! Tuek his bed  
The feller did, and lost his head,  
And wandered in his mind a spell,  
Then railed, and at last got well;  
But ev'ry friend that said he'd die  
Went back on him eternally.

It's natchural enough, I guess  
When some gits more and some gits less,  
For them 'uns on the slimest slae  
To claim it ain't a fair divide;  
And I've knowed some to lay and wait  
And get up soon and set up late,  
To ketch some fellow they could hate  
Fer gonn' at a faster gait.

The sigus is bad when folks commence  
A findin' fault with Providence,  
And balkin' 'cause the world d'n't shake  
At ev'ry prancin' step they take.  
No man is great till he can see  
How less than litt e he would be  
Ef stripped to self, and stark and bare  
He hung his sign out anywhere.

My doeteren is to lay aside  
Contentions and be satisfied;  
Jest do your best, and praise er blame  
That follers that counts just the same.  
I've allus not'ced great success  
Is mixed with troubles, more or less,  
And it's the man who does the best  
That gits more kicks than all the rest.



# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.

WE desire to call attention to our Improved FOUR MOULD WHITTAKER.

This machine will fill a long felt want to the many who are now manufacturing brick by the Dry or Semi-Dry process, and will prove a boon to one and all contemplating the manufacture of brick.

In placing this new and improved machine upon the market, we give to the craft the most perfect piece of machinery of its class in the world. Our TWO MOULD MACHINE has steadily grown in favor from year to year for the past ten years, and it stands to-day in the best equipped brick plants in the country, a monument to its superiority over all machines of its class.

Our improved FOUR MOULD MACHINE will be manufactured in St. Louis, under our own supervision, and patrons can depend that the same will be built by the hands of superior workmen, and prove a safe machine with which to enter upon business. We claim for this machine great durability, as well as the fact of it being the CHEAPEST machine upon the market. We guarantee it in every respect, and will place it under reasonable guarantee, and upon terms to suit. It will be kept in stock at all times and can be had on application.

Parties desiring a larger machine upon this principle can be accommodated. We will build five and six mould machines to order.

We are in the market with the finest brick machinery in the world, and solicit orders. We will be pleased to have parties write us for any information they may desire as to the approximate cost of erecting a brick plant.

We have had 10 years' practical experience in the brick business proper, under this process, and will contract to erect an entire brick plant if parties so desire.

Clay sent to us at St. Louis (freight prepaid) will be carefully tested, free of charge.

## IVES & LEONHARDT,

ST. LOUIS, MO., U. S. A.

Mention the CLAY-WORKER.



Written for the Clay-Worker.

### SOME KINDLY ADVICE.

A Few Timely Hints to an Inquiring Orator. How to Catch the Convention.



MR. PLATITUDINOUS PLUNK.  
MY DEAR SIR:—Yours of the 'steenth at hand. So you have been invited to address the Seventh Annual Meeting of the National Brick Manufacturers' Association at Louisville, have you? Well, I congratulate you, I'm sure. And you're going to address the meeting on the subject of "The Posthumous Brick From an Æsthetic

Standpoint," and you want an assortment of advice from me? Well, well.

Are you going to read your little piece from manuscript? If you are, be sure and get enough manuscript. About 13,000 words from the end don't fail to get in something like this: "I shall detain you but a few moments longer." Then within 5,000 words of the final



rattle off the rest of the speech.

If your pages become mixed while delivering your oration don't try to rectify the mistake—go right on as you find the pages. Your listeners will not notice the break, but will give you increased credit for profundity. Write on thin paper. Thus when you pull the wad on the audience they will think it only a short speech of five or six hundred pages. This would be a great disappointment to your hearers, and this is where you'll fool 'em.

I have sat out a speech before this and watched with hazy fascination a speaker yawp from notes, and lay down page after page. It seemed there could not be more than two or three pages left, yet that speaker went right on for hours, (perhaps a little less) and yet that slug of manuscript in his left hand never grew less—only the audience grew less. I didn't dare escape for fear of getting fired—it was my boss who was doing the talking.

Also, Mr. Plunk, I would advise you to sour. Get way up into the clouds. Electrify your audience with the superabundance of your simultaneous oratory. Get in the sockdollergest words you can find in the dictionary. Be sublimely redundant and magnificently superfluous. Get some good bold latin quota-

tions out of the back of the dictionary and when you get them off pound heavily on the table, thus if your latin pronunciation is a little wobbly it will be less noticeable.

But before you do any of these things try your speech on a dog—your own being preferable—at all events pick out a dog of a kind, amiable disposition. Read to him your speech until he begins to show traces of intense melancholy, or have fits. You can sometimes depend on man's most faithful friend, namely his nibs the dog, when all others have told you to "break away," or

"hire a hall"—that is, some other hall than the one you are talking in.

Do not forget to make your speech long and extraneous. It's the style, Mr. Plunk, and surely you wish to be in style.

CHARLES LEDERER.



sentence, you might remark: "And in conclusion let me say only this." At about 2,000 words from the last period, say triumphantly, "Gentlemen, I thank you for your attention." Get that off even if only the janitor is left in the hall. Then follow that up with, "I have but one more word to add," and then





# No. 10 Upright Machine

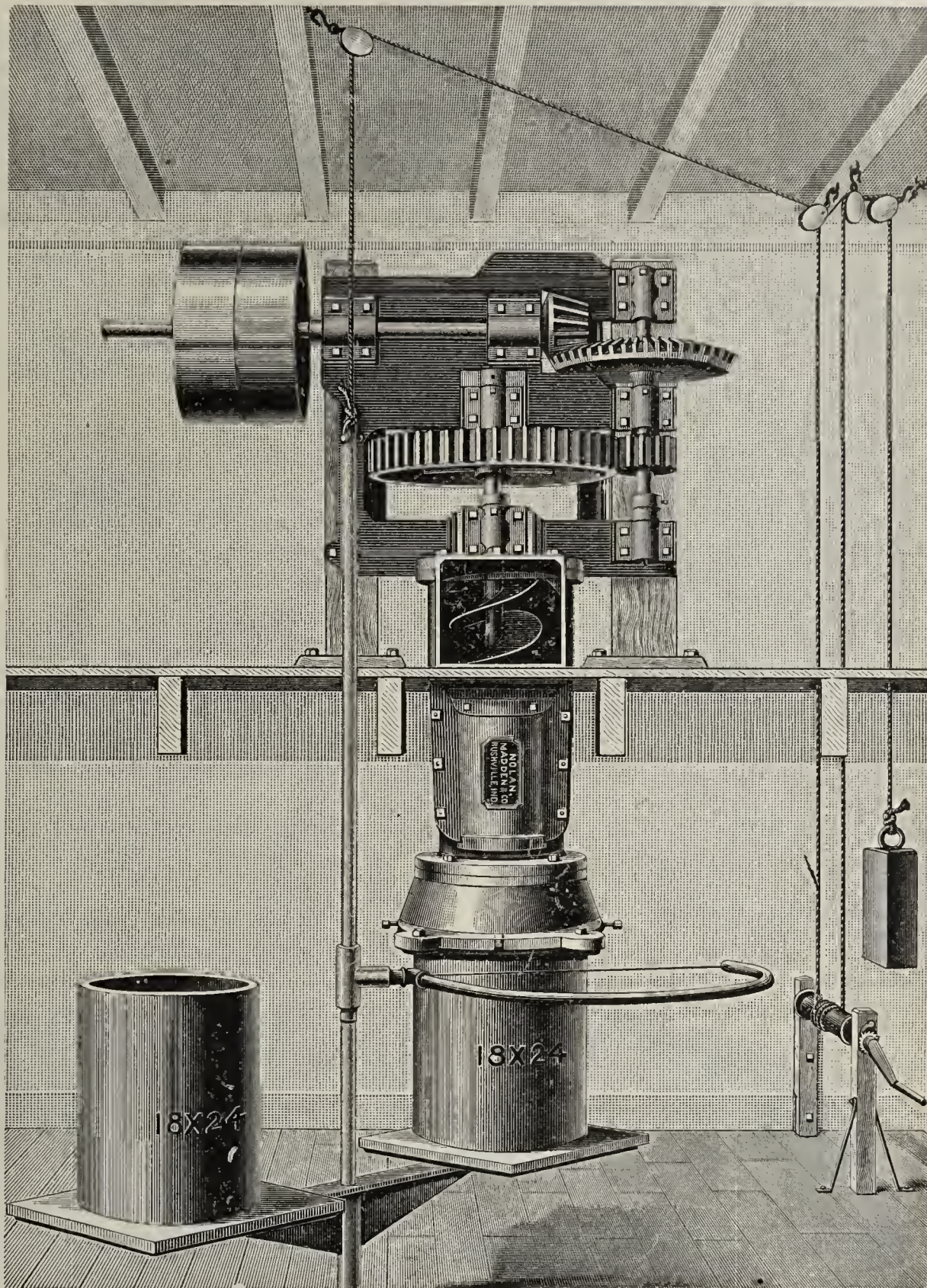
For the Manufacture

—OF THE—

## Larger Sizes of Tile

Including Tile from 10 to 20 Inches.

This Machine has been on the market for three years and has been a success beyond all expectations. It is made from the strongest pattern and built after the most improved style.



Any parties wishing to add a Machine for large tile to their factory will find this is the one that will give them the most and best work with the least power and no breakage. We have seven sizes of Horizontal Auger Machines for Tile, six sizes of Brick Machines with Side Cut Board Delivery Tables, and three sizes of soft clay Brick Machines. Also line of Crushers, Pug Mills, and the best Disintegrator in the market.

We will make it to your interest to write us before you buy and get our prices.

FOR PARTICULARS, ADDRESS,

# Nolan, Madden & Co.,

## RUSHILLE, IND.

[Mention the Clay-Worker.]



## A THRIFTY LOOK.

The CLAY-WORKER makes a brave start in 1893. Our readers cannot fail to note and appreciate the increased number of "goodies" we have provided for them. This is a LARGE number and we believe our readers will find it a meaty one.

Not alone is improvement shown in our reading columns, but scattered through our advertising pages will be found many bright attractive features. The following is a list of

## NEW ADVERTISEMENTS.

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Michigan Brick & Tile Mach. Co., page 102-103.  
Frey-Sheckler Co., page 106-107.  
E. M. Freese & Co., page 110-111.  
The Brick Builder, page 50.  
Paine & Ladd, page 50.

## Boston News Notes.

*Editor Clay-Worker:*

Brickmakers generally in Boston and vicinity have been able to eat their Christmas pie with considerable complacency at the thought of the past year's volume of business. No very hard kickers are found among the clay-workers, and everyone seems very well satisfied with the season's work. It is impossible yet to tell just how many brick have been burned in 1892 in the kilns of Boston and the adjacent cities, as most of the concerns are busy with their balance sheets.

The use of terra cotta blocks and "Haverstraw" brick, which have been steadily increasing in the past few years, has been augmented by the passage of the new building law, which went into effect early in the season.

The capacity of the only terra cotta works in New England, owned and operated by Mr. David McIntosh, under the name of the Boston Fire Proofing Co., has been taxed to its utmost in trying to keep the supply up to the demand. The plant has recently been improved and additional facilities provided for, turning out fireproof blocks of every description.

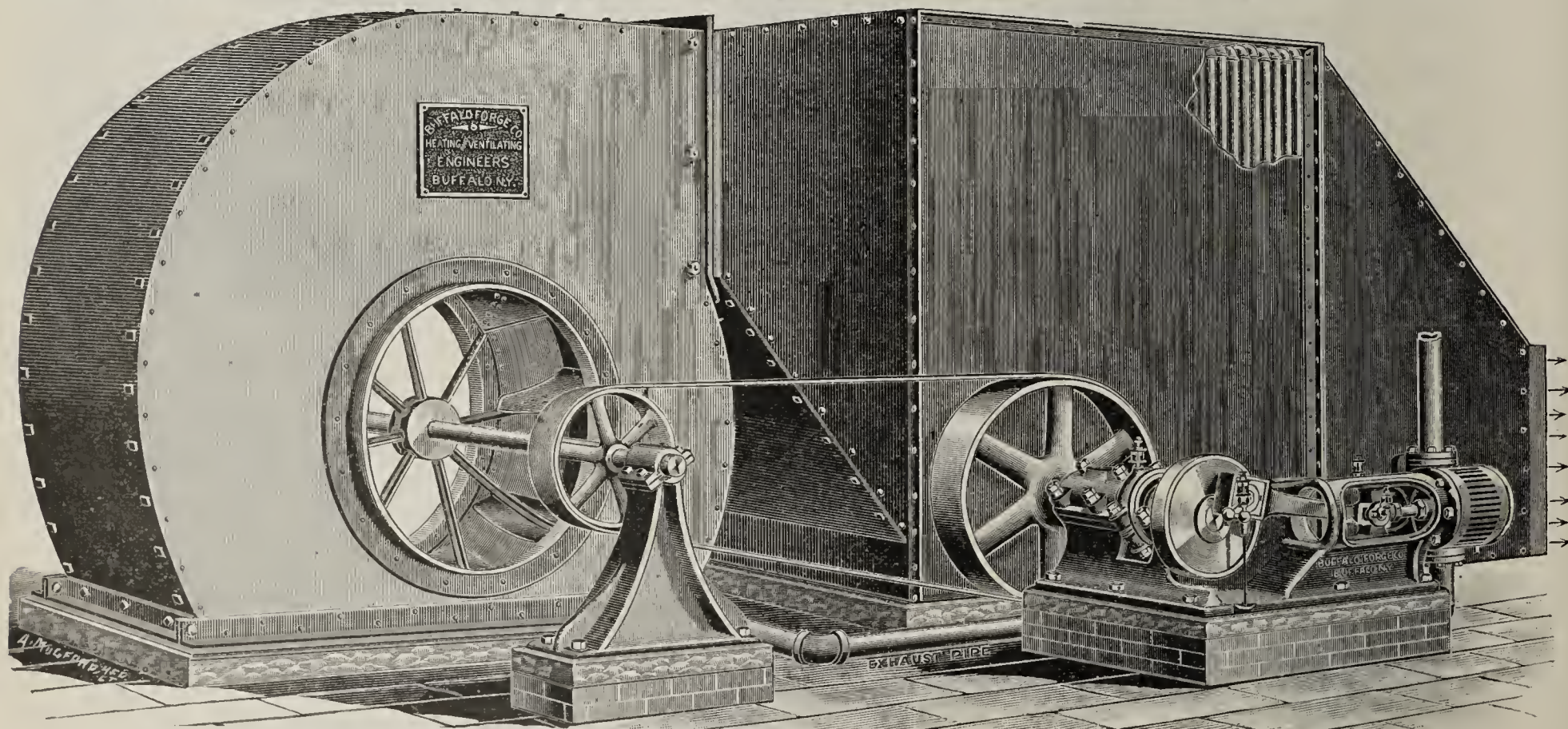
Among the hard brick makers, the Bay State Brick Co. and Parry Bros.,

about as large producers as any in the vicinity of Boston, report business as being fully up to the mark, and the prospects for next year good.

The old concern of Fiske, Coleman & Co. has undergone a change, and the sign over their unusually handsome show-room and office in the Master Builders' Association building, reads, Fiske, Homes & Co. This firm has been making a specialty of fancy brick and have displayed, on one wall of their show-room, samples of brick in imitation of cut and rough stone, of various sizes and colors, which are very deceptive in their appearance. To the ordinary individual who has not been kiln dried and who doesn't always know even clay when he sees it, these samples are the cause of considerable astonishment.

The brickmakers and their workmen have gone through the year without any demonstration on the part of the latter that they were unusually dissatisfied with the prevailing wages or hours of labor, and at present there is nothing to indicate a change in the present amicable relationship between the two. The wages of the men in the yards are about on a par with that of workmen in other branches of trade, engaged in work of similar character, and nine and ten hours constitute a days work.

A. BLUEBLOOD.



This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To CLAIM that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is ONE thing; to PROVE it is QUITE ANOTHER.

The proof that Buffalo Progressive Brick Dryers embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

Mention the Clay-Worker

BUFFALO FORGE CO., Buffalo, N. Y.



# ALL ABOARD!

FOR LOUISVILLE, KY.  
AND THE 7<sup>TH</sup> ANNUAL MEETING OF THE  
N.B.M.A



It is not our desire to in the least detract attention from the deliberations of the Convention. But if any one attending the Convention is interested in the progress of Improved Brick Machinery, they cannot afford to leave the "Falls City" without going to Cook Nist's brickyard at Thirty-Fourth and Bank Street and see the

## BIG WONDER

Brick Machine, or his 26th and Maple Street works and inspect the

## ✻ LITTLE WONDER ✻

Brick Machine.



Our Secretary, W. R. Cunningham, and traveling salesman, W. E. Sidney, will be in attendance and will be pleased to accompany those wishing to make the trip. All are invited.

[See ad. on page 113.]

# The Wallace Mfg. Co.,

FRANKFORT, IND.

[Mention the Clay-Worker.]



## ST. LOUIS NEWS.

The year just ended has been a peculiar one in the brick world. Sales were better than ever before in the history of the trade, but the less said about prices the better. While all the yards have made money the profits represent but an insignificant percentage on the investment and the demand did not let up with the opening of winter, but has continued right up to the present, and still continues. The prevalence of winter construction is remarkable. Every device known is in use to enable bricklayers to continue work in the unseasonable weather, and many of the yards which have always been shut down at this season of the year are kept running.

## STREET PAVING.

There has been quite a discussion in progress between the Street Department and representatives of the brick trade relative to the availability of brick as a paving material. The Street Commissioner, Major M. J. Murphy, has perpetrated some remarkable figures on this subject. He reported to the Board of Public Improvements that he had investigated the question "thoroughly" and found that where brick had been used for this purpose, the results had been most unsatisfactory. "Thoroughly" is a word of very elastic construction, especially when used by a city official in making an official report on the work and investigations of his department, and it must have been in a very limited sense that the Mayor used it in the report referred to. An authority, in speaking on the subject, said that Mr. Murphy confined his observations to the results in a few cities where fire brick were used, and ignored those made of shale clay entirely. There are yards all over the West which produce a brick as durable as granite, and which makes

a pavement as smooth as asphaltum, and as easily repaired as Tilford or Macadam. In the wisdom of divine Providence, the present Commissioner may see the error of his way, or we may get a new Commissioner. At any rate, the question is not settled yet. Where a new street was opened here a short time ago, nine-tenths of the property-holders voluntarily signed a petition asking that it be constructed of brick, but their request was denied.

The Hydraulic Press Brick Company's new plant at Menominee, Wis., is in active operation, and some curious facts in relation thereto come out. At the local yards, and at others south of here, the proprietors have found it extremely difficult to keep their men at work when the mercury got tired and sank to rest in the bottom of the tube, but up there they have been making brick, and good ones, too, with the thermometer at 10 and 20 degrees below zero. It is, however, a closed in yard, well equipped with stoves. They have had no such trouble with the clay as has been experienced here in extremely cold weather; here it has frequently been the case that the clay refused to granulate, and when the brick came out of the press it would crack, but at Menominee they have overcome this difficulty, evidently by a judicious distribution of the stoves.

Work is expected to begin before many days on our new \$1,000,000 hotel. It is not decided as yet whether red or buff brick will be used. If a buff is selected it will be a dark mottled (granite) brick.

The Illinois Supply & Construction Co. report a ready sale for all the brick they have had. The Collinsville works are running very steadily, considering the season. No ornamental or paving brick have as yet been turned out, as

their orders for the ordinary brick have kept the presses and kilns busy.

Anthony Ittner's yard in Belleville is closed down at present for an overhauling, after an extremely busy season, in which all hands have been kept on a hustle.

The demand for terra cotta keeps pace with that for brick as most of the sales of the latter have been for fine down-town office buildings, and up-town residences.

The prospects for the new year are excellent, as the air is full of building projects, most of which will be carried out. It is expected, too, and certainly to be hoped for, that better prices will prevail. TERRA COTTA.

## HOLLOW BRICKMAKERS.

## A Meeting Held at Canton, Ohio, to Organize a Protective Association.

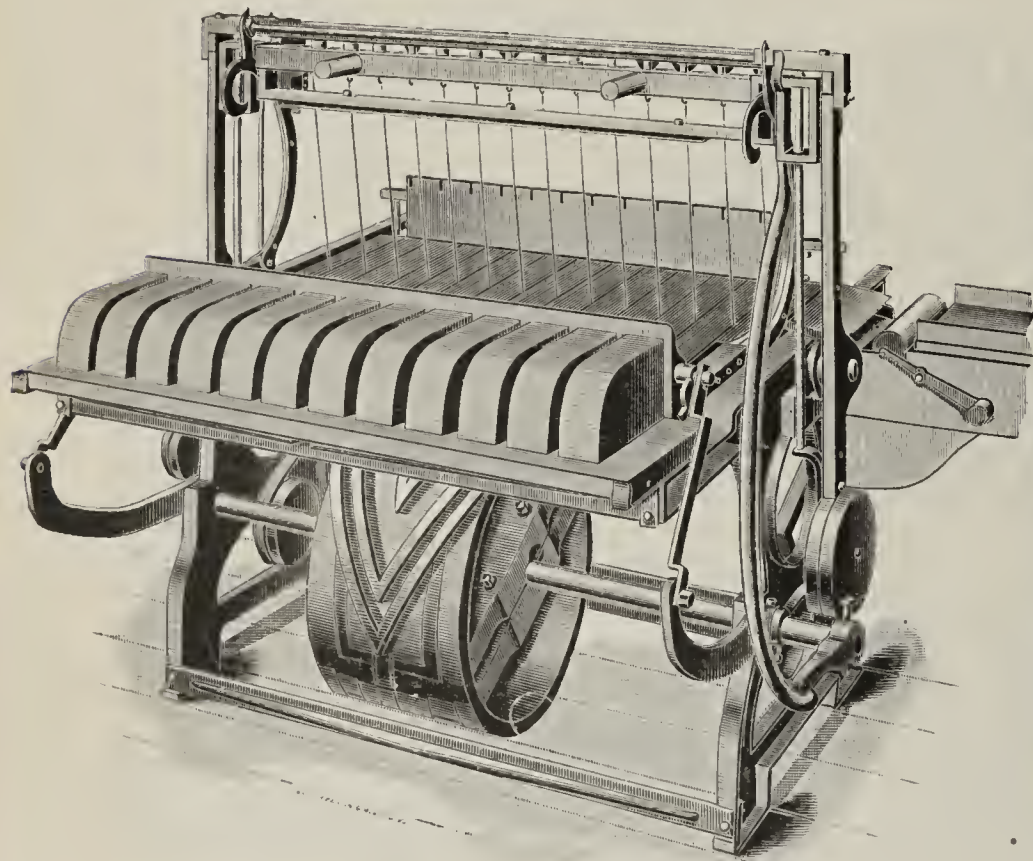
Representatives of fifteen companies manufacturing hollow brick in various parts of this State, met in Canton Jan. 3d, to organize a protective association to maintain uniformity in style and price. Hiram Doll of Canton, was made temporary president, and Tony Haug of Louisville, temporary secretary. An executive committee consisting of A. M. McCarty, John Merly of Canton, Tony Haug of Louisville, Mr. Baird of Salem and John Auld of Alliance, was appointed. Organization will be completed at a meeting to be held at Canton January 14.

## MENTION THE CLAY-WORKER

When writing to Advertisers

MENTION THE CLAY-WORKER

## THE ❖ BARRINGTON ❖ SMOOTH ❖ CUT



A Table that cuts clay from an Auger Machine into brick having an edge and finish equal to the best press. After being cut, the bricks are automatically separated and delivered upon pallets, and need never be handled until dry and ready to be set in the kilns.

A machine which is not for sale, but which is placed out upon royalty; and exclusive right given each party having the same, to territory contiguous to his market, and thereby keeping out ruinous competition.

Send for a sample brick as cut upon this table, and judge for yourself as to its value for doing work for your market.

Please direct all communications to

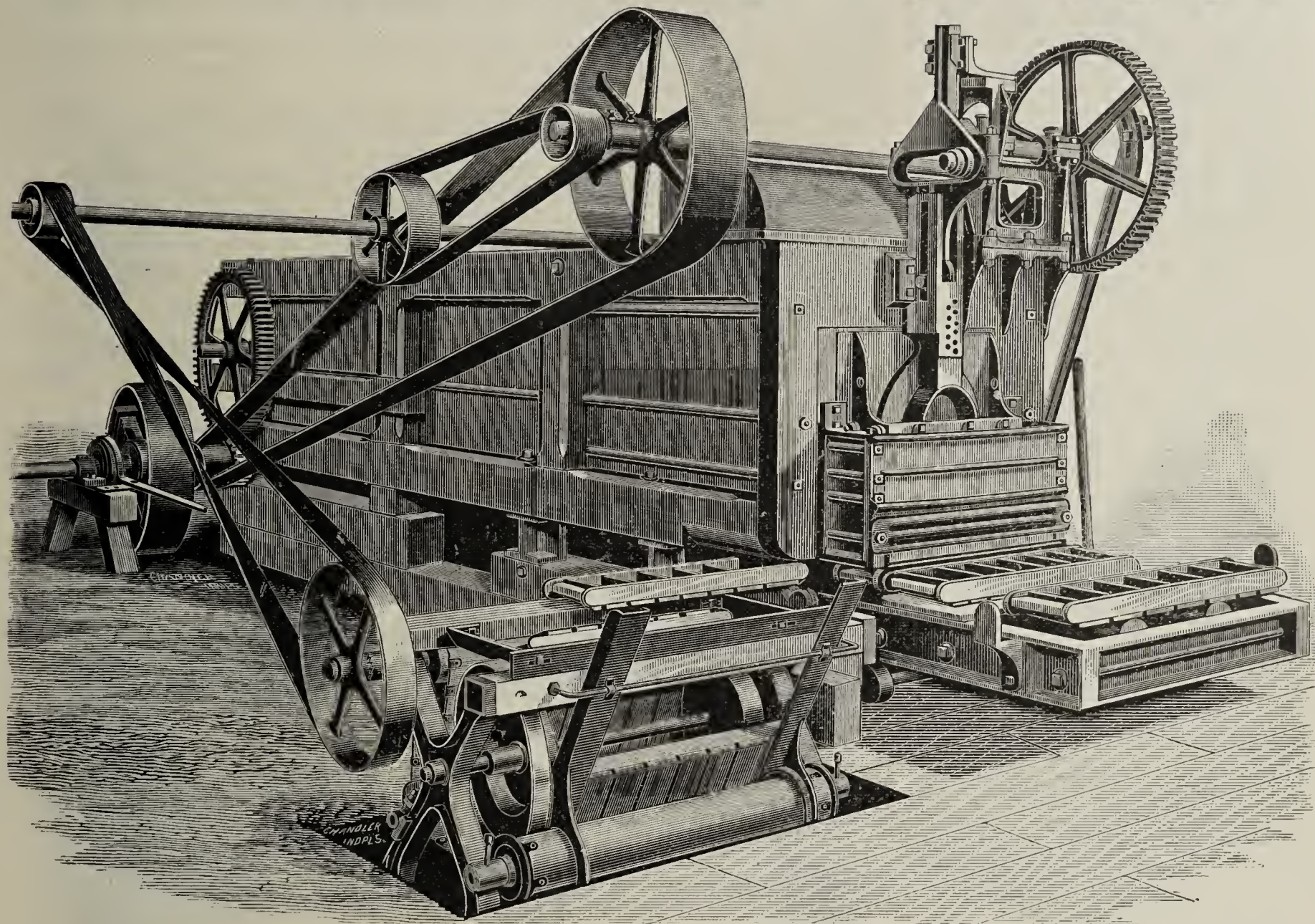
P. L. MONROE, OMAHA, NEB.,

OR

J. A. SNELL, BARRINGTON, R. I.



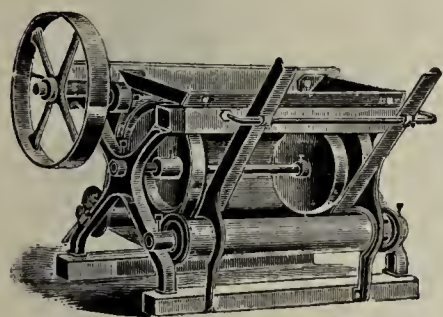
# THE LEADER OF ITS CLASS



## The Potts Horizontal Stock Brick Machine

Will make more Brick at Less Cost than can be done by the Vertical Machine and Extra Pug Mill.

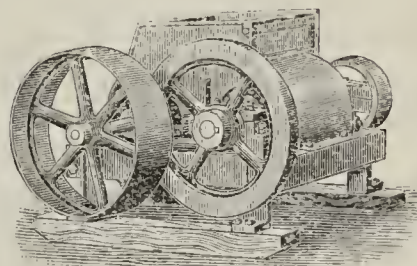
Every brick a perfect one. It will work the clay very stiff and fill a six Brick Mould perfectly. Its great tempering capacity insures brick having *clean, sharp corners*, and smooth surfaces, as well as a brick that will dry without checking or cracking. There is no machine made that will make as dense and heavy brick.



Mould Sanders.



We guarantee our Brick Machines to do all claimed for them. If they fail they to be returned to us at our expense.



Disintegrators.

We manufacture Brick Moulds, Trucks, Barrows, Elevators, Clay Cars, Winding Drums. Write for Prices.

## C. & A. POTTS & CO.,

414 and 428 W. Washington St.,

INDIANAPOLIS, IND.



## FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**WANTED**—A practical brickmaker to take contract for making brick on first class yard capital furnished to run business. Bond required. Capacity 25,000 per day. Address "U." 11 c Care "Clay-Worker."

**FOR SALE**—\$9,800 of the capital stock of an enameled brick plant near Philadelphia, Pa., now doing a good business. For particulars address JOSIAH MILLER, 1219 Callowhill St., Philadelphia, Pa. 11 p

**WANTED**—Situation as superintendent by one who thoroughly understands the manufacture of enameled bricks. Finished bricks made at one fire. JOSIAH MILLER, 1219 Callowhill St., Philadelphia, Pa. 11 p

**I HAVE** a good clay bank, for paving brick. Already tested. Wanted, a company to put in a plant. Will lease or sell. D. COTTINGHAM, 111 p Dubuque, Iowa.

**WANTED**—A good second hand soft mud brick machine. Horse power preferred. Give name of machine condition and price. GEO. RENNER, 111 c 652 Madison Ave, Indianapolis, Ind.

**BUFF BRICK**—Wanted an experienced man to furnish half the capital and build plant to make 50,000 brick per day at Kilston, Pa. Finest quality of clay, thoroughly tested, unlimited quantity at low price. Coal \$1.25. Apply to RED RUN COAL CO., Roaring Branch, Pa. 11 d

**FOR SALE**—One Martin Brick machine, pug mill, one 12 horse power engine and boiler. Will sell for \$550. Address B. F. TOWNSLEY, 11 d Aledo, Ill.

**TO LEASE, CHEAP**—A developed terra cotta clay property on Staten Island, N. Y., for mining or manufacturing purposes, clays make colored face brick, hollow brick, sewer pipe and fancy ornaments for front. There are two dwelling houses and two barns, scales, etc., on property. Apply to R. H. BOYD, 11 c 59 Murray St., New York City.

**WANTED**—Position by temperate man to superintend or burn sewer pipe, fire brick, vitrified paving brick and common brick. 25 years experience. The best of references. Address "C," 11 c Care "Clay-Worker."

**WANTED**—To correspond with party, having capital, desirous of investing in a brick yard in a city of 10,000 population. The only successful brick yard around the city. There is no tile yard here if party has tile machinery and wants to move address MARTIN MASS, 11 c Norwalk, Ohio.

**WANTED**—Position as manager of brick yard by a practical brickmaker and burner. Reference given. Address "C. M. L." 11 c Care "Clay-Worker"

**WANTED**—Position as superintendent of brick and tile works. 20 years experience in the management of brick, tile and terra cotta works. Highest testimonials. Address G. PARKINSON, 11 c Care "Clay-Worker."

Send ten cents in Postage Stamps and get by return mail a hand-somely illustrated Christmas Book of Sketches and Poems by Howard Saxby. C. B. RYAN, A. G. P. A., C. & O. R'y, Cincinnati, Ohio.

**FOR SALE OR RENT**. Tile factory, consisting of two round down draft kilns, dry sheds for 8 kilns, one 40-horse power engine and boiler, one Centennial Tile Machine with lubricating side cut brick die, and one Potts Distint-grator. Attached to factory is a Feed Mill for grinding feed, ear corn, etc., one run of stone with meal blt for making family meal. The factory is less than 300 feet from crossing of three railroads, two of them having side tracks along side of yard. No other tile factory here. Good demand for both brick and tile. All of the above machinery is in first class condition and ready to run. The above factory will be sold on easy terms or will rent to responsible party. Gibson City is a town of 2,000, good schools, churches, electric lights, gravel roads and not a saloon in the county. Address 122 c. EGGLESTON & SPALDING, Gibson City, Ill.

**FOR SALE**. Two horse-power brick machines in good condition. FRED H BROCKETT, 11 c North Haven, Conn.

**WANTED**. A socket and junction maker, a muffle and crucible man, a pipe burner and salt glazer. Good, reliable, experienced workmen can secure permanent situation and good pay. None but first-class men need apply. Write, giving references, to SOCORRO FIRE CLAY CO., 12.2 d. Socorro, N. M.

**WANTED**. Position as superintendent of brick works by a practical brickmaker and contractor of brick work. Understands the two well. A No. 1 all around brick man. Best of reference, and bond as to ability, integrity and honesty. Address, HUSTLER, 12.1 p. Care "Clay-Worker."

**BARGAIN**—A valuable pressed brick plant in the city of Chicago, well equipped with improved machinery, kilns, etc., which has been turning out a very high grade of front and ornamental brick for several years past. Is offered for sale, owing to present owners having other interests which demand their entire attention. The plant is also well adapted for the manufacture of terra cotta. Address "CHICAGO," 11 d m Care "Clay-Worker."

**WANTED**—A young man as assistant superintendent in a well established and successful clay working factory in the east. Must be fairly familiar with the manufacture of superior building brick and terra cotta, and have some knowledge of drawings. It is considered of more consequence, however, that he be energetic, quick to learn and ambitious to succeed in his profession. To the right man it is a good opening. Apply by letter stating age, experience, qualifications, etc., to "BOSTON," 11 c Care "Clay-Worker."

## The British Clay-Worker.

A High Class Illustrated Technical Journal.

PUBLISHED AT 222, STRAND, LONDON, ENGLAND.

It is the **Only Journal** published in the interest of the Brick and Tile Industries.

It is read by every Clayworker at home, and is subscribed to by English speaking peoples in France, Germany, China, U. S. A. and the Colonies.

The subscription is \$2.00 per annum.

## The Potter

A High Class Journal for the Manufacturer and Retailer.

Is read by every English speaking Potter.

Subscription \$1.00 per annum.

Published at 222, STRAND, LONDON, W. O.

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BRICKS  
MADE

AT  
ST. LOUIS, - - MO.  
—AND—  
BELLEVILLE, - - ILL.

UNSURPASSED FOR QUALITY.

OFFICE ADDRESS:

**ANTHONY ITTNER,**  
TELEPHONE BUILDING. ST. LOUIS.

ESTABLISHED 1859.



Mention THE CLAY-WORKER  
When writing to Advertisers  
Mention THE CLAY-WORKER.

.... SEND FOR CATALOGUE ....

OVER 20000 BEST AND CHEAPEST STEAM PUMP KNOWN IN USE

PULSOMETER STEAM PUMP CO. SOLE OWNERS-NEW YORK.

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ESPECIALLY ADAPTED FOR UN-WATERING CLAY PITS.

**THE AERATED FUEL COMPANY'S SYSTEM**

Gives the best oil fire. 200 plants in use. Adopted by large concerns on Terra Cotta, Brick, Pottery and Cement Kilns. Send for Catalogue to Hall Steam Pump Co, Pittsburgh, Pa.

**GILBERT & BARKER MFG. CO.,** Gen'l Agents for U. S., **Springfield, Mass.**



### FIRE CLAY ROOFING TILE.

Made of the best clays. Formed by machinery under heavy pressure. Burned nearly to vitrification. Color bright terra cotta red. Weight per square (100 sq. feet) 700 lbs. Fireproof, Waterproof, Frostproof, Everlasting. A non-conductor, therefore cool in summer. No paint. No cement. No rust. A clean, smooth surface. The best, cheapest and lightest tile roof in the world. No experiment. Roofs now on show for themselves. They are the most beautiful and durable roofs in the country.

Each tile locks on the others. Can be laid at one-fourth pitch and upwards to straight. This company owns the patents in all the States and Territories, and will negotiate for factories to manufacture on royalty. Prices very low for tile. For information, prices, etc., address

**CLAY SHINGLE CO., Indianapolis, Ind.**

## THE ONLY PUMP

For Brickyards, Water Works, Quarries  
Mines, Sewer Contractors, Founda-  
tion Builders, Farmers, all others  
who desire to raise large  
quantities of Water.

## HAND POWER PUMPS

The Most Powerful, Most Durable,  
Largest Capacity, and Works the Easiest  
of any Hand Power Pump made. Low  
Priced.

Will pump water containing Sand, Gravel, Mud  
Sewerage, Etc., **without choking** the Pump.  
In fact will pump water containing anything but  
rocks.

Full information, Catalogue, Etc., Mailed Free. Write

**Boston & Lockport Block Co., 162 Commercial St., Boston.**



This is a Diaphragm Pump

CAPACITY:

3500 to 5000

GALLONS -

- PER HOUR.

**WANTED.** One second hand Penfield No. 7  
Brick Machine. Must be in good condition.  
Write, stating location of machine, condition, etc.  
JULIUS FROELICH,  
1. 1. c. 1235 Indiana St., Sheboygan, Wis.

**WANTED.** Superintendent to take charge of a  
Sewer Pipe Manufactory, one accustomed  
to manufacture from shale. State experience, ref-  
erence and salary expected.  
PEARSON, MACDONALD & CROUYN,  
1. 1. d. 1 Toronto St., Toronto, Ont.

**WANTED.** A good, second-hand steam-power  
soft mud brick machine—Martin or Penfield  
Upright preferred. Give condition, age, location  
and price.  
Box 282,  
1. 1. c. Charlottesville, Va.

**WANTED.** An experienced fire and front brick  
burner, able to keep the kilns in repair.  
Study situation to the right man furnishing first-  
class references. Address,  
1. 1. c. BRICK WORKS,  
Wheatland, New Jersey.

**WANTED.** A practical man who understands  
clayworking, capable of making detail  
drawing from architect's designs, can figure the  
shrinkage of clay, and make plaster paris casts.  
Address,  
1. 1. d. TERRA COTTA,  
Care Clay-Worker.

**WANTED.** Situation as setter and burner of  
brick by the usual method of plain clamp  
kilns by an A No. 1 man. Age 33 years. Acquainted  
with machinery and all brickyard work, having  
served all his life at the business making a study  
of, and giving particular attention to that most  
important branch, viz: setting and burning.  
Address,  
1. 2. 2 p. THOS. EAST,  
Clinton, Ont.

**FOR SALE.** One Improved Horse-power Quaker  
Machine, nearly new, Trucks and Mon ds,  
one Miller Philadelphia Re-press, 7,000 board Pal-  
lets, one Raymond Tempering Wheel.  
1. 1. c. C. J., care "Clay-Worker."

**FOR SALE.** One three-mould Andrus Dry Press.  
Latest, heaviest pattern. In good order. One  
Little Wonder Brick Machine. One Cyclone Pul-  
verizer. Apply to  
MISSOULA BRICK & SEWER PIPE WORKS,  
1. 1. d. Missoula, Mont.

**FOR SALE.** One Raymond's Columbian Re-press,  
latest improved, warranted good as new, used  
only one month. One Wm Fisher (of Pittsburgh)  
7 ft. Wet Pan.  
1. 1. d. GEO. O. R. BINSON,  
Bellaire, Ohio.

**WANTED.** By practical brick man, position  
as Superintendent or Manager of Paving  
or Common Brickworks. Many years' exper-  
ence. Good reference. Address,  
1. 1. c. BOX 83,  
Care "Clay-Worker."

**A RARE OPPORTUNITY.**—A developed terra  
cotta clay property on Staten Island op-  
posite Woodbridge, with a good water front and dock,  
will be leased to responsible parties who will put  
up a factory to make buff brick, sewer pipe and  
fire proofing. The clay is excellent for such work.  
For particulars, address,  
1. 2. 1 c. R. H. BOYD,  
59 Murray St., N. Y. City.

**FOR SALE.**—One new Penfield & Son brick ma-  
chine with pug mill and disintegrator, never  
been used. Two Adrian brick machines, almost  
new. Two steam friction Hoisters, cutting table  
and shafting, belting everything complete. Boiler  
and engine in good condition, used but a short  
time. Or will sell brick yard complete at a great  
bargain. For full information address  
F. G. LOTTERER,  
1. 3 d. Ft. Scott, Kan.

**PACIFIC COAST** Offers an exceedingly good  
chance for a first-class brickmaker who will  
invest a moderate amount of working capital.  
Have a new and complete machine plant, patent  
kilns, good clay, good mark t. No rains for six  
months. Hard brick \$8 to \$9. Annual consump-  
tion 125 million. First-class connections. Good  
credit. A better chance never offered. Will meet  
first class party in the East, or here  
SAN FRANCISCO BRICK CO.,  
1. 2. 1 200p. Chronicle Bldg., San Francisco, Cali.

**FOR SALE.**—Interest in a paving brick plant,  
situated within a few miles of five cities hav-  
ing a combined population of over a million,  
works new, make both fire clay and shale brick,  
which have stood the highest test among all  
comparing works and are now being laid in one  
of the largest cities, and smaller ones as well. In  
order to supply our increasing demand for brick  
and to increase facilities for making same, a lim-  
ited amount of stock will be sold at a bargain. A  
man preferred who can take active part. Capital  
required \$10,000. To parties meaning business, any  
information will be cheerfully given. Address,  
"MONON,"  
1. 3. c. Care Clay-Worker.



**FOR SALE.** Three tile machines, cars, turn table, transfers, etc., outfit of tile factory for \$500. Address, **W. G. KIDD,** Princeton, Indiana. 12. 250 p.

**FOR SALE OR LEASE.** The Norfolk Brick and Tile Company's plant. For particulars, enquire of **DR. F. VERGES,** Norfolk, Neb. 1. 11. 2p

**WANTED.** A good second-hand dry press brick machine, preferably a Boyd Press. Please state capacity, order and condition and lowest price. Address, **C. SIEDLER,** 92 Liberty St., New York. 12. 2. d.

**FOR SALE CHEAP.** 60 iron cars and track for Sharer's Improved Dryer. Used only one season. For full particulars, address, **N. A. & J. L. FITZGERALD,** Danville, Va. 12. 6. c.

**WANTED.** A practical superintendent, thoroughly understanding the working of stiff and soft mud brick machines, and setting and burning a Continuous Down Draft Kiln. References required. **D. G. RHOADS & Co.,** Omaha, Neb. 12. 3. d.

**FOR SALE.** One Chambers Brick Machine, built April, 1891. In good order. Capacity from 3 to 40 thousand per day, also one set of conical rolls in fair condition. For particulars, address, **SUMMERVILLE BRICK WORKS,** Summerville, S. C. 12. 2p.

**ATTENTION PAVING BRICK MANUFACTURERS—FOR SALE.** A large body of finest shale of the same nature as that of Galeburg, but superior to it and underlaid with good coal. It has good railroad facilities and is in favorable shipping distance to two of the largest cities in the country. Address, **P. O. Box 402,** St. Louis, Mo. 12. 1 1p.

**FOR SALE.** New Dry Press Brick Machine, capacity 24,000 and 34,000 per day, also plastic machines, capacity 35,000 per day. For particulars address **SAMUEL COLLINGS EAGLE FOUNDRY,** Easton, Pa. 11. f. d.

**WANTED—Position as superintendent and general manager of first-class brick works, making 100 M. or over per day. Either dry press or mud presses, or both. Understand all about construction of yard, kilns and the management of machinery and men. Been making all kinds of ornamental and front brick. Have present situation for the past four years, and can still retain it, but desire to change location on account of health of family.** Address, **TOM KINS,** Care Clay Worker. 11. 11. d.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam. **C. B. RYAN,** Ass't Gen'l Pass. Agent. **H. W. FULLER,** Gen'l Pass. Agent, CINCINNATI, OHIO. WASHINGTON, D. C.

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Besides making Vitrified Stone Sewer Pipe we Manufacture and keep in stock a full line of

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**Kiln Building & Boiler Setting.**

Also Headquarters For

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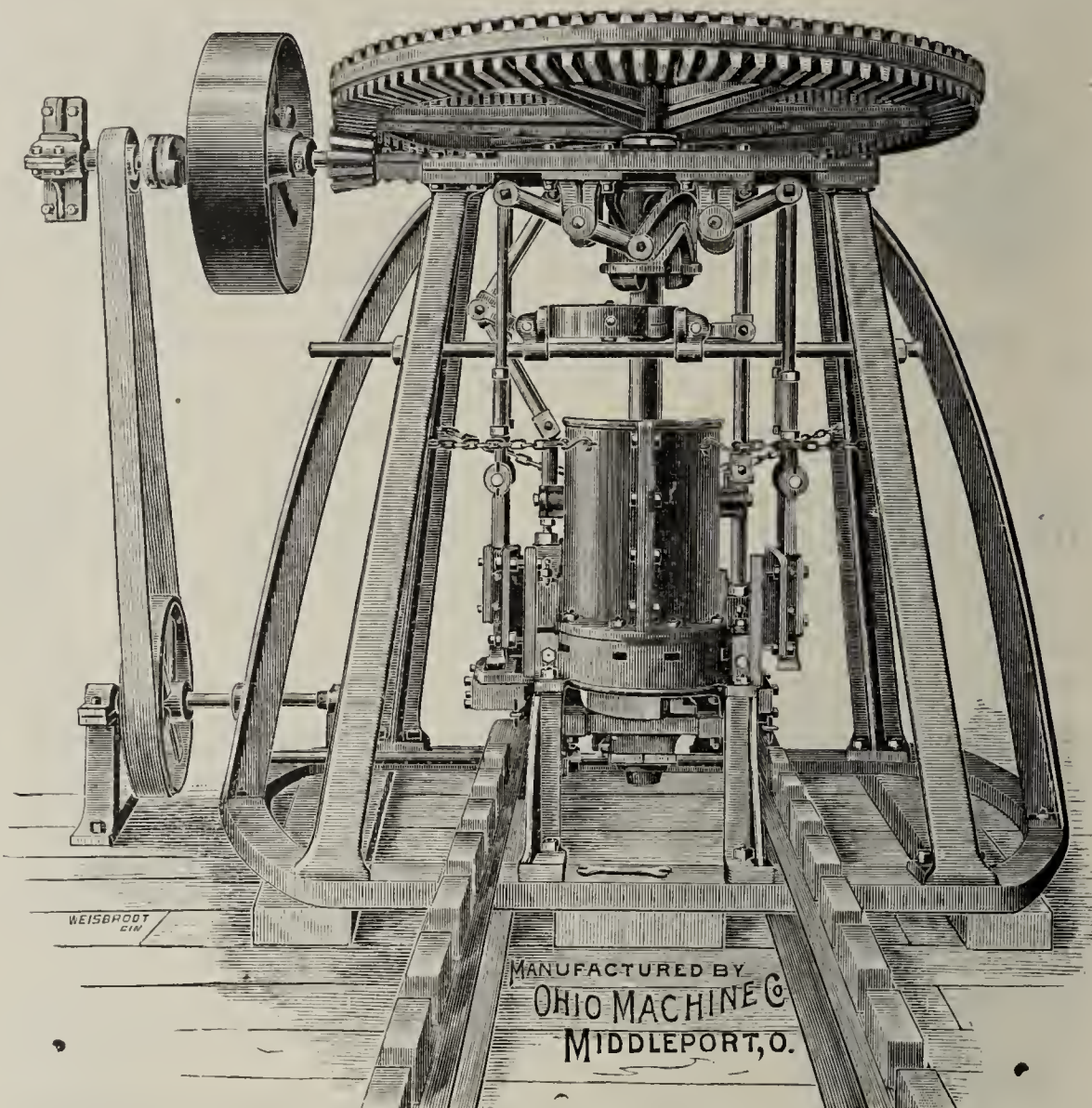
## THE "AJAX" BRICK MACHINE

MANUFACTURED BY

## OHIO MACHINE CO.,

MIDDLEPORT, OHIO.,

Under the very LATEST IMPROVED GRANT-MURRAY PATENT.



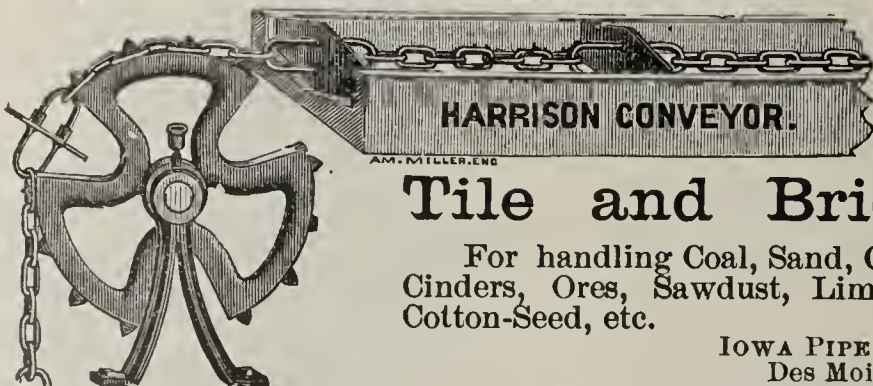
This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with

## OHIO MACHINE CO.,

MANUFACTURERS.

Middleport, Ohio.

[Mention the Clay-Worker.]



## Tile and Brick Yards.

For handling Coal, Sand, Clay, Grain, Tan-Bark, Cinders, Ores, Sawdust, Lime, Cement, Shavings, Cotton-Seed, etc.

**IOWA PIPE AND TILE CO.,**  
Des Moines, Iowa, Sept. 24. 1887.

**Borden, Selleck & Co., Chicago.** GENTLEMEN—We have used the Harrison Conveyor for the past two years. It takes about 90 tons of clay per day from our dry pan and distributes it through our cellar. Gives good satisfaction. Yours Truly, **IOWA PIPE & TILE CO.**

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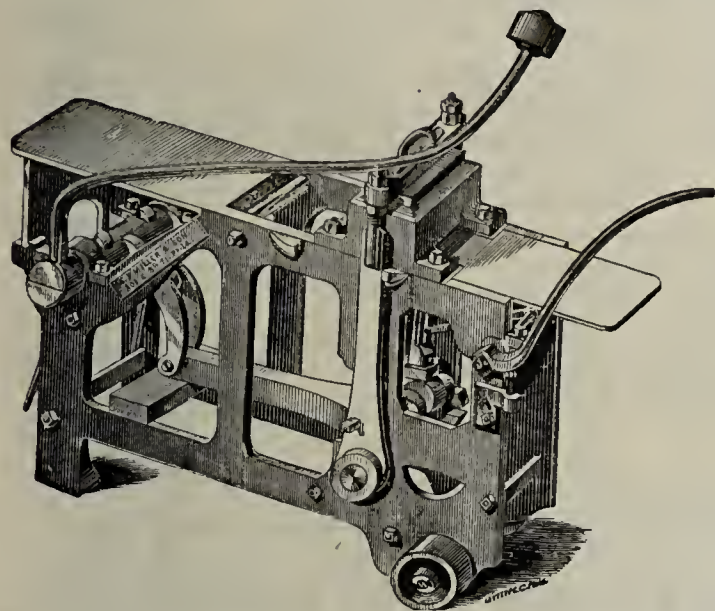
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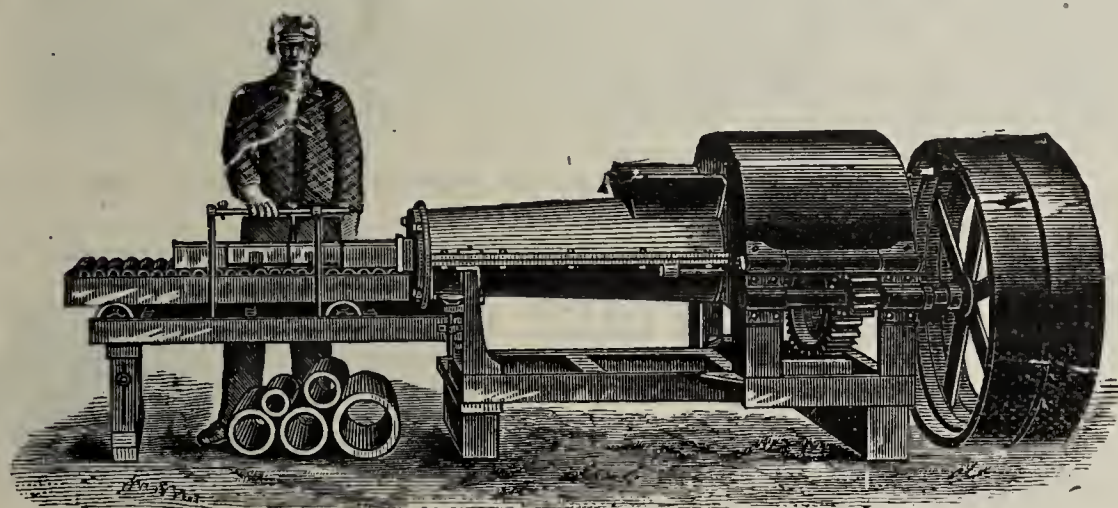
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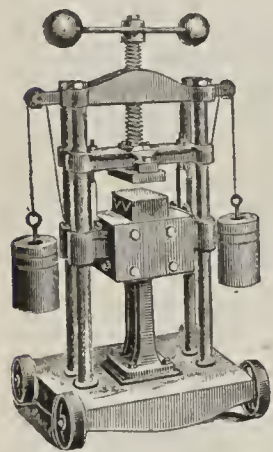
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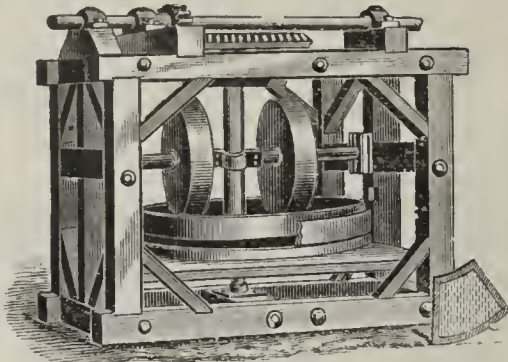
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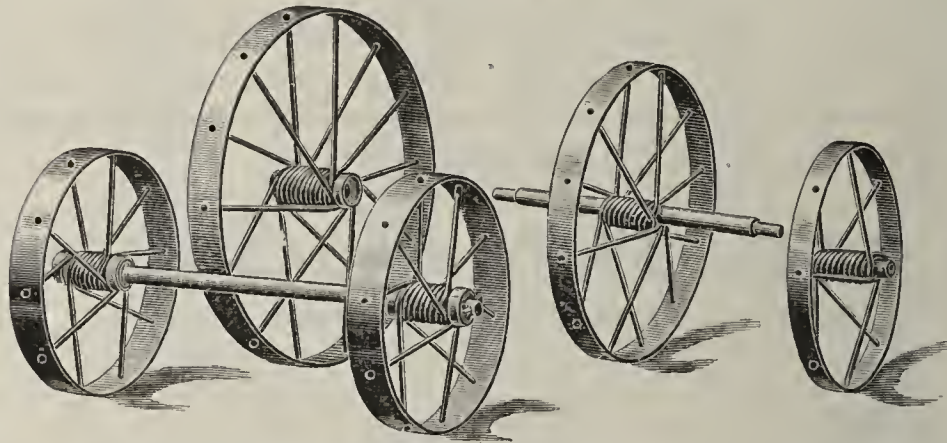
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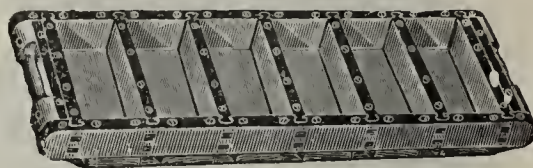
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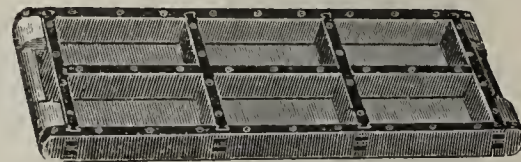
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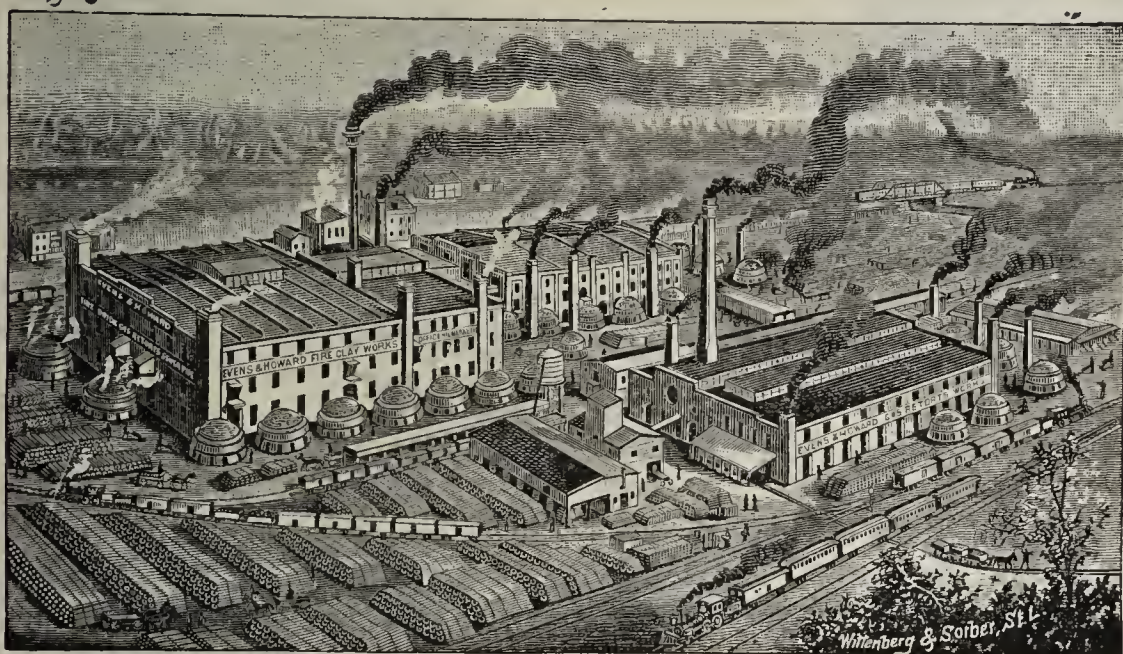




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HORIZONTAL AND VERTICAL PUMPS.  
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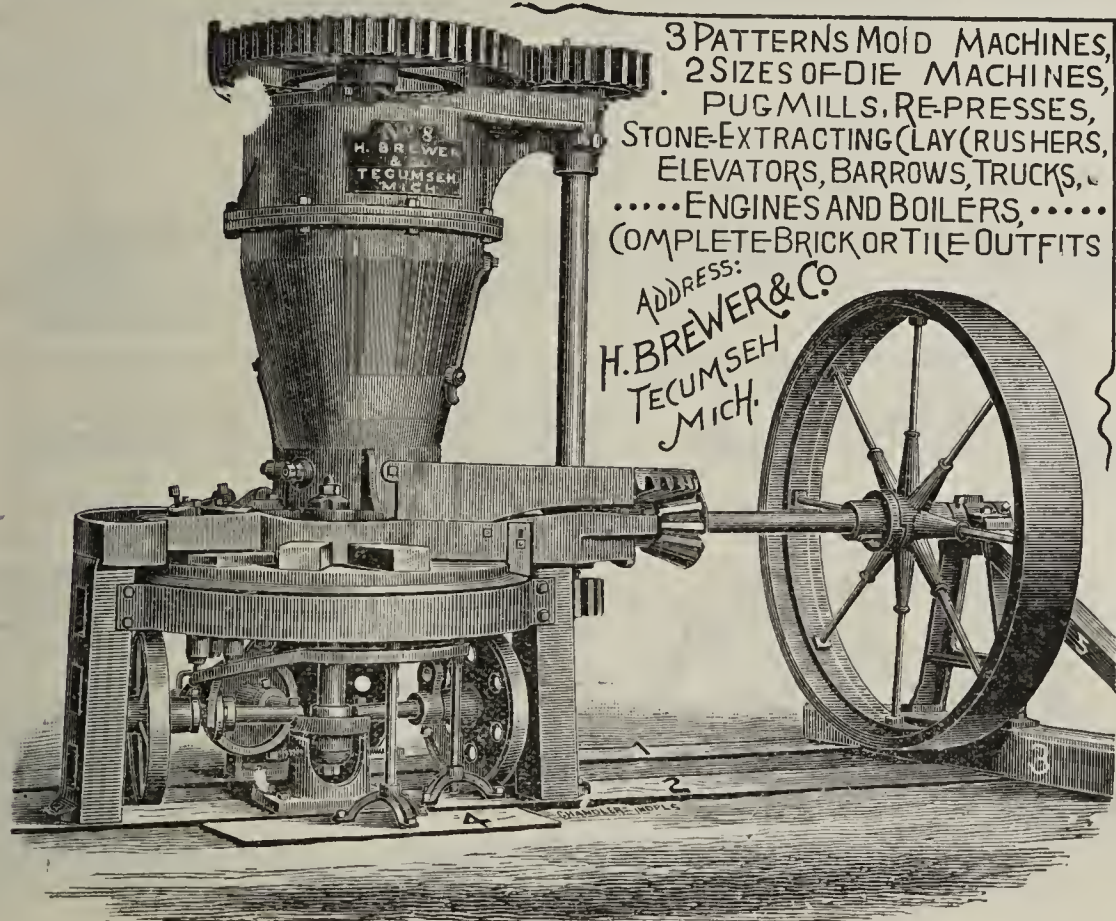
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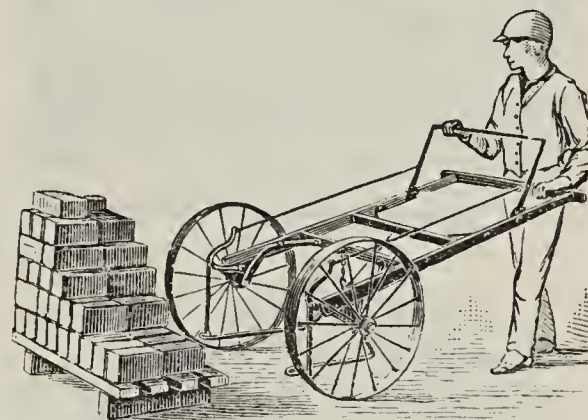


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The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling an time in drying bricks. Can be used in any yard not too steep.

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May 6, 1892.

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MR. J. C. STEELE,  
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DEAR SIR—I agree with your many subscribing testimonials as to the merits of your Improved Brick Trucks. They are indispensable helpers on a brickyard. Yours Truly,  
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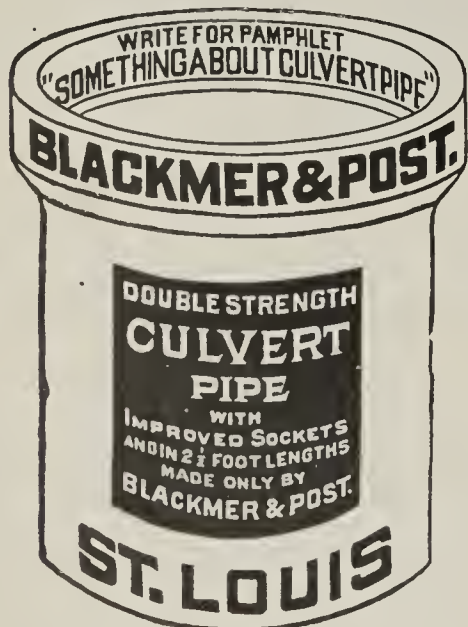
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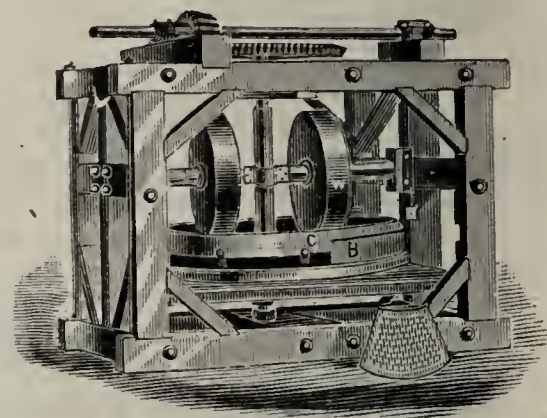
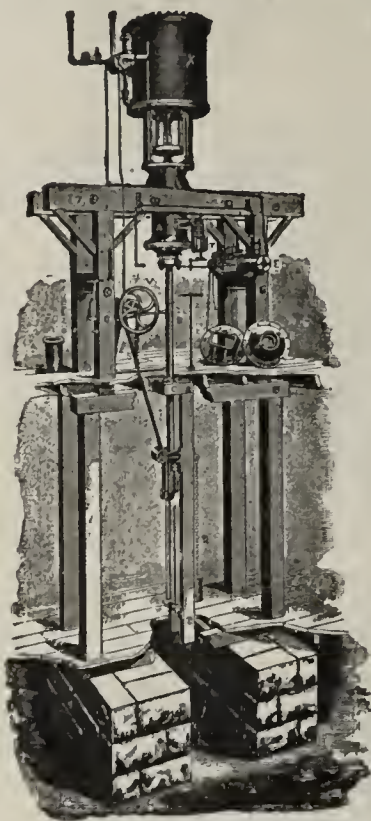



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These Pumps are simple, durable and low-priced.

A large capacity and easy working pump for **Brick Yards, Water Works, Sewer Contractors, Foundation Builders, Miners, Quarries** or wherever it is desired to raise a *large quantity* of water by *Hand-power*. The pump has large valves (*accessible by hand*) and will pump water containing *sand, gravel, mud, sewage matter, etc.*, without *choking* or any *perceptible wear*.

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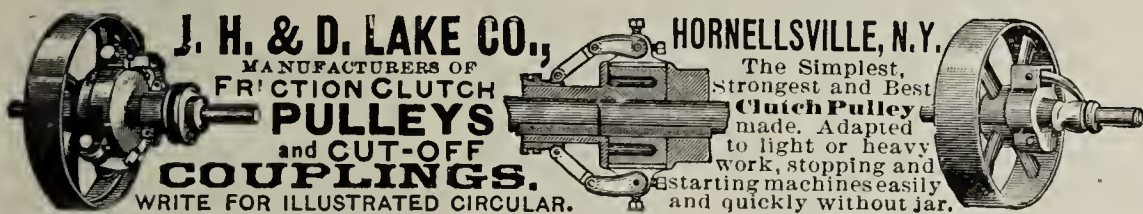




## THE MAN who put straw IN BRICKS

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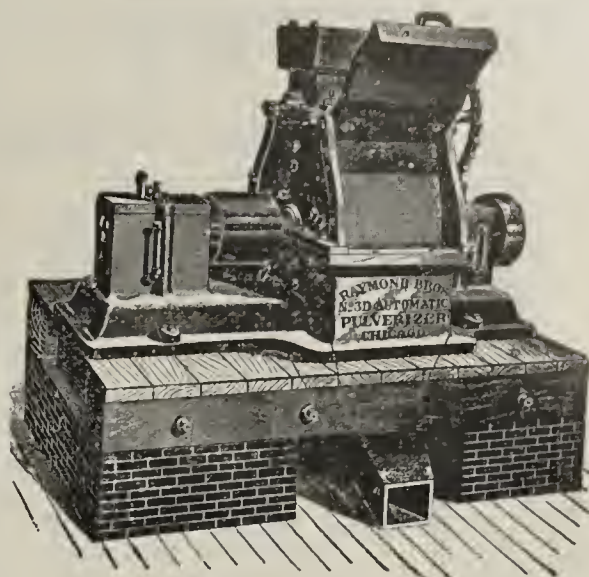
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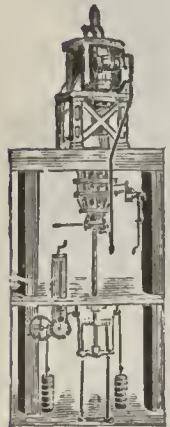
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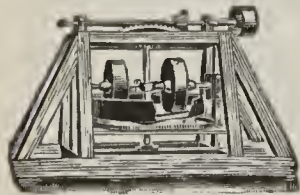


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Every Variety of Iron and Brass Castings  
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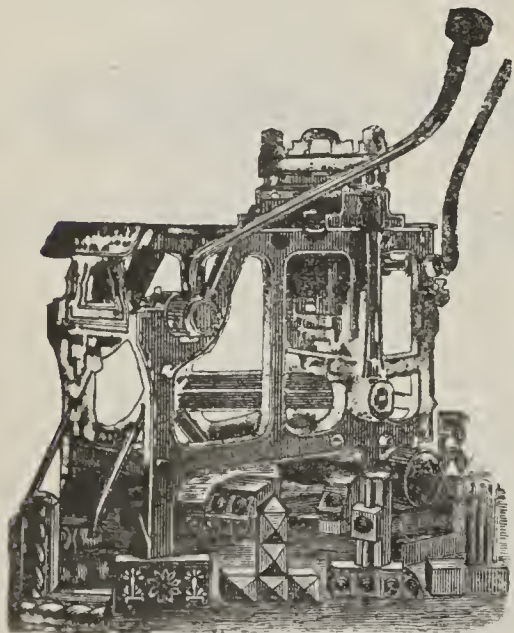
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Boehncke's Continuous Kiln is the result of 22 years experience in building and running of Continuous Kilns on both sides of the Atlantic. It is no experiment.

### Advantages of the Kiln:

The Kiln burns successfully mud brick or dry pressed brick, paving brick, fire bricks, sewer pipes. No waste or loss of brick in burning. Most even burning throughout the kiln. 80 per cent. fuel saved in comparison with clamp kilns.

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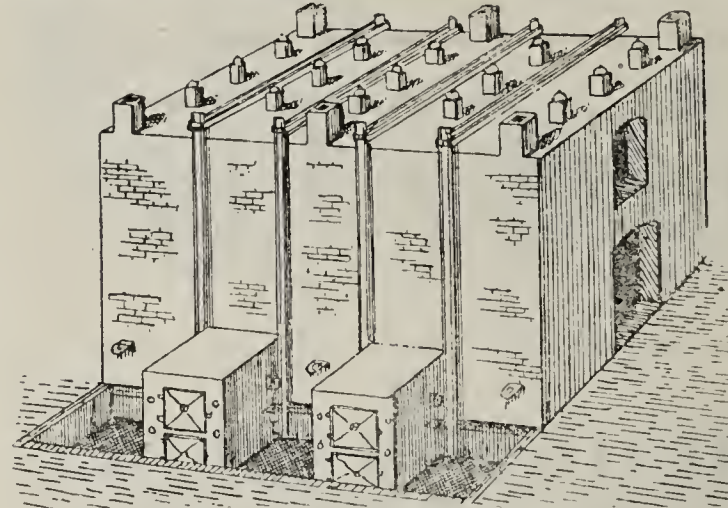


**Boehncke  
&**

McLean's "Common Sense"  
**KILN.**

Up and Down Draft. Pat. May 24, '92

This Kiln is especially adapted to burn all kinds of finer face and front brick. Very cheap in construction, and can be made continuous too. A brick in this kiln burnt even in color and hardness.



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Steam and Horsepower.

THE BEST MACHINE IN  
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The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

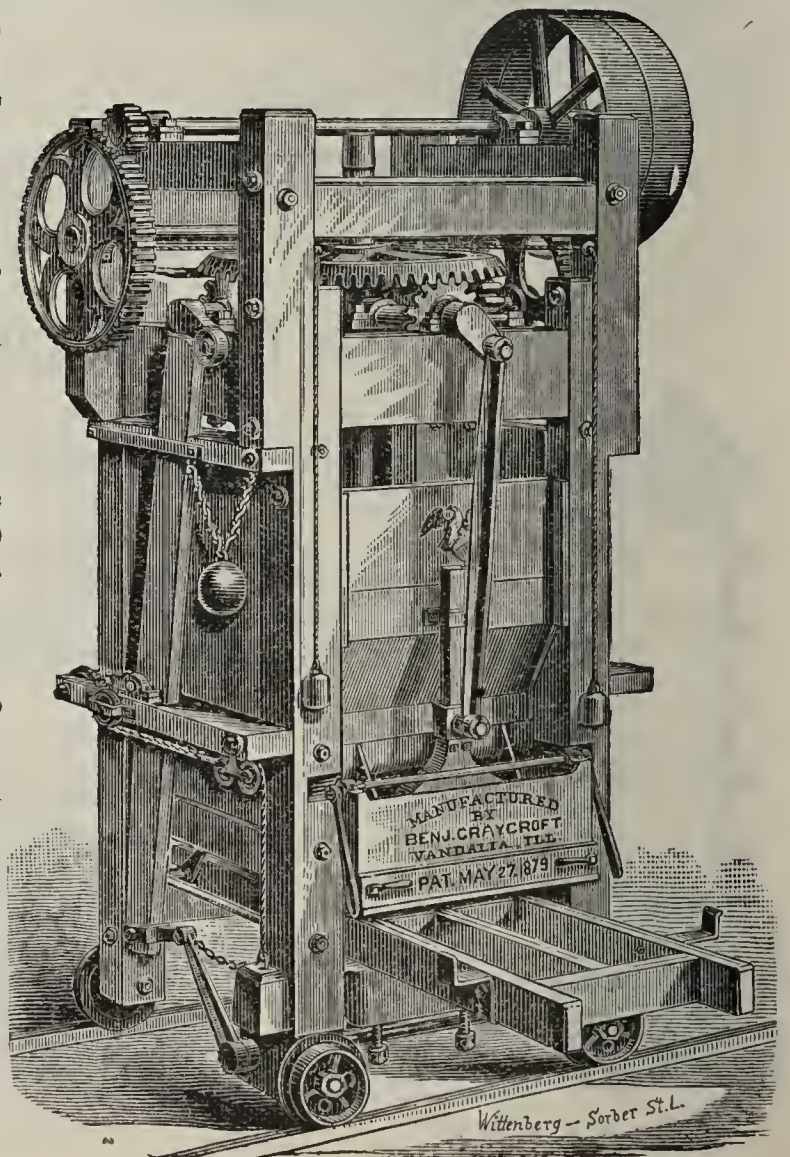
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Manufacturer,

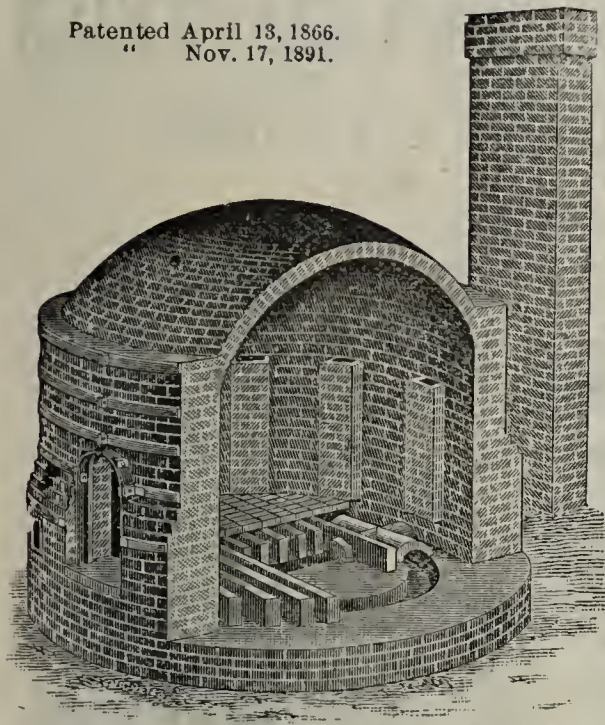
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C. J. CRAYCROFT, Fresno City, Cal., Gen'l Agent for Pacific Coast.





Patented April 13, 1866.  
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### Heads the Procession!

The New Discovery is THE KILN you are looking for if you want THE BEST KILN EXISTANT for burning ALL KINDS of clay products.

ITS SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES AND SYSTEM IN USE. Those who are using it, and they are many, THINK SO TOO.

If you will investigate and learn what the New Discovery CAN DO you will be WITH US.

This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The New Discovery HAS PROGRESSED and is still at it.

I don't KNOW IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

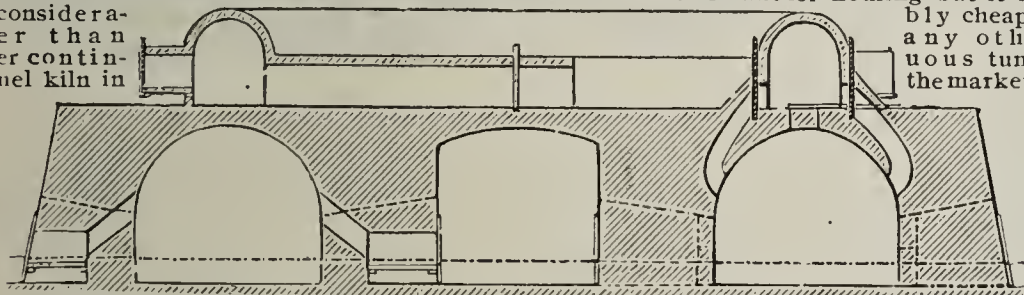
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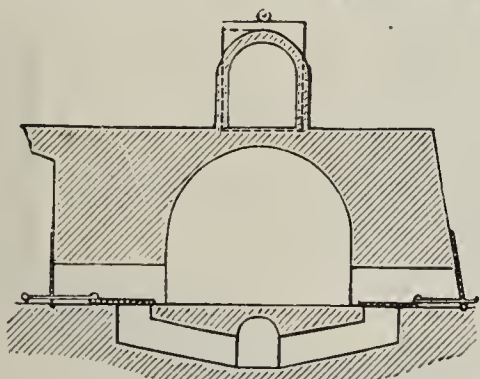
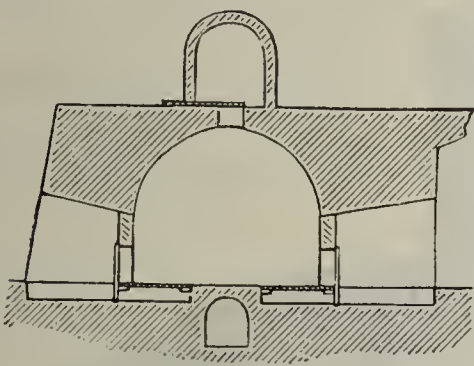
### THE MONARCH CONTINUOUS KILN.

PATENTED AUGUST 5, 1892.

The only kiln ever invented that fires on the top with furnaces. It is especially designed for burning fine wares, such as Terra Cotta, Fine Pressed Brick, Clay Shingles, Fire Brick, Silica Brick. Any desired degree of heat can be obtained with 85 per cent. less fuel than the old style kilns. It has both up and down draft, also horizontal draft. It has both outside and inside draft. Each chamber is fired in three different places and under perfect control. No expensive valve dampers or feed holes required. All in search of a better class kiln should write for circular. The kiln can not be built for nothing but it is considerably cheaper than any other continuous tunnel kiln in the market.



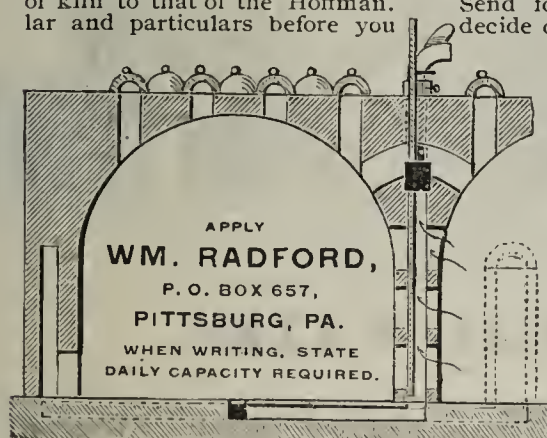
YARD, COUNTY AND STATE RIGHTS FOR SALE.  
WM. RADFORD, Pittsburg, Pa.



### THE RADFORD UP-AND-DOWN DRAFT CONTINUOUS KILN.

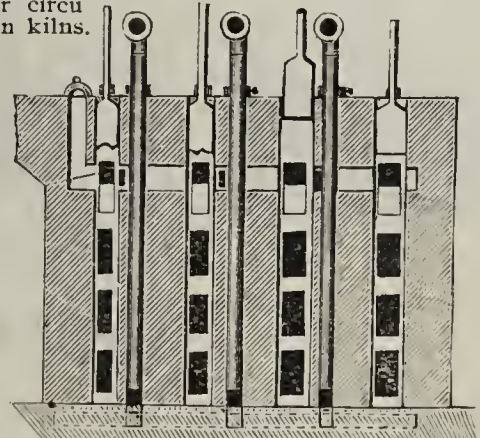
PATENTED AUGUST 2, 1892.

This is the result of 29 years' experience building and working continuous kilns on both sides of the Atlantic. It costs only one-third of other continuous kilns to build it. It is burning successfully dry pressed and paving bricks, soft mud bricks and drain tiles. It saves 85 per cent. fuel over the old style kilns. This is entirely a different type of kiln to that of the Hoffman. Send for circular and particulars before you decide on kilns.

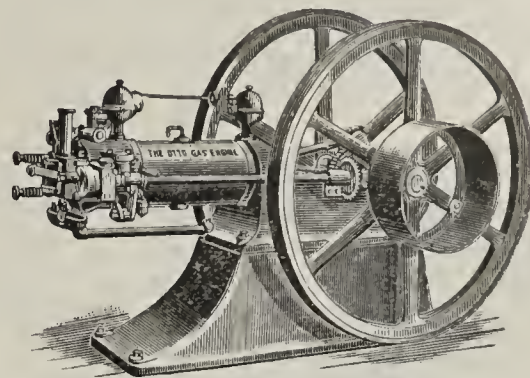


APPLY  
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P. O. BOX 657,  
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WHEN WRITING, STATE  
DAILY CAPACITY REQUIRED.



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## Otto Gasoline Engines.

Cheapest Power for the Trade.

NO ENGINEER. NO STEAM.  
NO BOILER.

Starts at any time at once.

Costs only while running.

## Otto Gas Engine Works,

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PHILADELPHIA, PA.

151 Monroe Street,

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Invites attention to a few facts.

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2nd. Pullman Vestibuled Sleeping Cars are carried on all through trains.

3rd. The employees are uniformly polite and attentive.

4th. All complaints of whatever character receive prompt and careful attention.

5th. The mechanical excellence of the road-bed being constantly maintained, and the construction of the train equipments being of the latest and most substantial character, the highest speed can be made with perfect comfort and safety.

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7th. Trains are run with remarkable regularity.

8th. For the above and other good reasons the United States Government has chosen the Vandalia Line for its Fast Mail Route between the East and the West.

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Between  
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The only line running Dining Cars between Indi-  
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Magnificent Pullman Sleeping and Parlor Cars  
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JAMES BARKER, G. P. A., Chicago.

Mention the Clay-Worker

When writing to Advertisers

Mention the Clay-Worker

## THE YATES IMPROVED DOWN DRAFT KILN

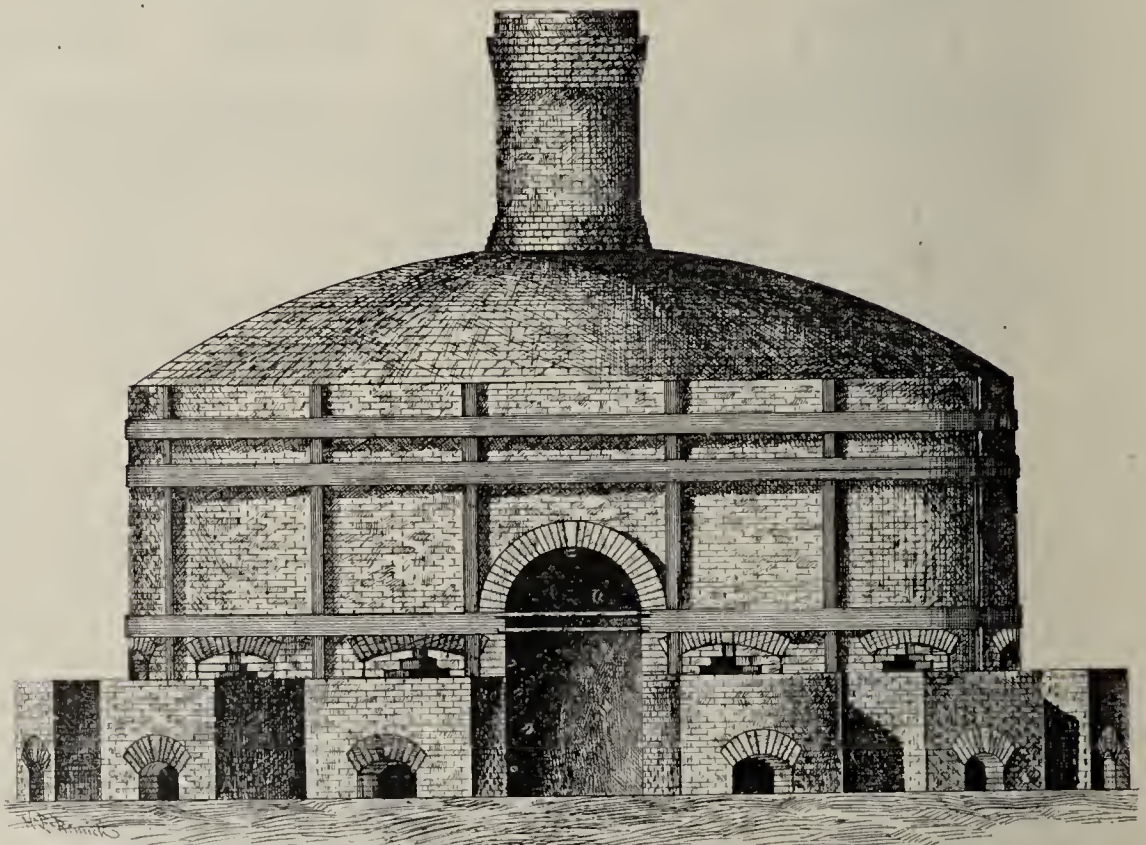
FOR BURNING BRICK OF ALL KINDS.



FULLY PROTECTED BY PATENTS.

These Kilns are producing results that make back  
numbers of its competitors.

Economy in fuel and even burns guaranteed.



ALFRED YATES,

Write for full description. NORTH CAMBRIDGE, MASS.



## Waplington's Regenerative Gas Furnaces

Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of **Pottery and Fire Bricks**, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

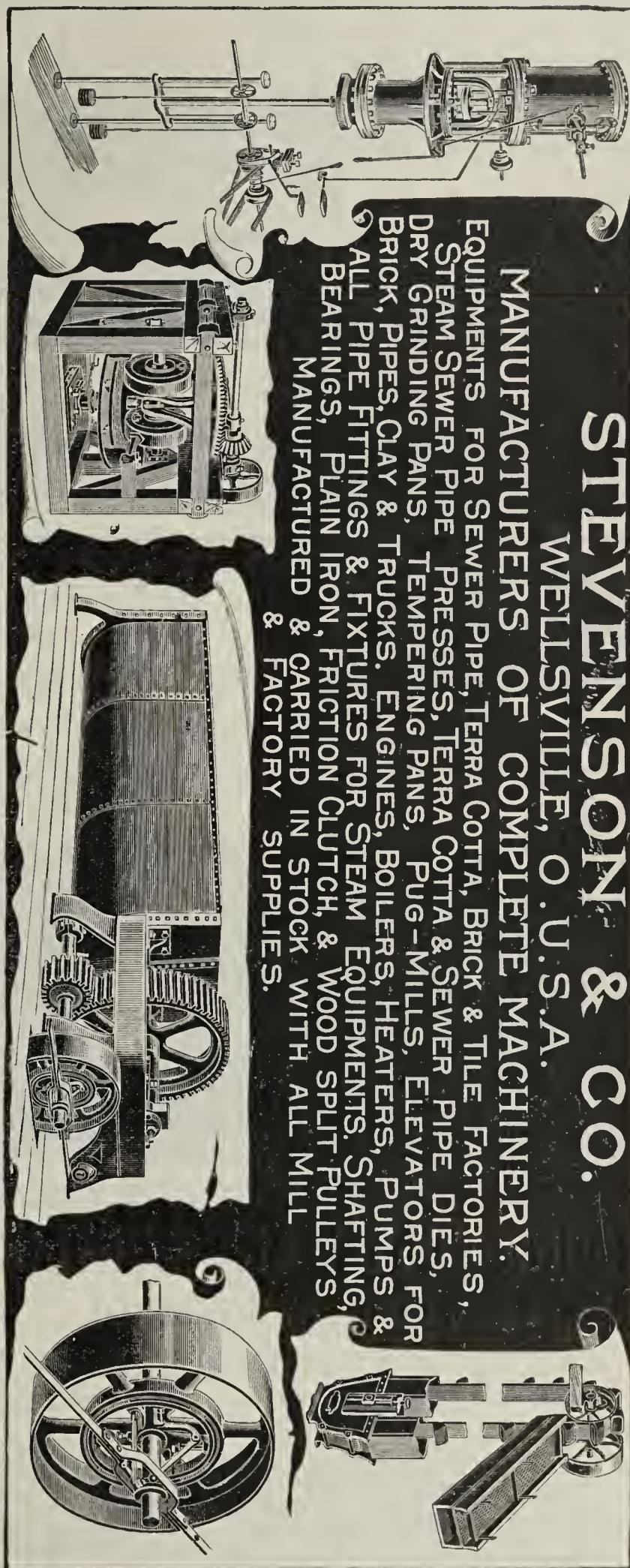
Estimates, specifications and plans on reasonable terms. Plants contracted for on approval to good, responsible parties. Sets of blue prints, 25 cents per set, showing the application of gas to any of the above mentioned purposes.

Send stamp for pamphlet "**Natural versus Artificial Gas.**"

Address,

**WILLIAM WAPLINGTON,**

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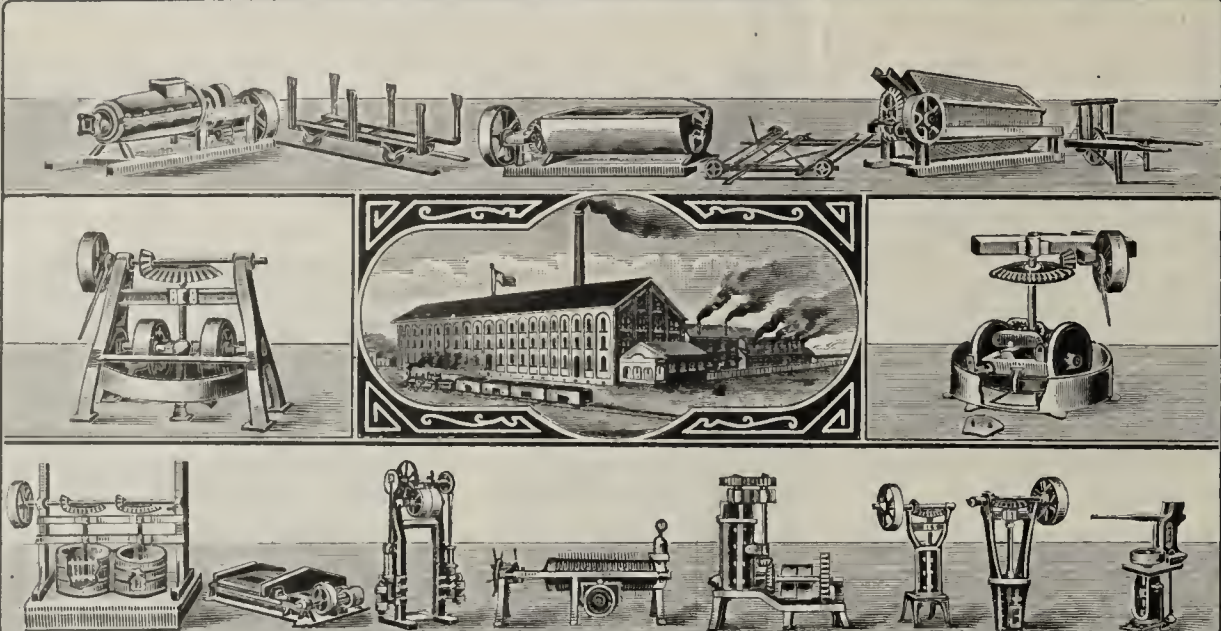
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**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS, FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS, &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS. SHAFTEING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS  
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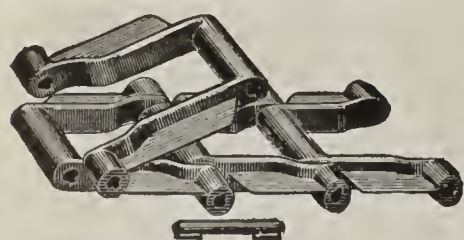


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**BRICK & POTTERY PLANTS EQUIPPED COMPLETE READY FOR OPERATION UNDER ONE CONTRACT**

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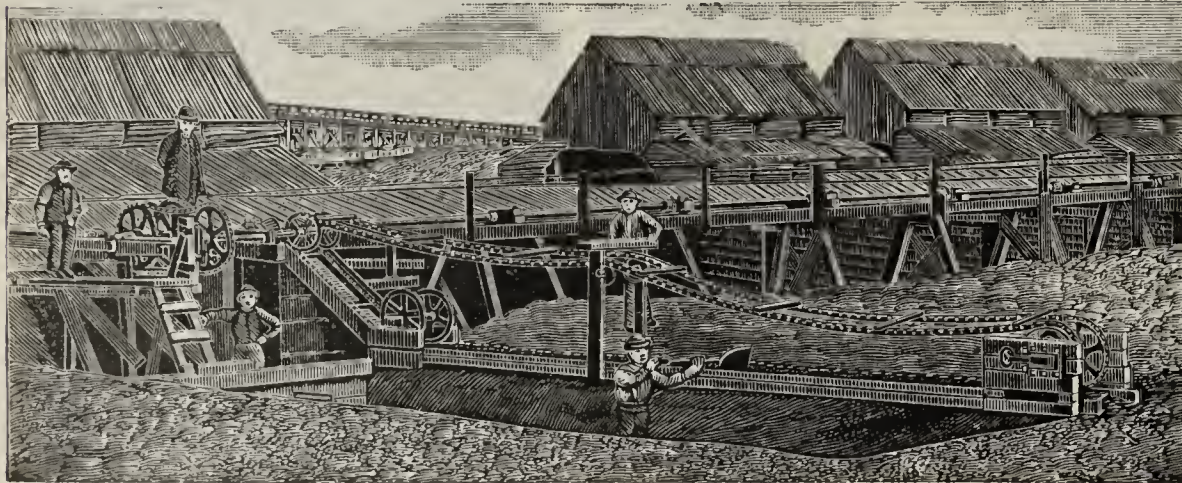
**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,  
APPROVED APPLIANCES FOR . . .

**Elevating, Conveying & Transmission of Power**

64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

**T**HIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
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**A LONG FELT WANT SUPPLIED.**

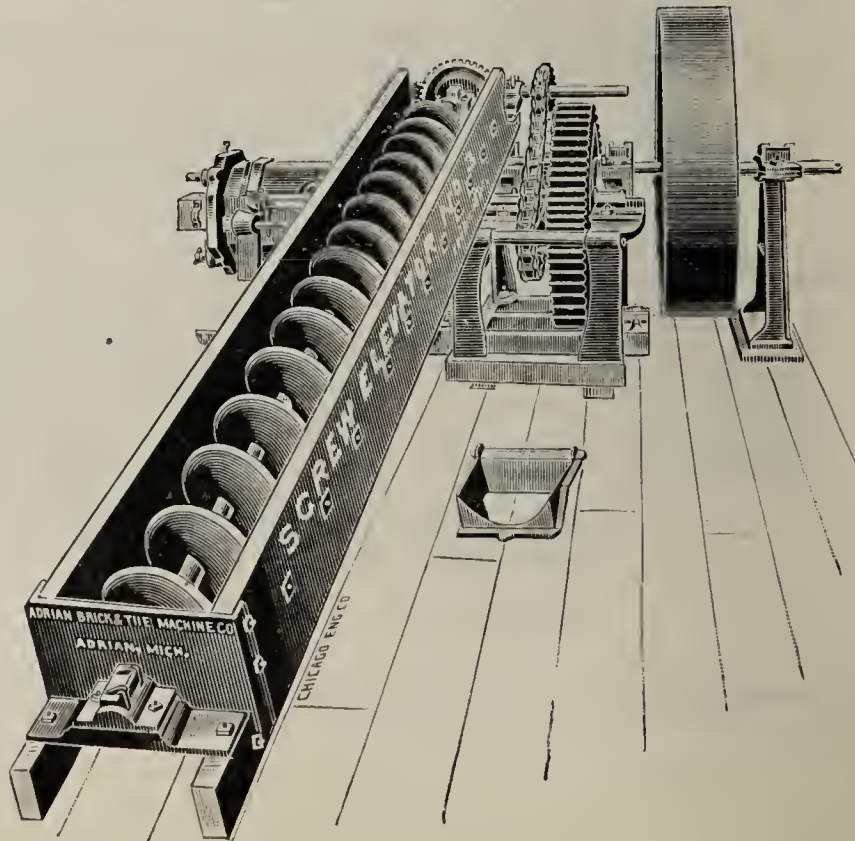
**A SCREW ELEVATOR FOR ELEVATING CLAY.**

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

ADRIAN, - - MICHIGAN.





## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

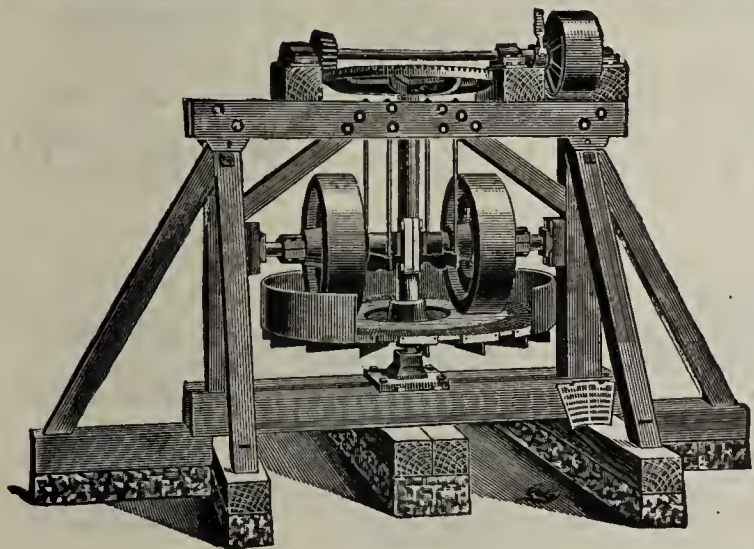
These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

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CORRESPONDENCE SOLICITED.



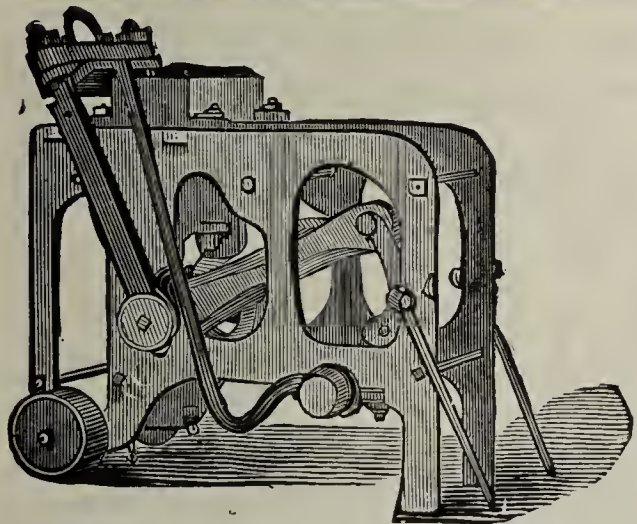
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— 8 and 9 Foot Sizes —

In operation all over the United States and Canada. Send for Catalogue and List of customers.

COMPLETE POWER PLANTS.

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Nos. 1819 and 1821 Germantown Avenue,  
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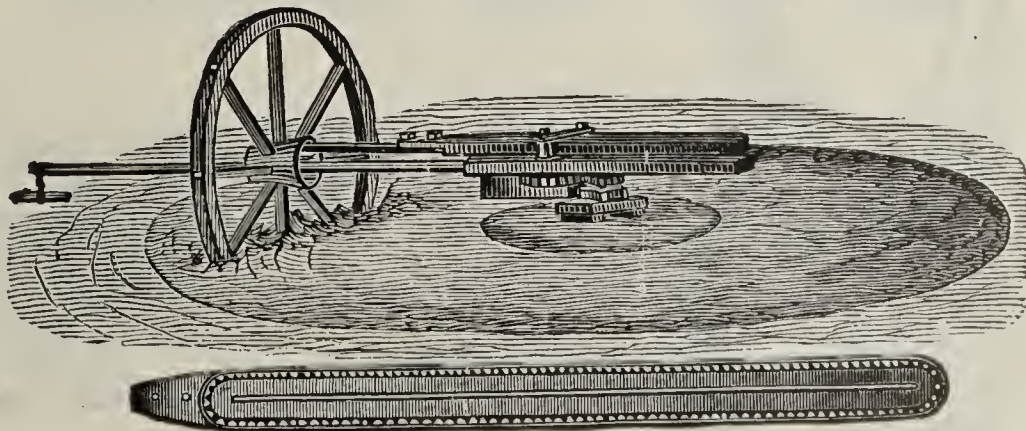
Send for Circular and Price-List.

## Philadelphia Brick Machine Works

—MANUFACTURER OF—

## FIRE AND RED BRICK PRESSES.

Various sizes, from the smallest size up to 24 inches; also, manufacturer of Clay Mills, Tempering Machinery, and all kinds of Brickmakers' Tools.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and is fitted up ten per cent. cheaper.

Mention THE CLAY WORKER



## S. G. PHILLIPS, AGENT AND PATENTEE.

WOODBRIDGE, N. J.,  
—DEALER IN—

"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.

"Air dried" bricks all the year round.  
A new plan of reducing old, approved methods to a System.

This frame enclosure needs no iron pallets.

The INSIDE FAN Steam Dryer.

A cross, spiral current from fan to fan.

Bricks are safely dried in five hours.

No "checking" or discoloration.

NO CHIMNEYS OR BRICK STRUCTURE!

And only half the doors are required.

A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

MORE FANS! LESS PIPES!

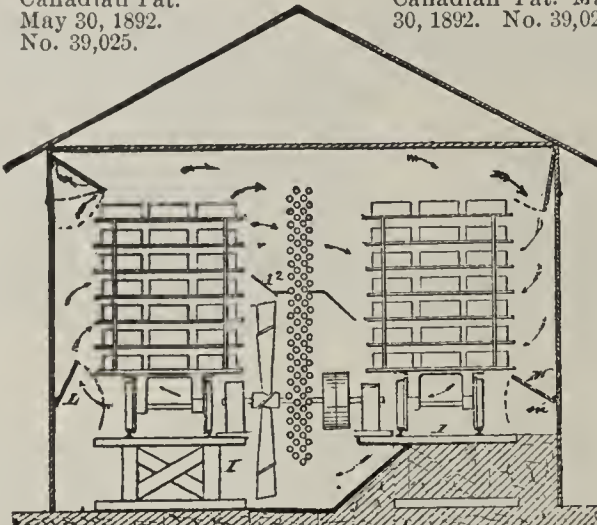
The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live" in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

"SEEING IS BELIEVING,"

Therefore, "at home," this system of drying is replacing others and may be seen in operation at several of our neighboring brick works.

Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.



U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

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Tables of Analyses of Clays, Etc.

Showing the composition of all the principal clays in Europe and America, a book for all interested in clays and their products. Compiled and arranged by Alfred Crossley. Price, One Dollar. Postage Paid.

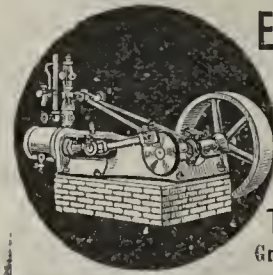
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T. A. RANDALL & Co.,

Pub's "Clay Worker," Indianapolis.

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ENGINES & BOILERS

Stationary & Semi-Portable.

8 to 25 HORSE-POWER.

High in Grade.

Low in Price.

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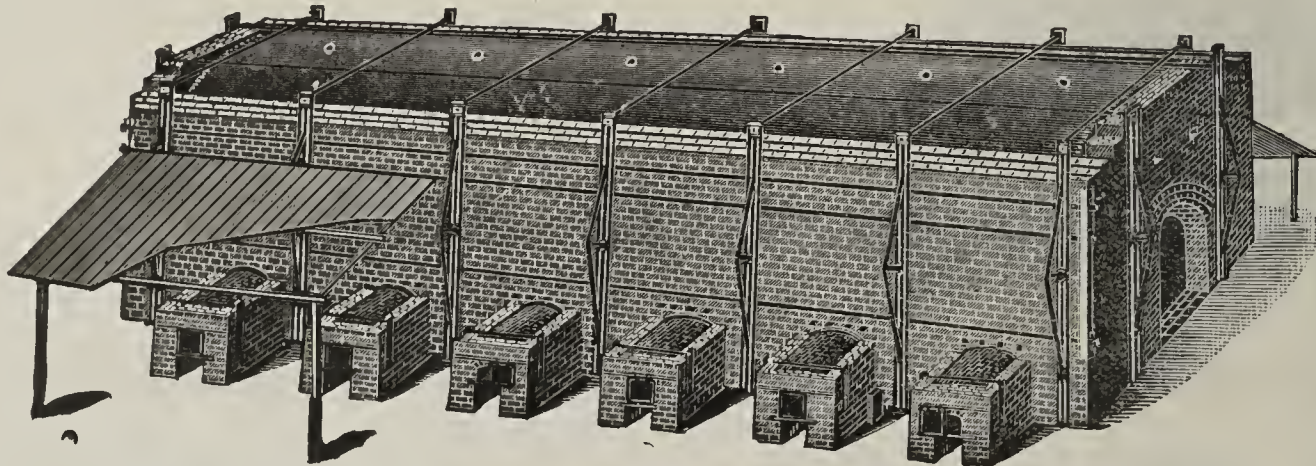
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## THE GRISWOLD PATENT IMPROVED BRICK KILN

With  
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Latest  
Improvements  
Has  
No Equal.

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Works  
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Continuously  
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Change of  
Dampers.

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Box 1419, Zanesville, O.

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**RICK**

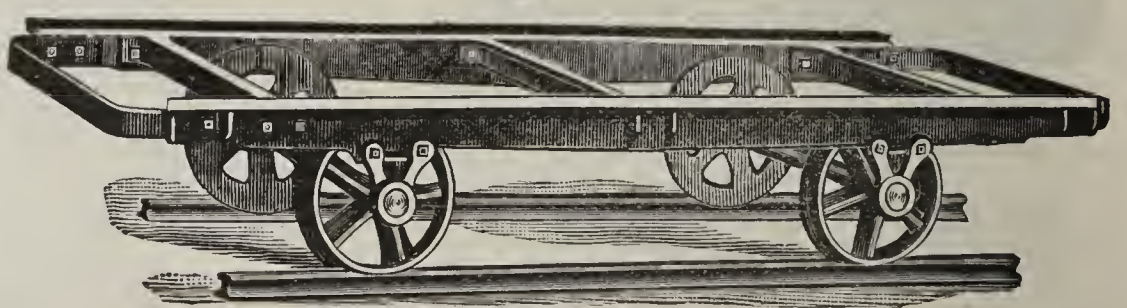
48 Styles.

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Also

Turn Tables,  
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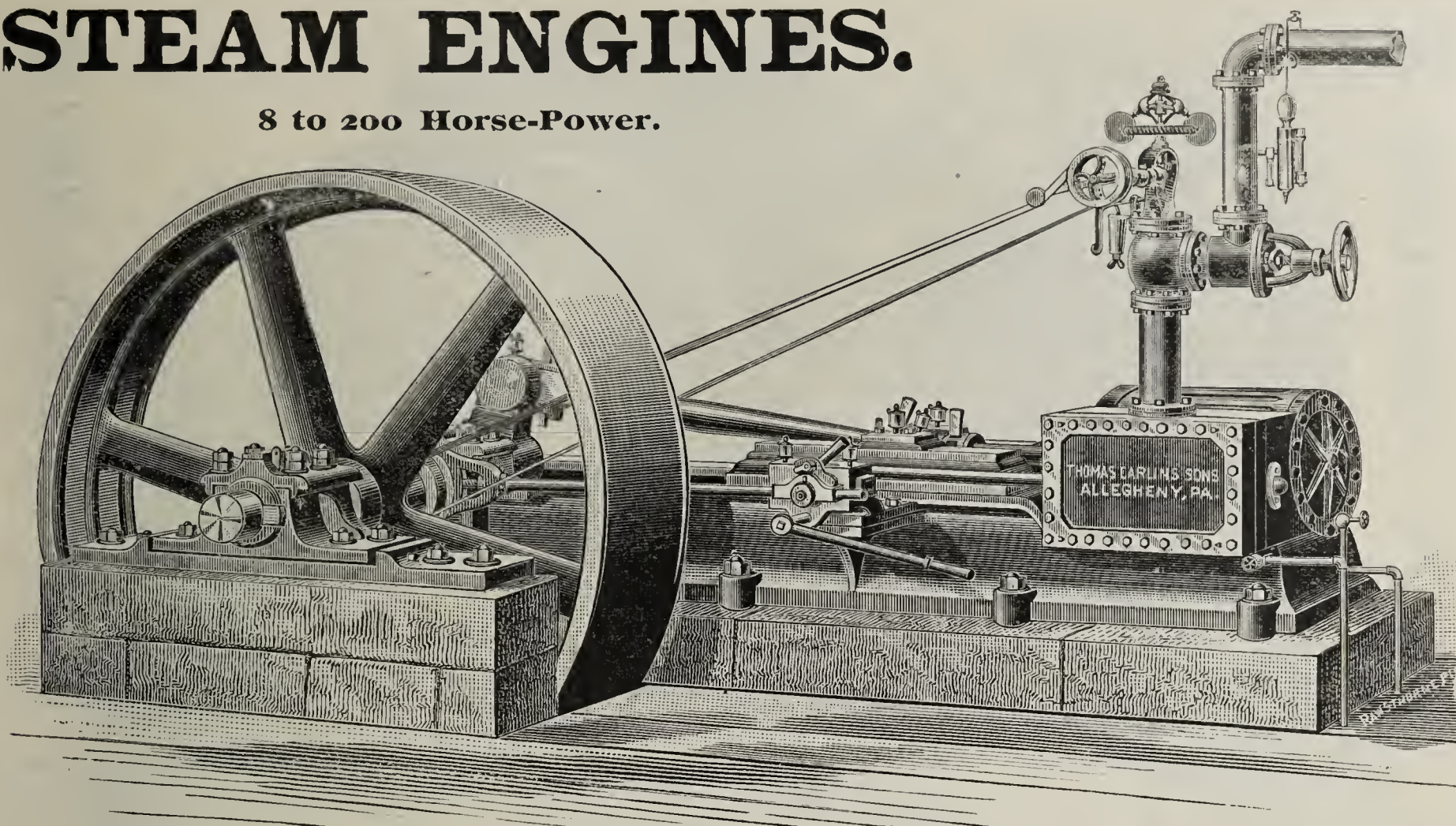
THE WALWORTH RUN FOUNDRY & MFG. CO.,

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8 to 200 Horse-Power.



**PLAIN SLIDE VALVE, VERY HEAVY AND SUBSTANTIAL.**

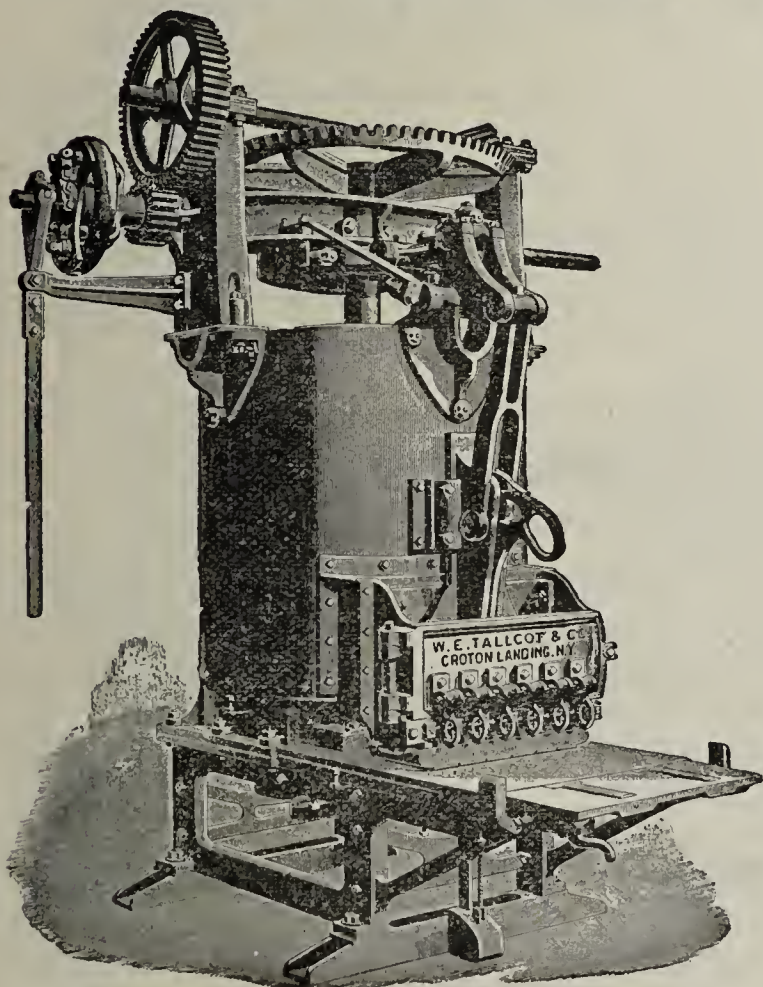
Stationary, Portable and Hoisting Engines for Special Duties.

**THOMAS CARLIN'S SONS,**

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Machinery in stock:  
40 Engines; cylinder 3-in. to 26-in. diameter.  
40 Tubular 2-Flue Portable Boilers.  
4 Grinding and Mixing Pans.

## The "I. X. L." Brick Machine. A Modern Type of Machine.



Extra Strong,  
Handy to Operate,  
Large Tempering and  
Pressing Capacity.

Made in two sizes:

The "Standard" for ordinary brick.

The "Special" for large brick.

Especially Adapted For

**PALLET BRICK WORK.**

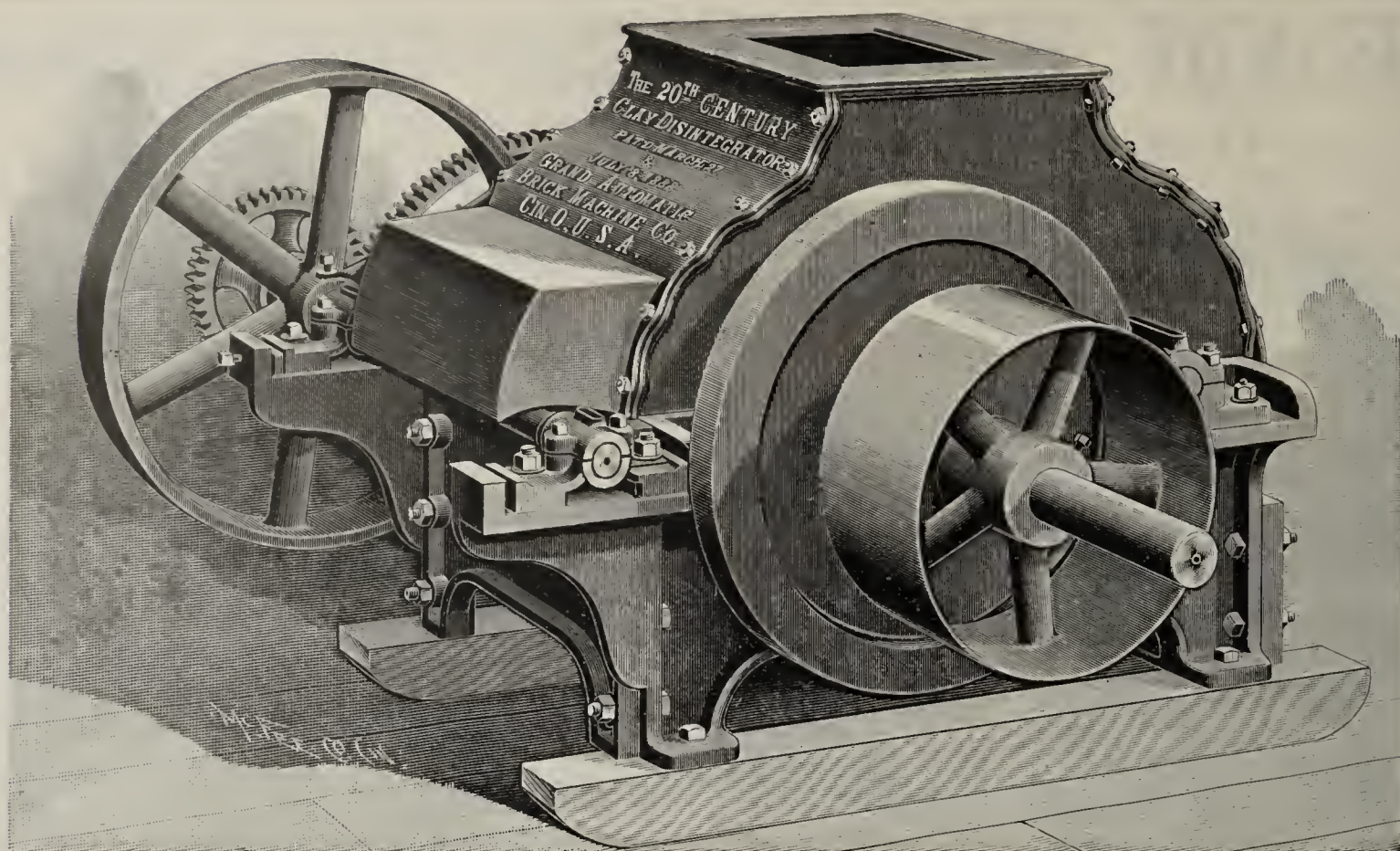
Write for Illustrated Catalogue, stating size of brick to be made and if wanted for pallet work.

**W. E. Tallcot & Co.,**

CROTON-ON-HUDSON, - NEW YORK.



THE "CREAGER",

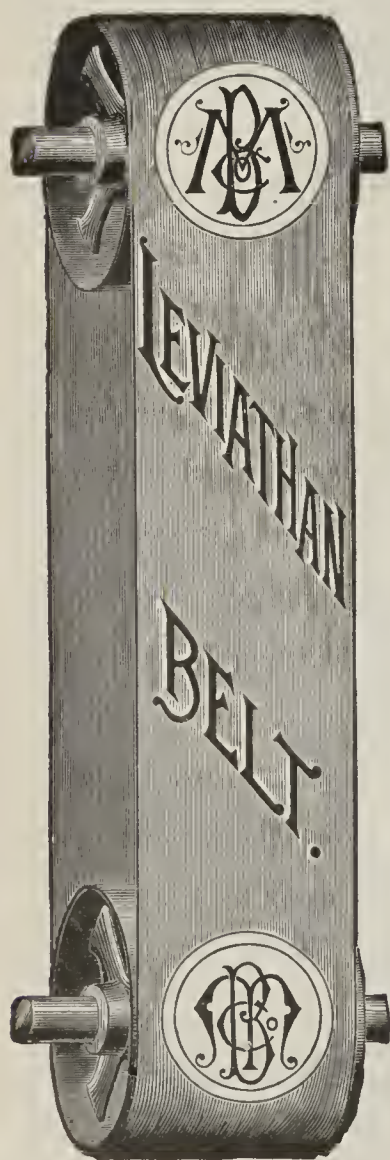


THE "CREAGER",

It is no trick to drive a Disintegrator with two belts, but Behold, in the "Creager" the only one that is successfully operated by one belt!! the feed Roll receiving its motion by immediate friction and gears. Now, a word right here about these gears—less you might imagine them to run at high speed, making a noise like the 4th of July (at least this is what our competitors want you to think) but don't be bulldozed—these gears just move and that's all—there is no perceptible sound and the least possible wear. For all the Latest Improvements in Brickmaking Machinery, and the world-renowned "Grand Automatic," address the Manufacturers,

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**Honest Machinery, Moderate Prices, and Square Dealing. Complete Equipments, Positively Guaranteed.**



## "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

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We always Prove it in

**Thompson's Water-Proof Belt Dressing for  
Leather, Rubber and Canvas Belting.**

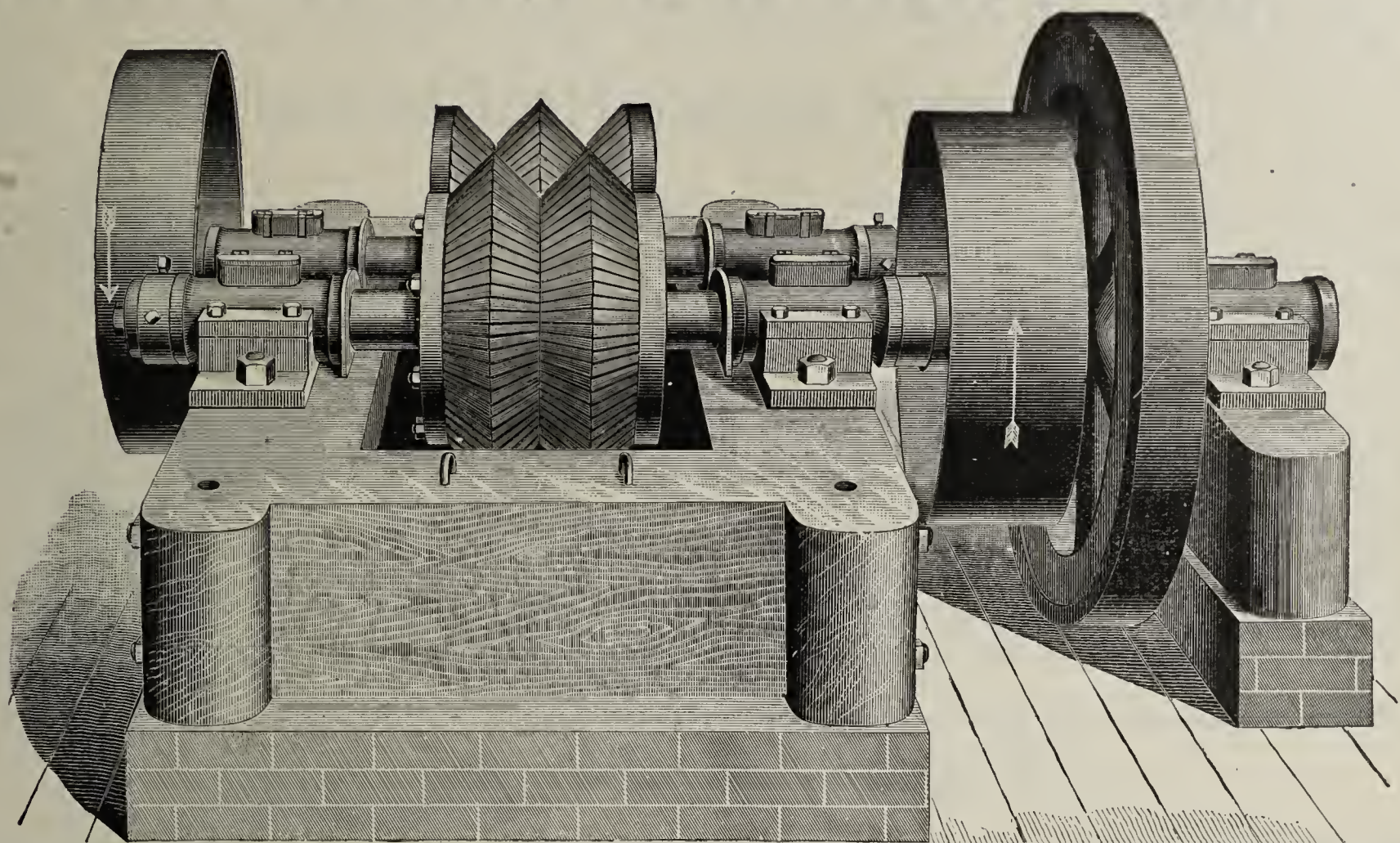
**No user of Belting can afford to be without it.**





# NEWELL IMPROVED CLAY PULVERIZER

Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.

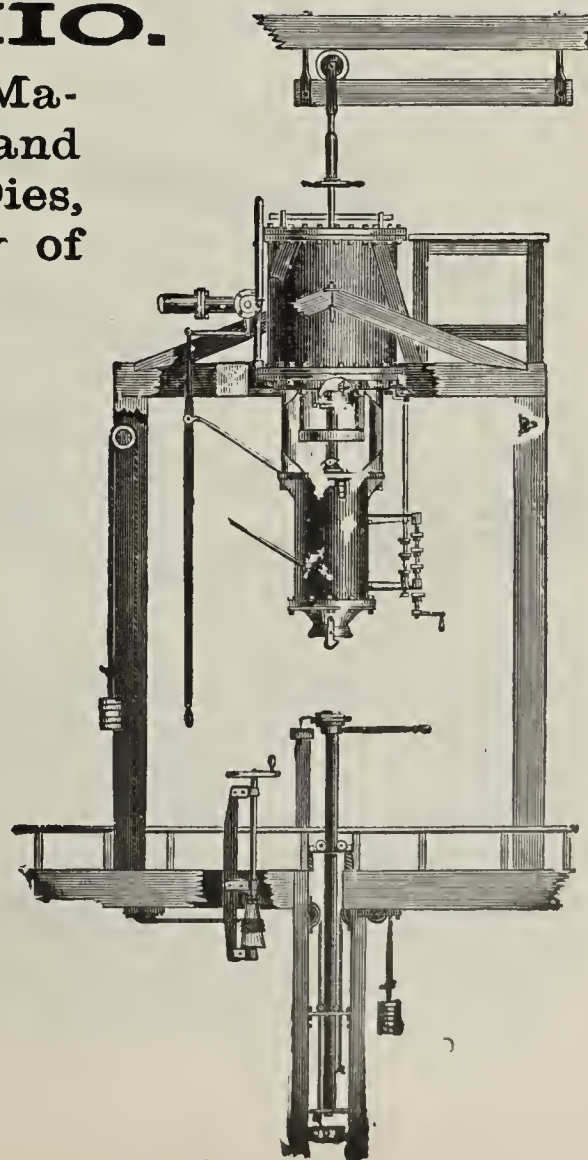
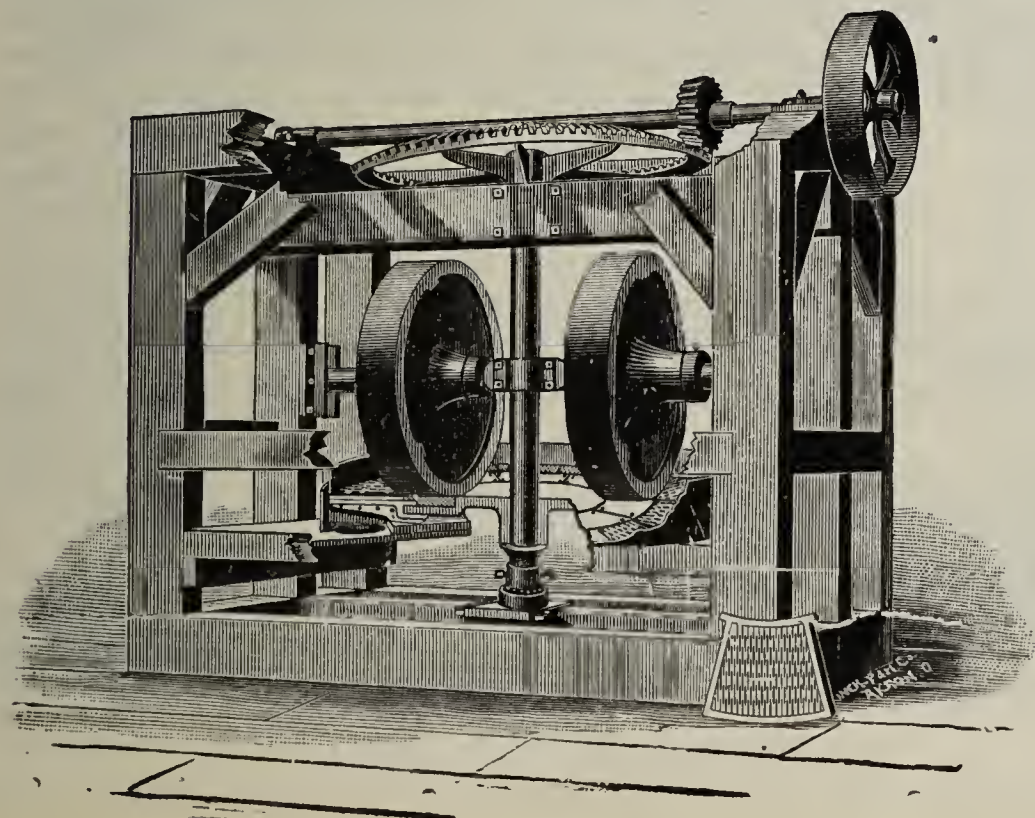


Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Electrical Ex. Bldg., 136 Liberty St., N. Y.

## TAPLIN, RICE & CO., AKRON, OHIO.

Manufacturers of Improved Clay Working Machinery of all kinds such as Clay Mills, Dry and Wet Pans, the Barber Steam Sewer Pipe Press, Dies, Clay Blockers, Potters' Wheels and machinery of every description. Write for circulars.





# WE CANNOT MAKE WORLD'S COLUMBIAN

## Souvenir Silver Half Dollars,

But we can give information that will enable brick manufacturers to make brick at a large profit and which will be in as much demand as the Souvenir Silver Half Dollar.

Read the following testimonial, then come and judge for yourself:

ST. LOUIS, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

ANTHONY ITTNER.

For further information and Illustrated Circular, address,

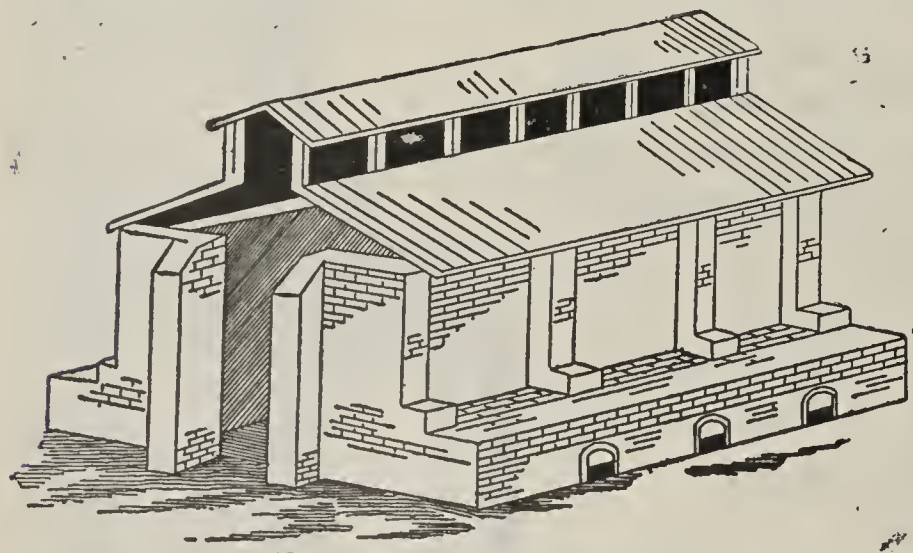
WM. & S. H. ALSIP,

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.

## L. H. REPELL'S IMPROVED FURNACE AND UP-DRAFT KILN. CLAIMS:

After thirty-five (35) years' experience in brickmaking and over (20) twenty continuous years of brick burning with the St. Louis Hydraulic Press Brick Co. and now with the Kansas City Hydraulic Press Brick Co's new yard No. 2 as Master Burner and Foreman, I claim this to be one of the most successful kilns in the United



States, as it can be dried off more perfectly and in less time than any other kiln of this type, with less checked and cracked brick than any other kiln. I claim this to be the easiest kiln to handle of any Up-draft Kiln. The ability of this kiln is to direct the heat to any part of the kiln. Unless the burner has control of the heat in the kiln, he has no assurance of a uniform burn. I can turn out 50 per cent. stock, front or ornamental brick all having perfect faces, containing no streaked or flashed edges. It is the most substantial kiln of the day, stands more wear or tear. This kiln can be built to hold from 250,000 to 500,000 brick. Two (2) men can easily handle a kiln containing from 250,000 to 300,000 brick. This is the only kiln adapted for all

kinds of fuel, including oil and gas. Also the best kiln in the market for terra-cotta. This kiln is in reach of all, the smallest as well as the largest manufacturers. For the saving of fuel, labor, time and money it is unexcelled. I guarantee this kiln to do just as I state. I have this kiln fully patented and parties infringing on these patents will be fully prosecuted.

I solicit correspondence for terms on yard rights—City, County or State—for use of patent, plans and specifications furnished for building this kiln. For further information, circulars and terms apply to or address

LOUIS H. REPELL, 2019 College Ave., Kansas City, Mo.



## THE THISSEN-ARNOLD CONTINUOUS BRICK KILN AND DRYER.

Taking into consideration all the advantages of this kiln over all others, it is undoubtedly the best. It is the best arranged, the most durable, the simplest, uses the least fuel, and gives the most perfect results in any clay, especially in the production of common building and vitrified paving brick. Only very limited shed room is required when the semi-dry clay process is used. Soft mud brick, of course, must be dried until they become hard enough to sustain their weight when set in the kiln.

This kiln works continuously. In other words, when once in operation, it burns a given number of thousands every day in the year; and when properly operated, there will be no loss whatever in burning. It can be easily arranged for work summer or winter, without additional expense for manufacturing and burning. The escaping heat from the cooling brick is successfully used for water-smoking the brick ahead of the fire, without extra expense for labor or fuel they are dried at the same place where burnt, without moving them.

To burn brick successfully it is necessary to have full control of the draft and perfect combustion of the fuel. Our kiln not only possesses these advantages, but it acts also as a smoke consumer, and the heat can be directed, at will, to any desired point. For vitrified paving brick our kiln has no equal, because no heat can escape, and it can be kept in the brick as long as necessary. This kiln will last a lifetime, with very little expenditure for repairs. We now have a kiln of thirty-thousand daily capacity, in operation, and hereby cordially invite examination.

**DESCRIPTION:**—The kiln consists of an endless tunnel, which is lined with fire bricks on the inside to make it substantial, and divided in a series of compartments (18 preferred) by use of shutters and movable partitions which connect and disconnect in any compartment at any time desired. Each compartment has a draft channel in its door, extending transversely across the compartment and further to the smoke chamber, where it is provided with a damper to open and close it. In the compartments these channels are provided with two plates, shorter than the entire width of the compartment, to slide over the top of each, by which means the draft is regulated from one side to the other or to the center of kiln if desired. The firing is done from top of the kiln, through holes about six inches in diameter, in only one compartment at one time. The draft channel is open five or six compartments ahead of the fire, so as to consume the entire heat in the bricks, allowing none to escape. A shutter is drawn across the compartment in which the draft is open, thus making the burning compartments independent of the rest of the kiln. Ahead of this shutter the drying is done, with the escaping heat from the cooling brick, and the heat which is utilized from the sand filling over the burning compartments, by means of channels or pipes imbedded in the filling and extending the entire circuit of the kiln, being connected with each compartment. The channels are provided with dampers, and so regulated as to connect or disconnect them with any compartments, thus operating continuously with the fire.

The drying is done in the same manner as the burning, and as many compartments are used as will consume all the heat. Then the draft is opened in the last compartment and another shutter drawn across, making the desired compartments independent of the rest of the kiln.

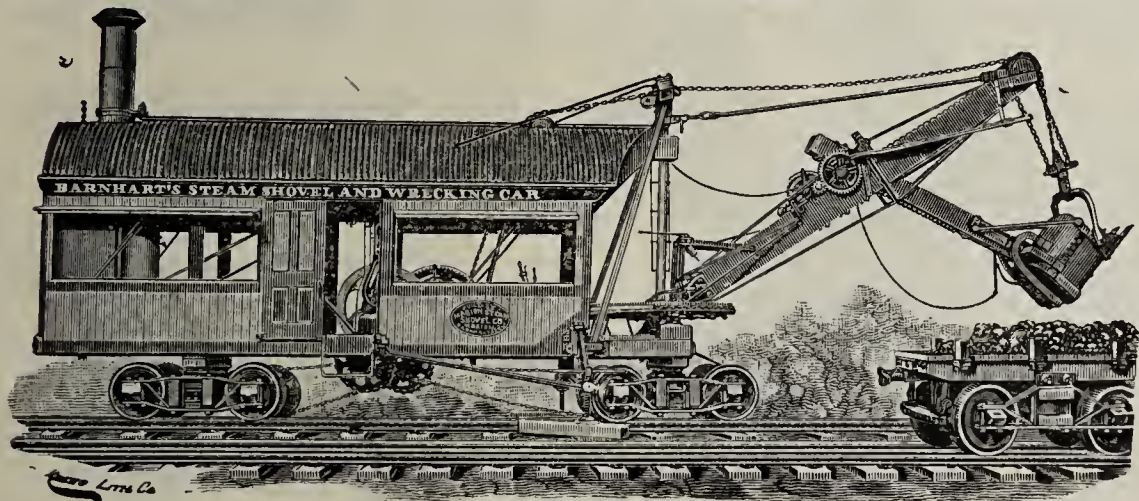
Ahead of the compartments drying, the setting continues, and behind the burning, the bricks are taken out.

The kiln gives the best of results in any kind of clay. It can be built of any daily capacity desired.

For further particulars call on or address,

**THE UNIVERSAL CONTINUOUS BRICK KILN CO.,** 510 New York Life Building,  
(Mention the Clay-Worker.) or 425 Range Building, OMAHA, NEBRASKA.

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
MARION, OHIO.

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick

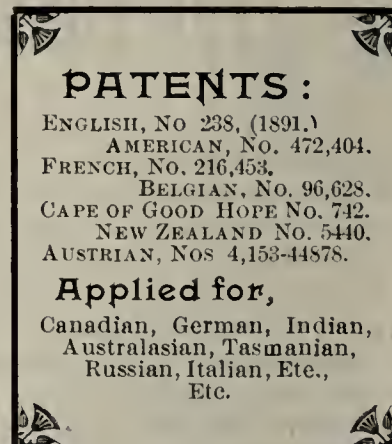


STYLE C—¾ YD





# SERCOMBE'S PATENT CHAMBER KILN.



**SPECIALTIES:—Perfect Control of the Fire. Perfect Combustion. Perfect Results and Perfect Economy in Erection and Operating.**

November 22, 1892.

## To American Brickmakers:

We respectfully request your attention to the following particulars of our "Patent Perfect Kiln." Naturally you may desire to see the same in operation before deciding to erect one of them. We therefore take pleasure in informing you that our Mr. Sercombe has left England for the purpose of operating the kiln erected by Messrs. The Ostrander Fire Brick Company, Fords, N. J., and he will be pleased to exhibit the same to you when ready for inspection; will you kindly communicate with him on the matter at your convenience, and we trust that business will result.

The kiln has proved a grand success in England, as may be judged by the testimonials we have received and the references we can give, and large numbers of kilns are being erected or converted to our system in various countries.

We get what has never before been obtainable in any Chamber kiln, viz.: (1) PERFECT CONTROL OF THE FIRE; (2) PERFECT COMBUSTION; (3) PERFECT RESULTS; and (4) PERFECT ECONOMY IN ERECTION AND OPERATING.

We can burn ordinary bricks (all hard) with 2-cwt dust coal to the 1000, and we have lately—as a test—burnt for Messrs. Martin Bros., Ltd., of Plymouth, a Chamber of the most refractory Fire Bricks in the world, with 3½-cwt., the same goods requiring 15-cwt. rubble in down draft kilns. The proprietors were so well pleased with the result that they immediately gave us an order for a big kiln, and intimated their intention of erecting four more of them later on.

The cost of erecting the various sizes will differ, according to cost of materials and labor in the different districts. We give approximate estimates below:

### FOR A NUMBER 1 KILN,

Containing 14 chambers, each chamber being 13x14x8, and holding about 11,000 bricks, 9x4½x2½ when burnt, and turning out from 30,000 to 75,000 per week, according to the supply of bricks and requirements.

49,000 for 98 feet chimney stack.

209,000 for kiln.

20 tons of lime.

4 tons of castings.

Sand and rubble.

Labor in England varies from \$1,000 to \$1,250. (Calculated at from 12 to 18 cents for masons and 8 to 12 cents for laborers.)

License fee, \$625. payable half down.

### FOR A NUMBER 2 KILN,

Fourteen chambers, 16x17x10, each holding about 22,000 bricks, and turning out from 40,000 to 110,000 weekly.

49,000 for 98-foot chimney stack.

370,000 for kiln.

30 tons of lime.

5 tons of castings.

Sand and rubble.

Labor in England \$1,500 to \$1,750.

License fee \$875; payable half down.

### FOR A NUMBER 3 KILN,

Sixteen chambers, 16x17x10, 22,000 capacity, and turning out from 60,000 to 130,000 weekly.

60,000 for 112-foot chimney stack.

425,000 for kiln.

35 tons of lime.

5½ tons of castings.

Sand and rubble.

Labor in England \$1,750 to \$2,000.

License fee, \$1,000, payable half down.

FOR A NUMBER 4 KILN, double the capacity of a No. 2, the cost would be nearly double No. 2, and the fee would be \$1,750. payable half down. Only two burners are required for this kiln, same as for the others.

Correspondence solicited.

## SERCOMBE, OSMAN & WARREN,

Exmouth, England.

Mention the CLAY-WORKER.





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

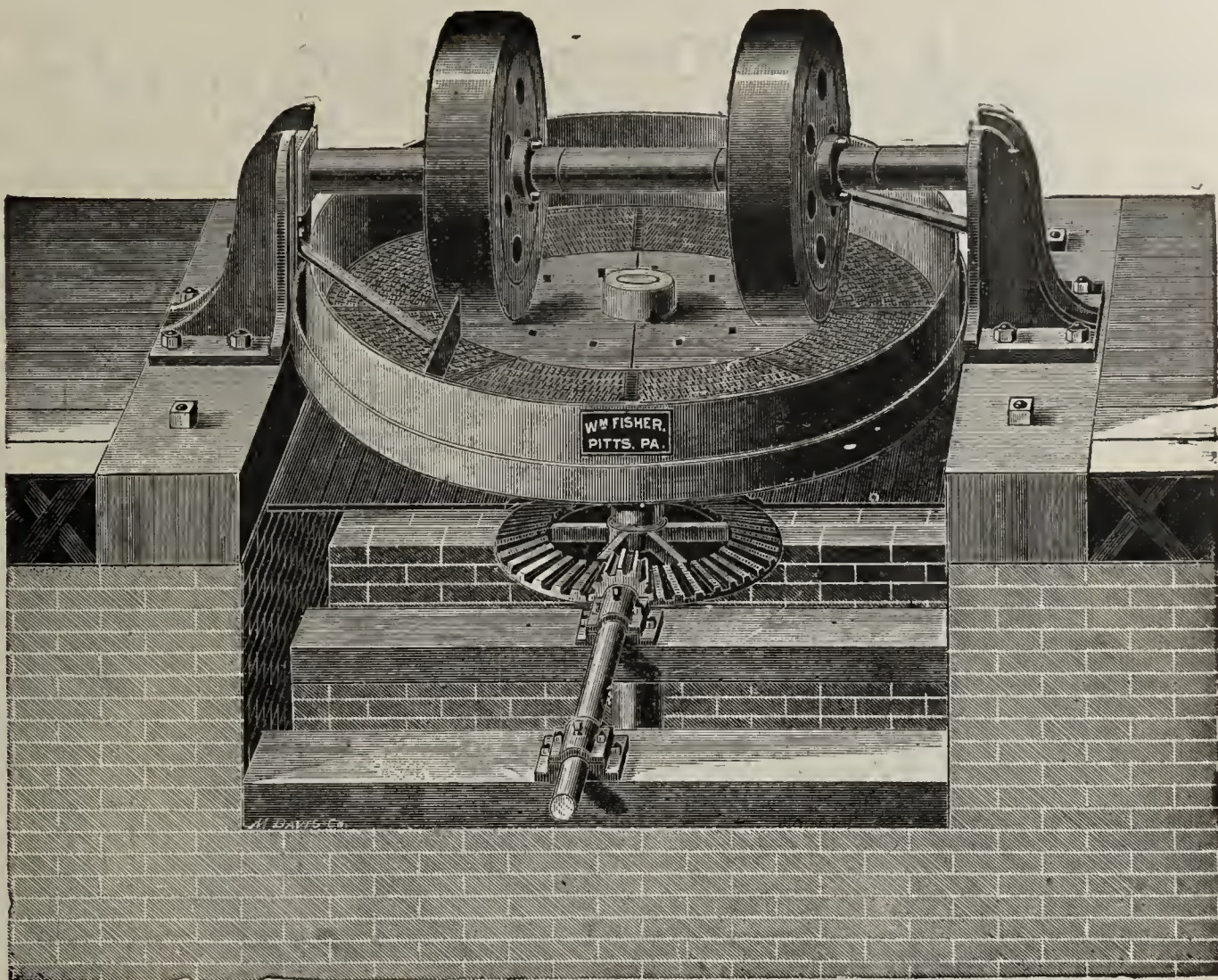
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

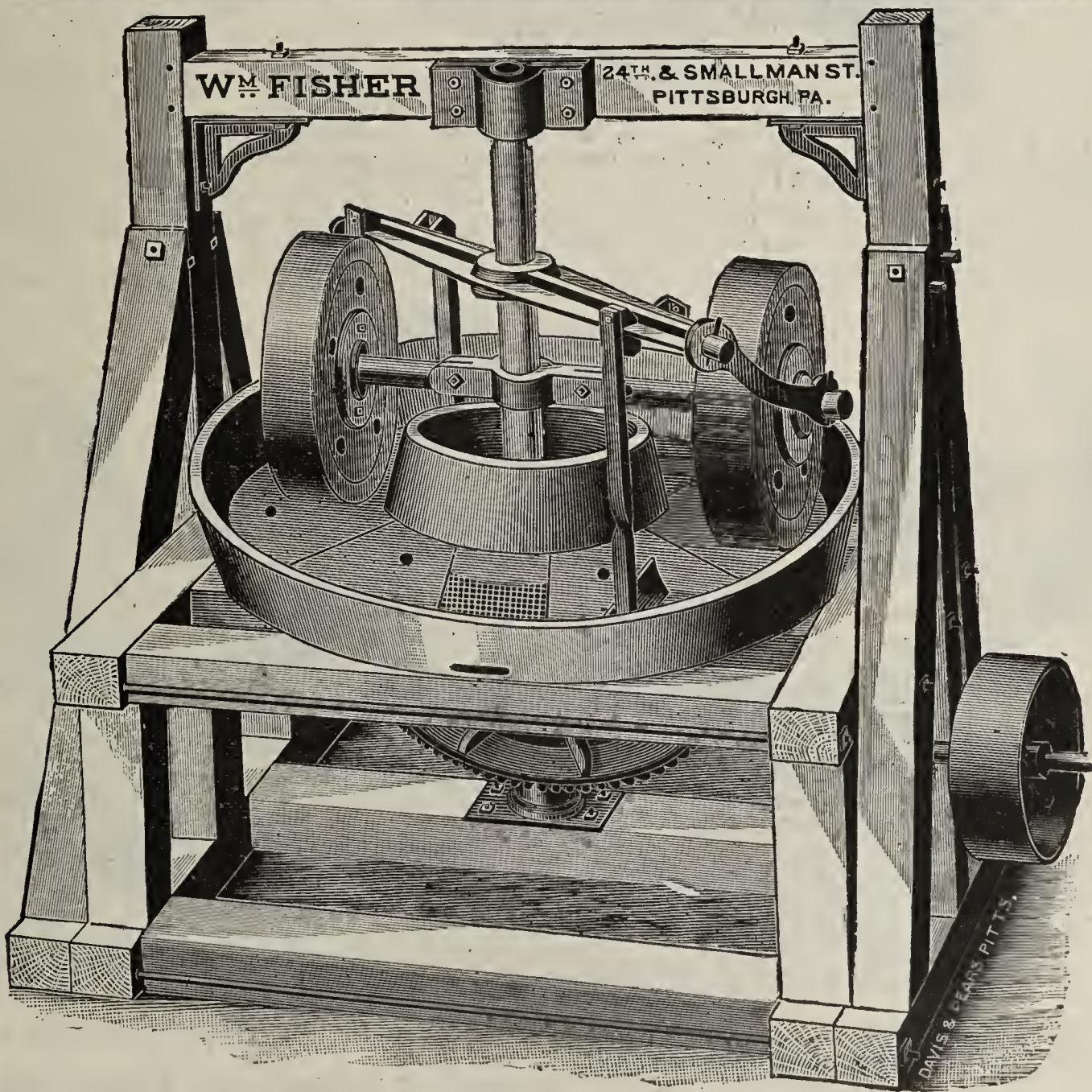
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.



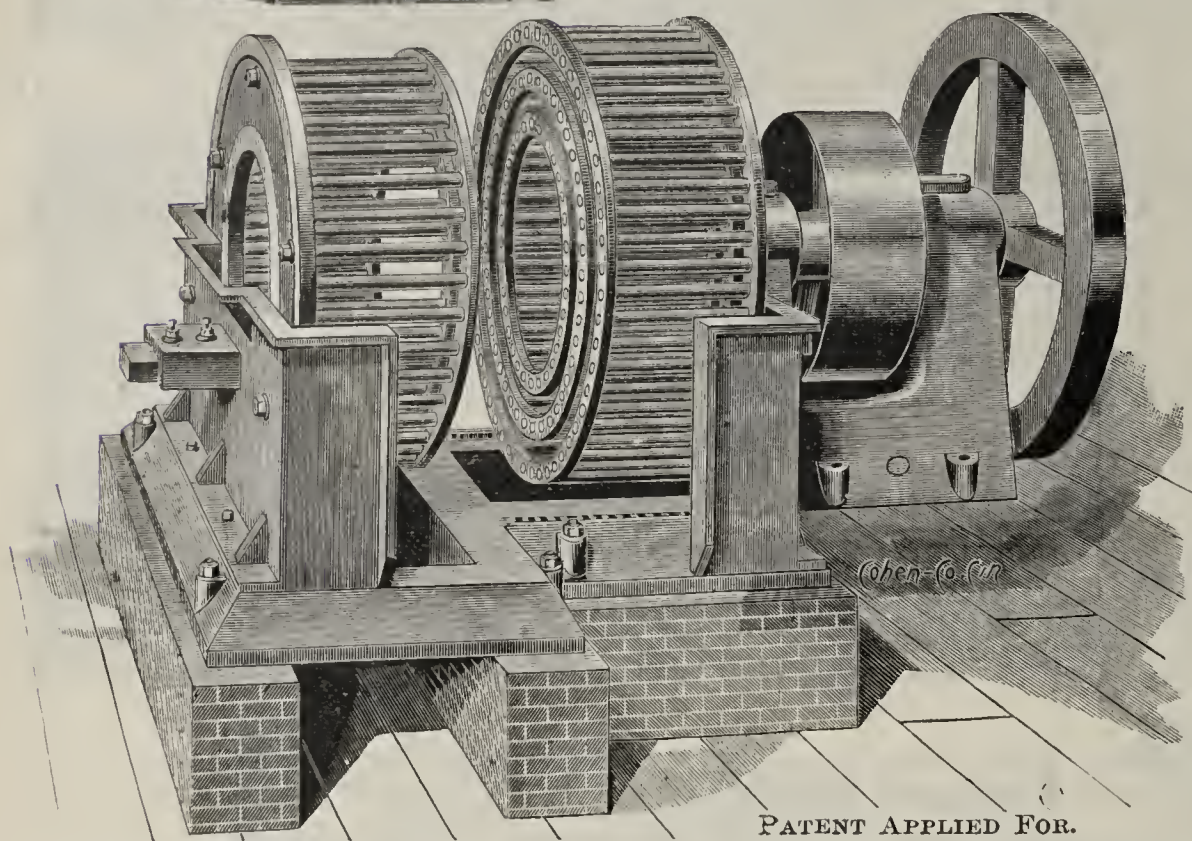
## Description.



This Disintegrator is especially designed for pulverizing clay for making **"FINE PRESSED BRICK."**

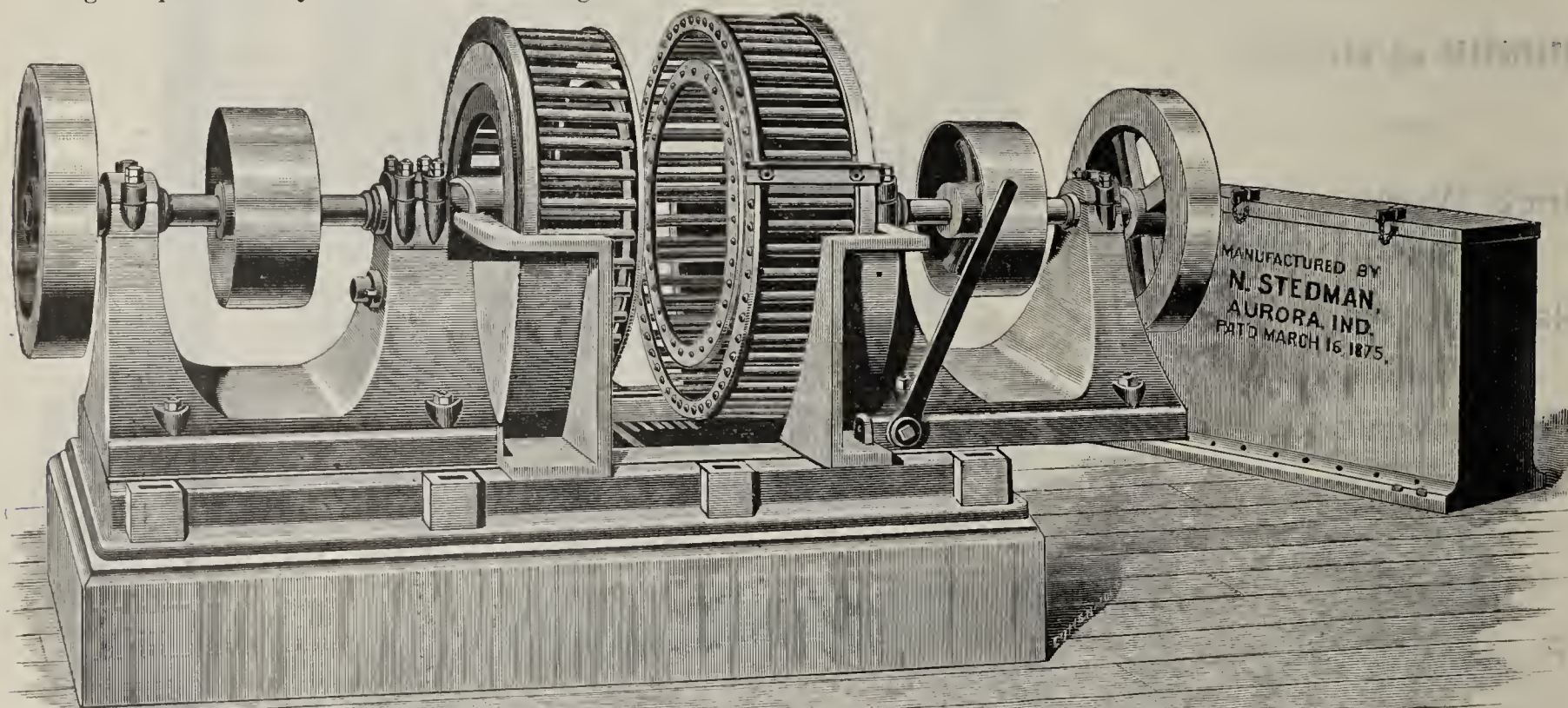
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our **DOUBLE CAGE DISINTEGRATOR** which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our **SINGLE REVOLVING CAGE DISINTEGRATOR**. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



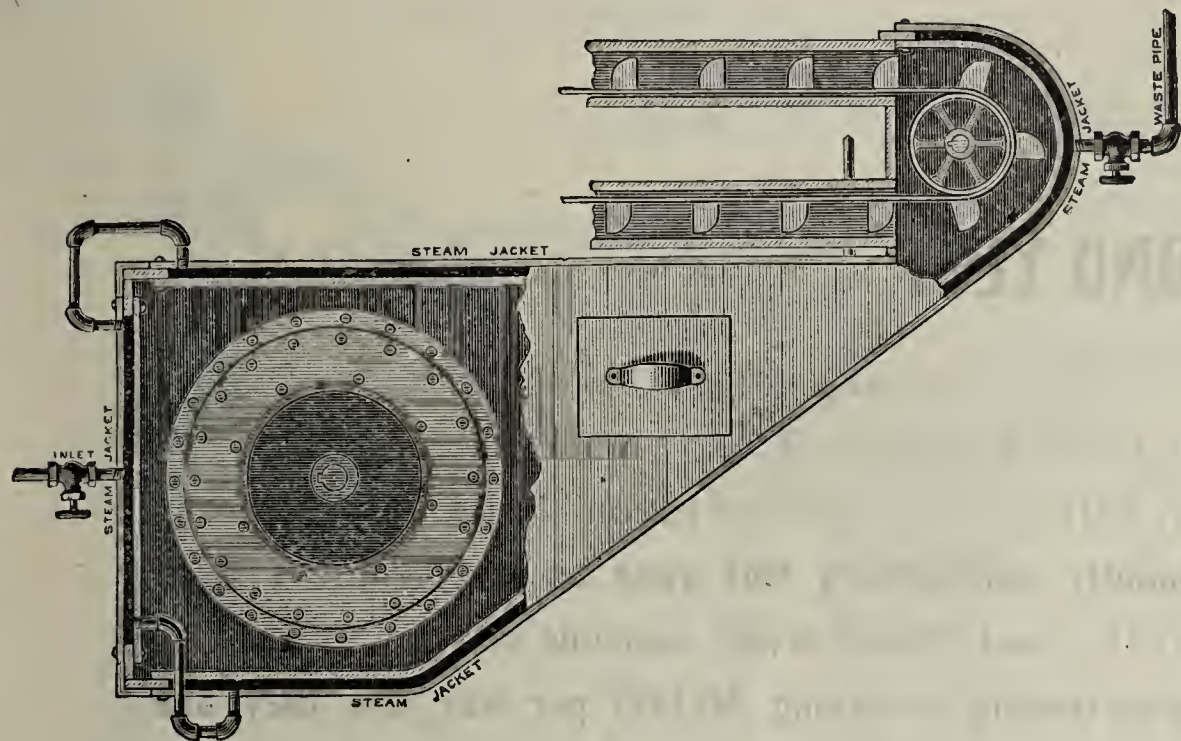
For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



# Williams' Cyclone Clay Pulverizers



and Little's Patent Steam Jacket,

FOR CLAY PULVERIZERS.

There is no known machine that will so thoroughly disintegrate and pulverize clays and other substances as *Williams' Cyclone Mill*. It thoroughly disintegrates all kinds of clays and shales.

When the clay is damp or wet it adheres to the housing and sometimes causes choking of the mill. To obviate this we have introduced clearance rakes which answer all purposes as long as they last; but they soon wear out. We now have found a remedy for all these evils. It is *Little's Patent Steam Jacket*, represented in above cut. It encases the Pulverizer entirely and at the same time

forms the Elevator Boot. By the use of this combination, clays can be worked directly from the bank; but it is preferable to cure them in a dry-shed for dry-press brickmaking. By the use of the above combination it is *absolutely impossible to choke the Pulverizer or Elevator Boot*, and, therefore, no dry-press brickmaker can afford to do without it when he once knows its value. Patented 1890. Other patents pending.

- WILLIAMS' Clutch Pulleys and Couplings.
- WILLIAMS' Cyclone Clay Pulverizer, 30 inches diameter.
- WILLIAMS' Cyclone Clay Pulverizer, 36 " "
- WILLIAMS' Cyclone Shale Pulverizer, 36 " "
- WILLIAMS' Cyclone Clay Pulverizer, 40 " "
- WILLIAMS' Cyclone Shale Pulverizer, 40 " "
- WILLIAMS' Cyclone Clay Pulverizer, 48 " "
- WILLIAMS' Cyclone Shale Pulverizer, 48 " "
- WILLIAMS' Revolving Clay Screen.
- WILLIAMS' Automatic Feeder for Dry Presses.
- WILLIAMS' Automatic Feeder for Pulverizers.
- WILLIAMS' Brick Trucks, 3 sizes.
- WILLIAMS' Clay Elevators.
- WILLIAMS' Triple Roll Clay Crushers.
- WILLIAMS' and Little's Patent Steam Clay Screen.
- WILLIAMS' Sizing Machine for Radial or Angular Brick.
- WILLIAMS' Pony Pulverizer for Testing Clay and Shale.
- WILLIAMS' Complete Outfits for Dry Press Brickmakers.

LITTLES' Steam Jacket for Pulverizers.

Write to

**M. F. WILLIAMS & CO.,**

2705 and 2707 North Broadway.

**St. Louis, Mo.**



## This was **THE SECOND YEAR.**

GREENFIELD, MASS., Nov. 3, 1891.

THE McLAGON FOUNDRY CO.



GENTLEMEN :—The "New Haven" Brick Machine has proved **equally satisfactory this year as last** when I pronounced it the **best "Pallet brick" machine made.**

I have no trouble in making 40,000 per day, and they are good brick too.

Yours truly,

C. C. DYER.

## Just as **GOOD AFTER THREE YEARS.**

GREENFIELD, MASS., Dec. 13, 1892.

THE McLAGON FOUNDRY CO.,



GENTLEMEN :—After using your Brick Machine **three years**, the best recommendation I have for it is that **if I needed another machine, I should put in a "New Haven."**

Yours truly,

C. C. DYER.

More like this to follow. All replies are equally satisfactory. Suppose you ask them about it yourself, or address

**The McLagon Foundry Co.,**  
New Haven, Conn.



# TIFFIN AUTOMATICS . . .

Are now being used and giving the

## HIGHEST POSSIBLE SATISFACTION

to the users in Columbus, Cleveland, Toledo, Findlay, Mansfield, Lima, Kenton, Salem, Fostoria and Tiffin, in Ohio, also at other points in Ohio, and in other States.

We will cheerfully furnish names and addresses of users of our machines to parties who may desire to make particular inquiries.

## KEEP IT IN MIND,

That we ask only the most careful and rigid inspection of our Machines in comparison with those of any other maker.

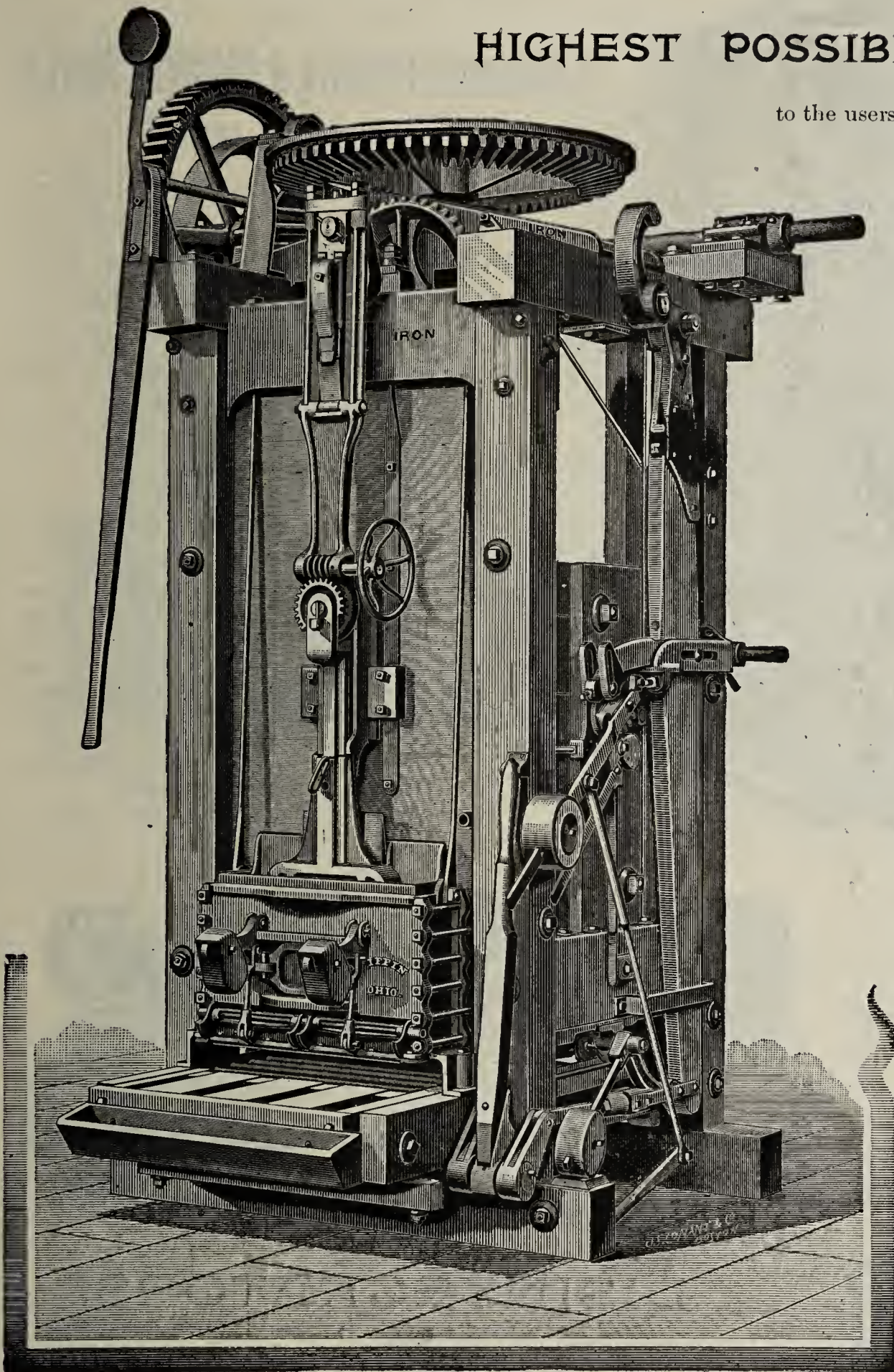
THE ADVANTAGES we have

in our

Patented Special Safety Devices,

are so readily apparent to any practical brickmaker, that they need only to be seen to be appreciated.

☞ If you have not received a copy of our Illustrated and Descriptive Catalogue of Brick Machinery and Brickyard Supplies, we will be pleased to mail you one.



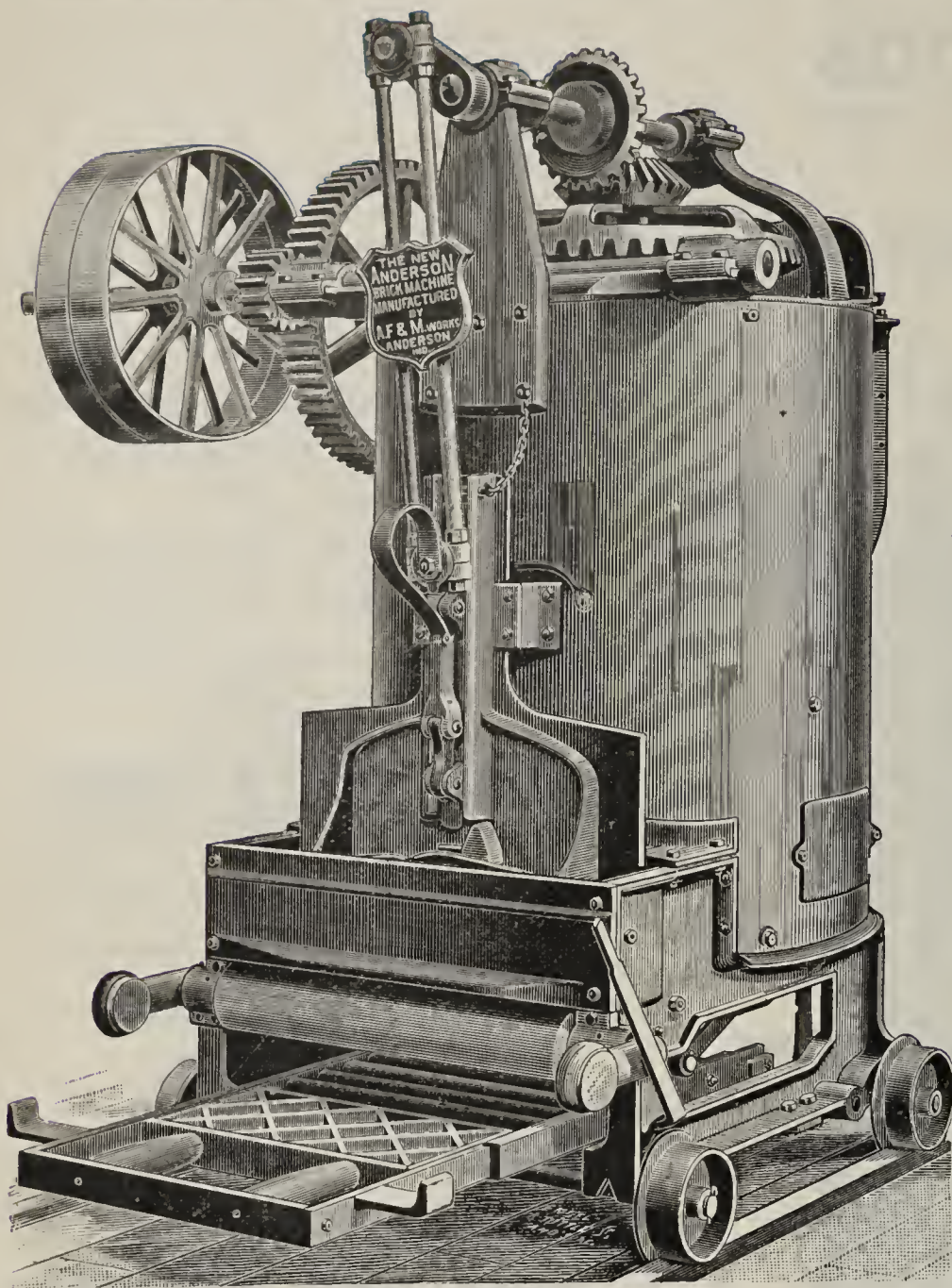
## Tiffin Agricultural Works,

MANUFACTURERS OF

Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, &c., &c.

— TIFFIN, OHIO.





## THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works  
ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



DUBUQUE, IOWA, Oct. 29, 1892.

A. F. & M. WORKS.

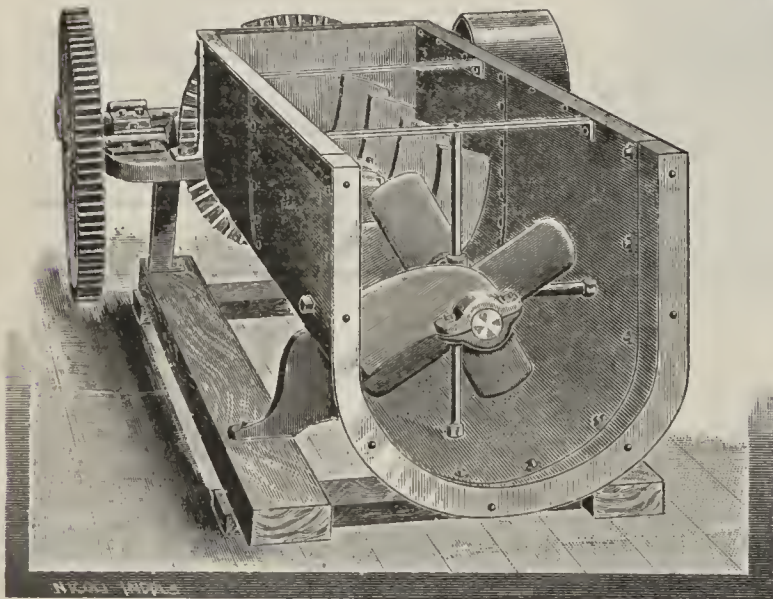
GENTLEMEN:—I have worked with the New Anderson Brick Machine and I have turned out 3,000,000 of good, square-edged brick. Before I had this Machine I was troubled right along. I have tried nearly all the machines now in operation and none were a success until I got a New Anderson, now I can depend on 30,000 good brick per day, and if any of you brother brickmakers want a machine, I would recommend the New Anderson Machine,

Yours truly,

A. HEIM, Proprietor.

JOHN HEIM, Gen'l M'g'r.

We also manufacture the  
NEW IMPROVED CHIEF BRICK MACHINE.



End View of Pug Mill.

PUG MILLS, . . .  
DISINTEGRATORS,  
. . . TRUCKS, . .  
. . . BARROWS,  
AND ALL BRICKYARD SUPPLIES.

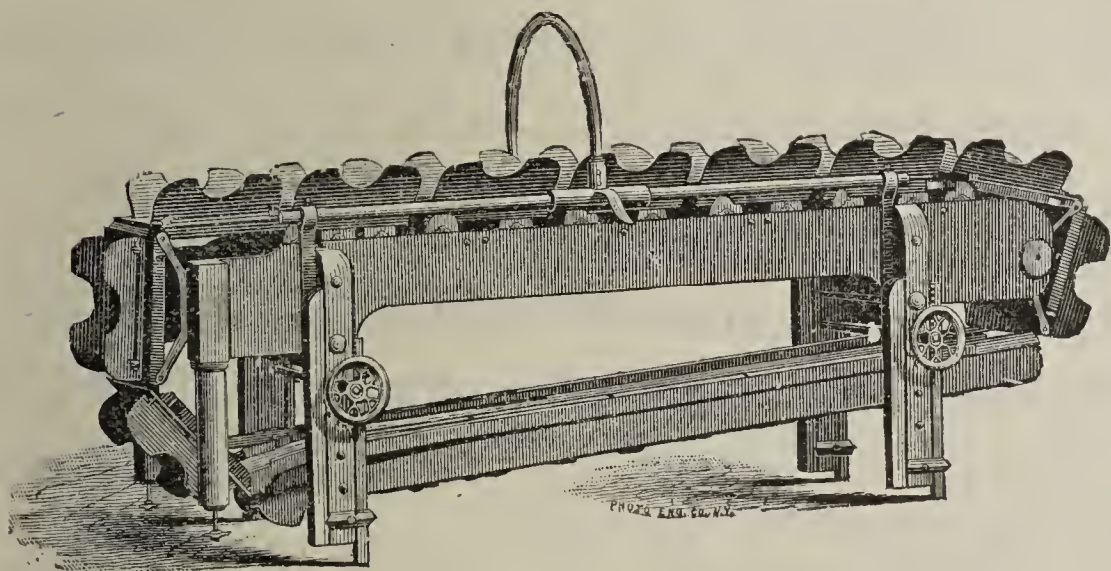
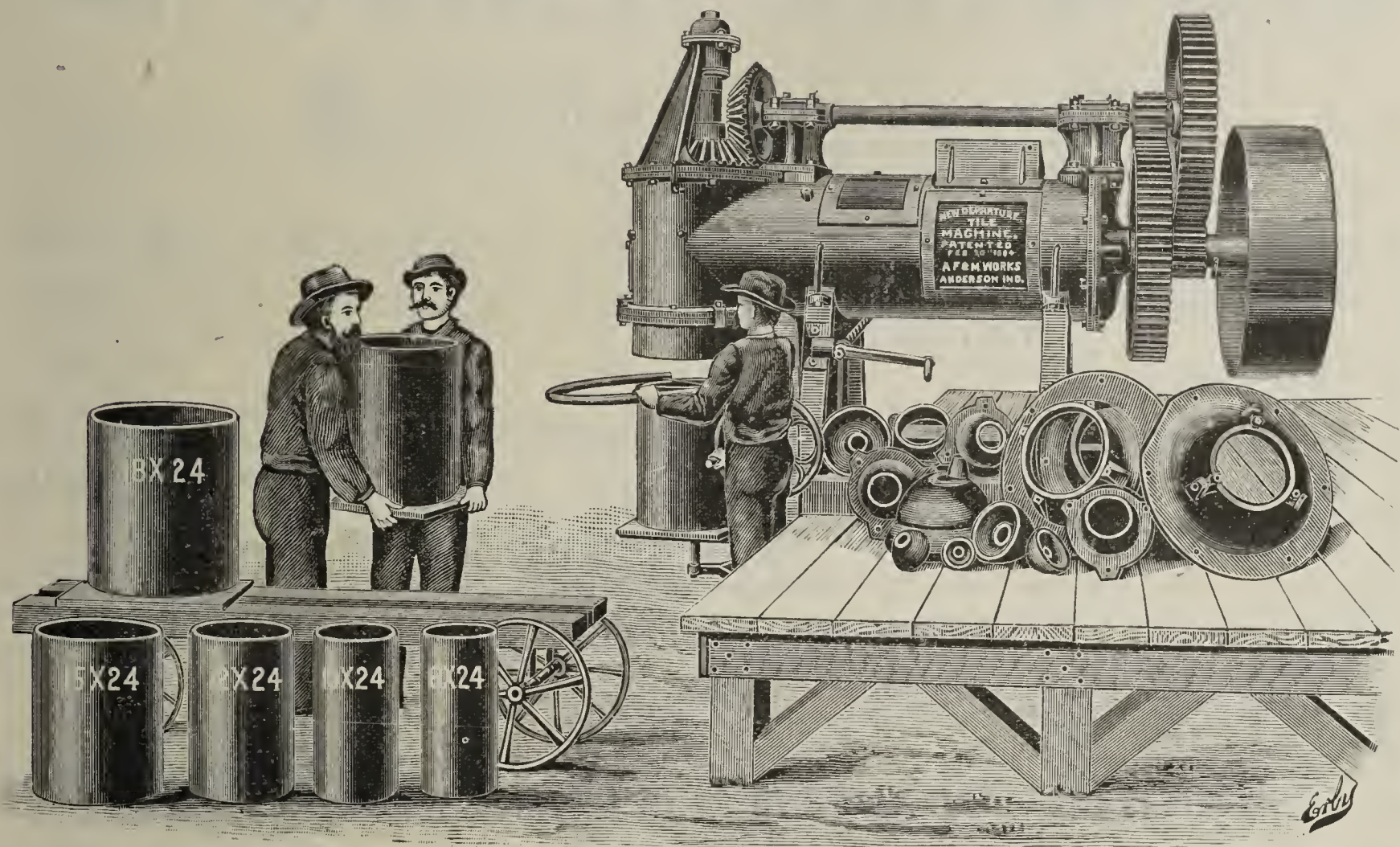
[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*

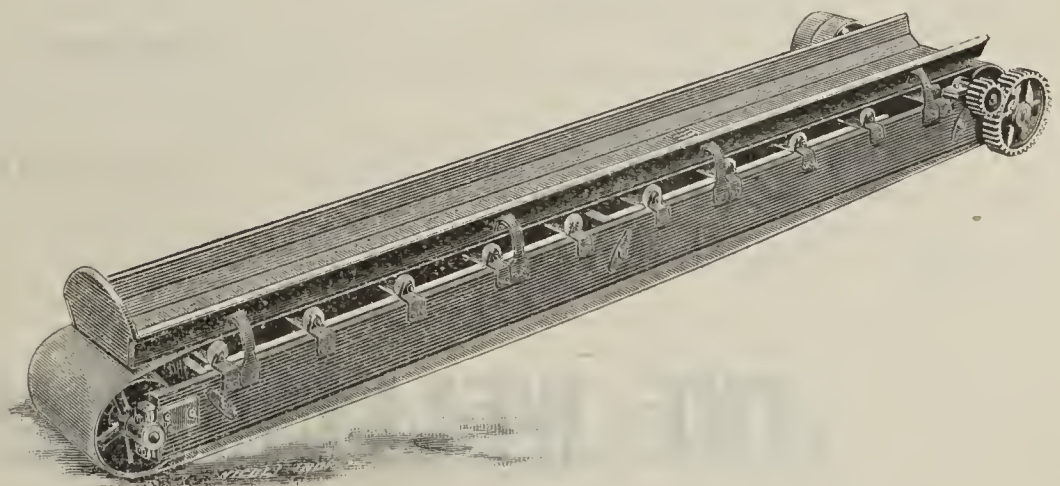


We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 20 in. in diameter in a manner that defies competition.

**Down Delivery for Large Tile.**

**Side Delivery for Small Tile.**

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

[Mention the Clay-Worker.]

**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**



# THIS ONE IS SHORT,

But it is STRONG. and TO THE POINT.

UTICA, N. Y., Aug. 9, 1892.

THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO.

GENTLEMEN :

We take great pleasure in strongly recommending your "Monarch" Brick Machine. It does its work, as if by magic. THERE IS NO BREAKAGE, and everything runs with astonishing smoothness.

Yours very truly,

CALLAHAN & DOYLE.

## DO YOU REMEMBER, THAT THIS MACHINE,

Is a combined Machine and Pug Mill?

Has only four gears, and is all run by one belt?

Has a mud press that can never leak or wear out?

Has 14 feet of Pug Mill?

Has the most powerful pressing device invented?

Takes less power than any other arrangement for doing the same work?

That it has now been used two seasons, and is thoroughly perfected?

That it is very low in price considering what it is?

Should be INVESTIGATED, before you buy any other?

Watch this page next month. Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y.

**OUT!** Our 1893 Circular describing this Machine is now ready. Send for one.

## THE WELLINGTON MACHINE CO.,

**Wellington, Ohio.**



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

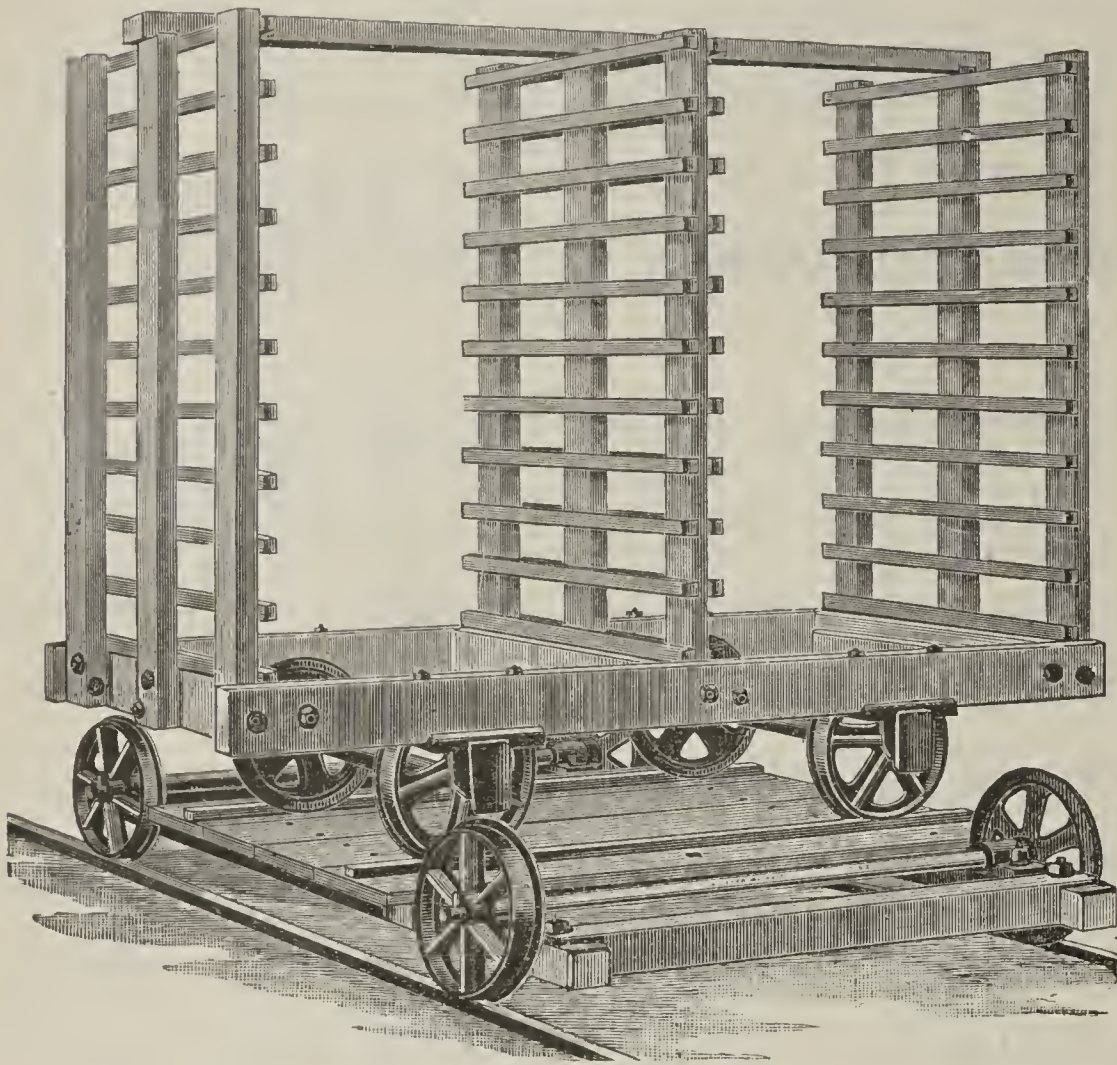
WELLINGTON, OHIO.



# The Henry Martin Brick Machine Mfg. Co.,

(INCORPORATED.)

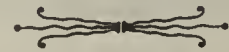
LANCASTER, PA., U. S. A.



Rack and Transfer Car.

MANUFACTURERS OF

All Kinds of Dryer Cars,  
Wooden or Iron,  
Transfer Cars,  
Turn Tables, &c.



We have facilities for turning out this work very fast and at a reasonable figure. Let us make an estimate for you.



THE

Latest Improved

BRICK MACHINERY

AND

Brick Yard Supplies.



WROUGHT IRON CARS A SPECIALTY.

Low Prices and First-class Work.



# CAUTION

## TO WHOM IT MAY CONCERN:

Notice is hereby given that we are manufacturing under the patent granted to Mr. HENRY MARTIN (for trucks), dated March 31st, 1885, and June 3rd, 1890. The claims of this patent are

First: An improvement in vehicles for transporting unburned brick. In which one end of the racks, upon which the brick are placed, are mounted on springs, and the other secured to the frame of the vehicle by means of hinges.

Second: The device is intended to be used by hand, and it consists of a frame, composed of two longitudinal pieces, having handles at one end, connected by cross pieces, and supported at one end by a wheel or wheels, and at the other, when at rest, by the legs. Resting upon this frame is a rack consisting of longitudinal bars, connected by transverse pieces. The bars are connected with and held above the frame, near and slightly in the rear of the wheel or wheels, by springs, which are attached to the bars under the cross pieces. At their inner ends, the bars are secured to the pieces by means of hinges, which allow such play about those points as may be rendered necessary by the movement of the outer ends of said bars, occasioned by the springs. It preferable, spring plates may be used instead of the hinges, one end of the plate being secured to the upper side of the frame pieces, and the other to the lower side of the bars, the point at which the plate is attached to the frame piece, being far enough apart to allow sufficient spring.

Third: The device is operated by raising the upper rack, then loading the rack with trays of brick, closing or lowering the upper rack, and then loading it. One or two springs may be used. In the former case, the spring is placed transversely, and rests upon the cross pieces. Or one or two wheels may be used.

It may be seen that our patent broadly covers a vehicle or truck for use in carrying bricks or pallets, and all purchasers or users of said trucks made without our authority, are hereby notified that they thereby render themselves liable as infringers, and we shall prosecute all persons manufacturing or selling such trucks.

All persons are CAUTIONED against purchasing such trucks, except those manufactured by us or by our authority.

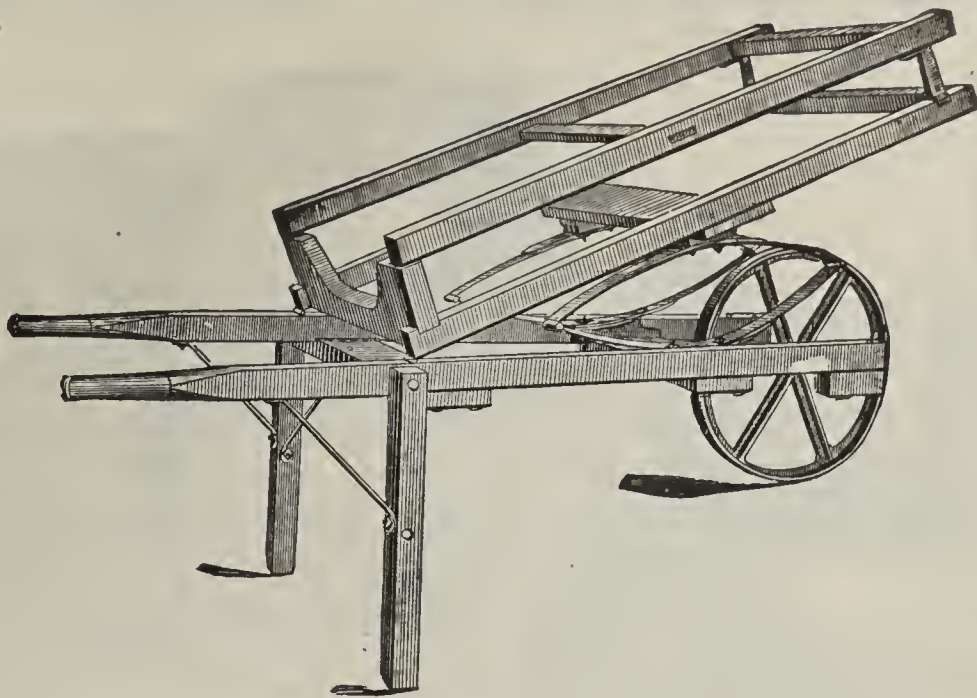
## The Henry Martin Brick Machine Mfg. Co.,

Incorporated.

LANCASTER, PA., U. S. A.

[Mention the Clay-Worker.]

### The Henry Martin Patent Double Deck Spring Barrow.

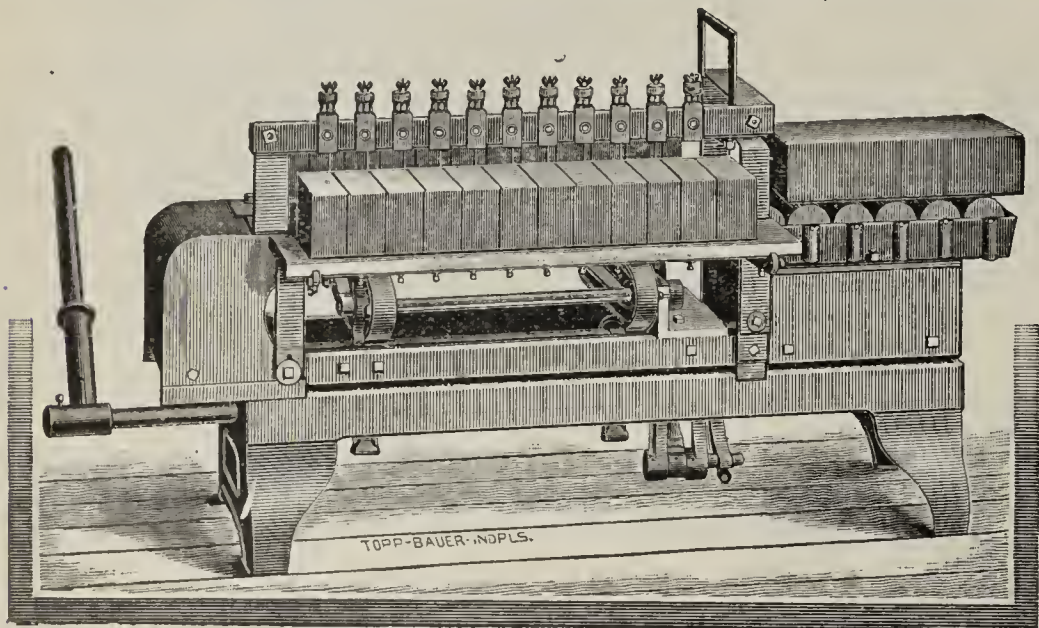
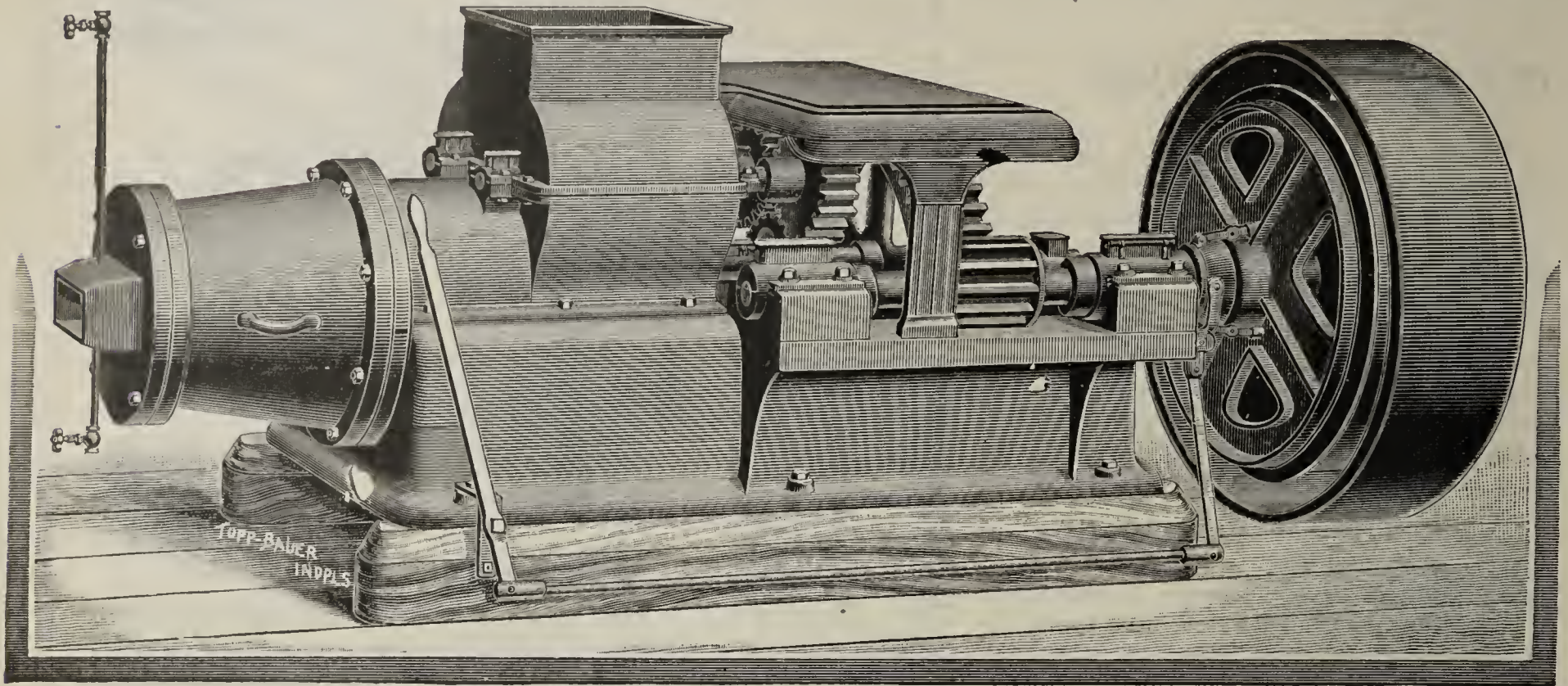


PATENTED MARCH 31, 1885.  
PATENTED JUNE 3, 1890.

The above cut shows our Patent Double Deck Spring Barrow; it is a great labor saving Barrow and is made especially to carry pallets from the Machine to the racks; it will carry nine pallets of six brick each at one time. It is built very strong, of first-class material, is of light draught, is easily handled, and saves one-half the run of the off-bearer. When it is loaded the weight is so evenly distributed that a boy can run it with ease. It is especially adapted to wheeling on a plank, and the brick are not jarred out of shape.



# The Plymouth Brick and Tile Machine



AND THE

## PLYMOUTH CUTTING TABLE

Is the best combination for brick making now offered to the trade.

**A Modern Machine Built for Strength and Capacity.**

If you want an outfit that will run ten hours a day, six days in the week, don't fail to write for descriptive circular and prices.



## The Fate-Gunsaulus Co.,

[Mention the Clay-Worker.]

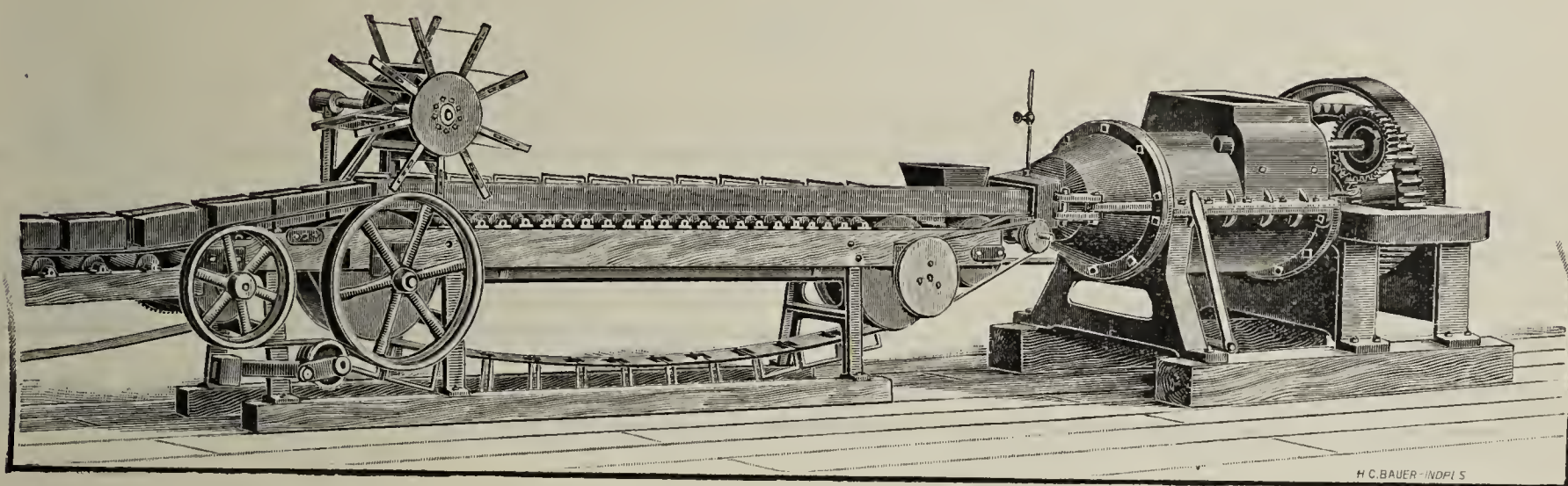
PLYMOUTH, OHIO.



The Decatur Leader Mfg. Co.,

DECATUR, ILL., U. S. A.

# Brickmaking Machinery



Brick Machines of any desired capacity and for every requirement.

*Three Sizes Screw Machines,*

*Two Sizes Roller Machines,*

*The Best Automatic Cutter,*

*The Best Mechanical Sander,*

*Six Sizes Pug-mills,*

*Three Sizes Crushers,*

*Two Sizes Disintegrators.*

☉ WINDING DRUMS, CLAY CARS, BELT ELEVATORS, PLATFORM ELEVATORS. ☉

We equip entire outfits with Machinery and supply the best Dryers and Kilns.

Write for 1893 Catalogue.

**THE DECATUR LEADER MFG. CO.,**

[Mention the Clay-Worker.]

**DECATUR, ILL.**



✂ ED. H. CALLAWAY, ✂

CONSTRUCTING ENGINEER AND BRICK MANUFACTURING EXPERT,

— WITH —

PHŒNIX FOUNDRY & MACHINE CO.

Manufacturers of Brick Drying Cars, Transfer Cars, Turn Tables,

and full Dryer Equipments. Engines and Boilers and General Machinery.

SYRACUSE, NEW YORK.



General Agent for Sharer's Improved Brick Dryers and Calorific Kilns. Will construct Brick Manufacturing Plants Complete, furnishing all necessary Machinery. Plans and Estimates furnished. CLAYS TESTED. NO TROUBLE TO ANSWER INQUIRIES.

Ten years practical experience.

PAVING BRICK PLANTS A SPECIALTY.

We are wedded to no particular Brick Machine or system of manufacturing bricks, but will examine your clay, location and all conditions, and put in the machinery on system best adapted to your clay and locality. We will build the plant and turn it over to you and guarantee it to make first-class bricks, as economically as they can be produced in that particular section.

WE TAKE ALL THE RISK.

New beginners should not fail to consult us before erecting a plant.

And "old timers" might get some good points from us.

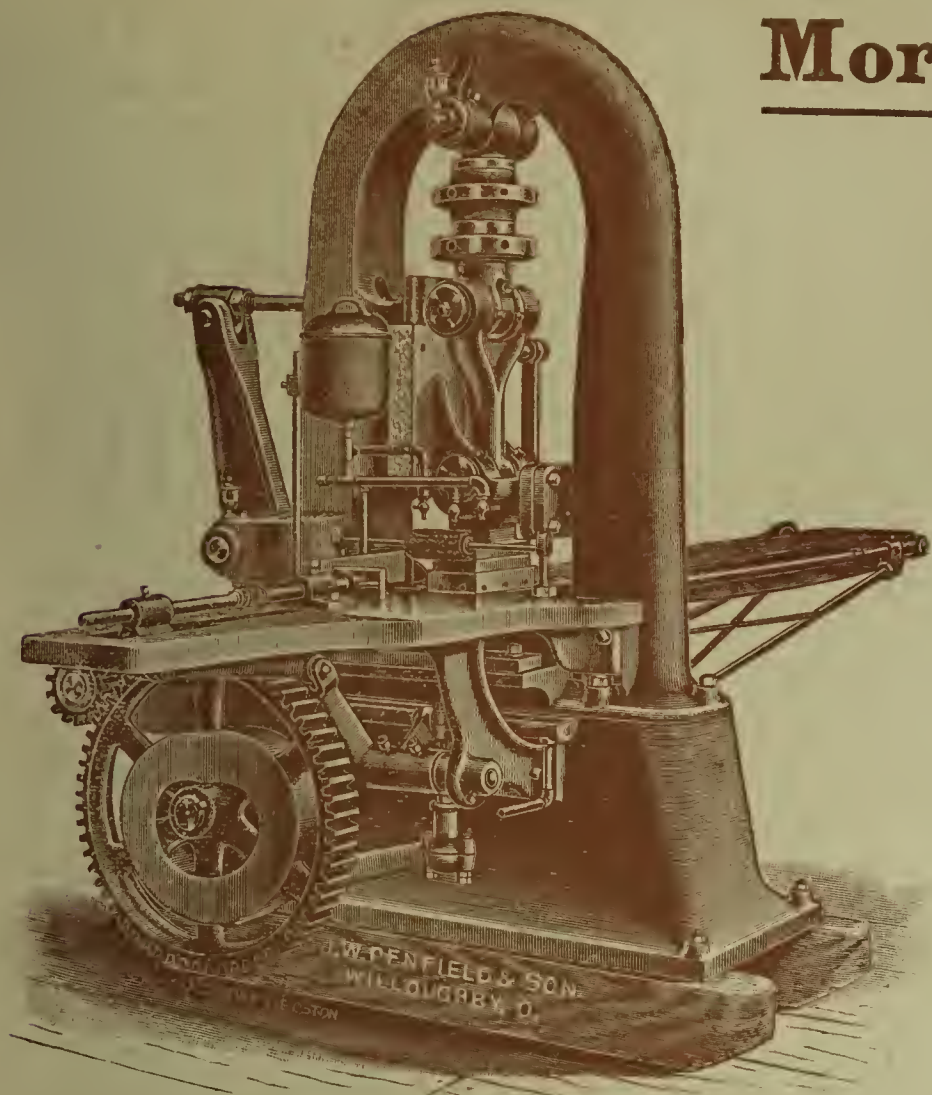
Correspondence solicited.

500 EAST WATER STREET,

SYRACUSE, N. Y.



## More About Represses.



PENFIELD No. 2 POWER REPRESS.

THAT repressing of brick pays, is admitted by all thoughtful investigators. The main question is, "*Which* press is most profitable to use?"

# THE PENFIELD POWER REPRESS



Is the heaviest, strongest, single-die repress made;  
Has fewer parts than any other;  
Is least complicated, and  
Easiest to operate and keep in repair and running order.

## THE PRESSURE.

The pressure is exerted by a powerful toggle joint, accessibly placed above the die; hence surplus clay from die vents cannot fall into the toggle and cause increased friction and wear. As the brick are pressed from above, the toggle does not have to lift the entire die and die table each time a brick is pressed.

The pressure exerted on each brick is rigid and uniform, and not modified by or dependent on springs which cause lack of uniformity in thickness of brick.

Our press has other advantages. Write and we will tell you all about it.

**J. W. PENFIELD & SON,**

Willoughby, Ohio, U. S. A.



J. B. MCGORRISK,  
GENERAL CONTRACTOR.  
PAVING AND CURBING.

Des Moines, Iowa.

Oct 10<sup>th</sup> 1892

J. W. Penfield & Son,  
Willoughby, Ohio.  
Sent:

Your  
number ("10") ten auger machine  
is giving perfect satisfaction  
in every respect. I have  
not had any breakage or  
trouble of any kind <sup>with it</sup> ~~and~~  
the last six months.

Respectfully,

J. B. McGorrick

# PENFIELD AUGER BRICK MACHINES

.....IN.....

The West ❖

and

❖ The East

Send for our—

New Catalogue

OF

**AUGER BRICK**  
❖ **MACHINERY.**

FINE PRESSED FRONT BRICK

IN  
BUFF OCHRE RED  
DRAB, CRAY, OLD GOLD  
BRONZED AND MOTTLED  
ENAMELED BRICK IN VARIOUS SHADES  
Telephone 91 & New Brunswick

SAYRE & FISHER CO.,  
Adamantine Brick Works,

AT SAYREVILLE, N. J.  
On the Raritan River, near South Amboy, N. J.  
NEW YORK OFFICE: "BENNETT BUILDING," NASSAU AND FULTON ST.

HARD BUILDING BRICK

FIRE BRICK

ALL SHAPES AND SIZES  
OF A SUPERIOR QUALITY

Sayreville, N. J., Oct. 11th, 1892.

Mess J. W. Penfield & Son,  
Willoughby, Ohio.

Gentlemen:—

Replying to your favor of the 7th inst would say, that we  
have used one of your #10 Auger machines in our works for the past six  
months with very good results. We consider it a well made machine, and  
can cheerfully recommend it.

Yours truly,

E. A. Fisher, Sec'y.

Dictated

**J. W. Penfield & Son, Willoughby, Ohio, U. S. A.**



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

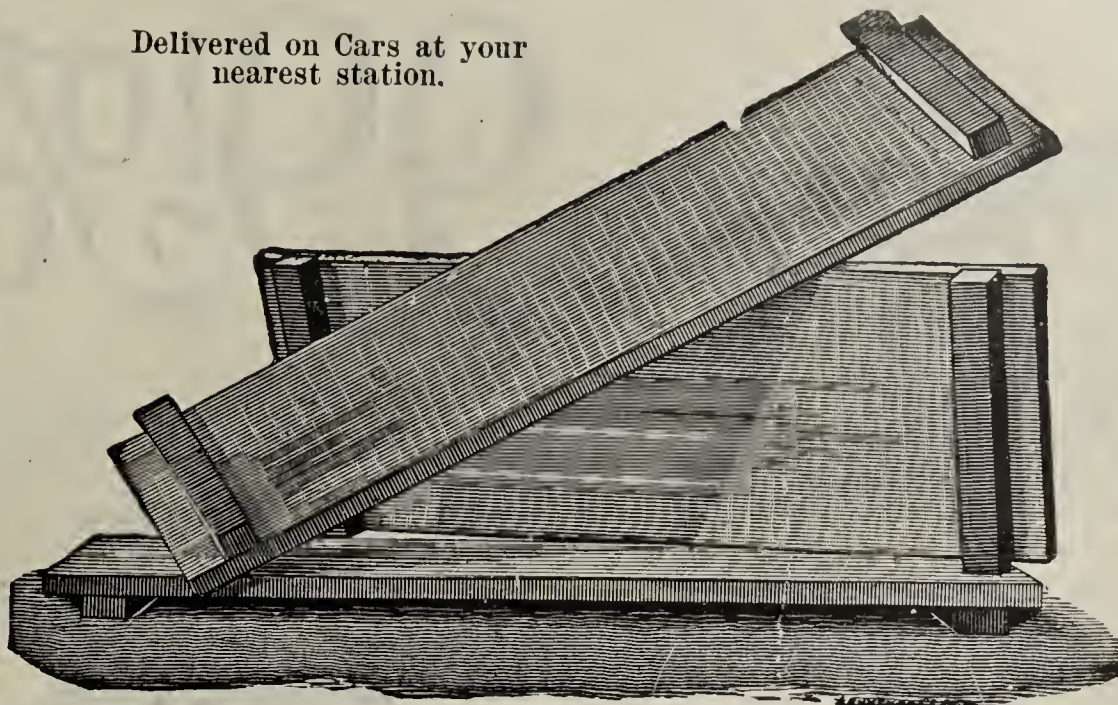
W. B. MERSHON & CO.,

East Saginaw, Mich.

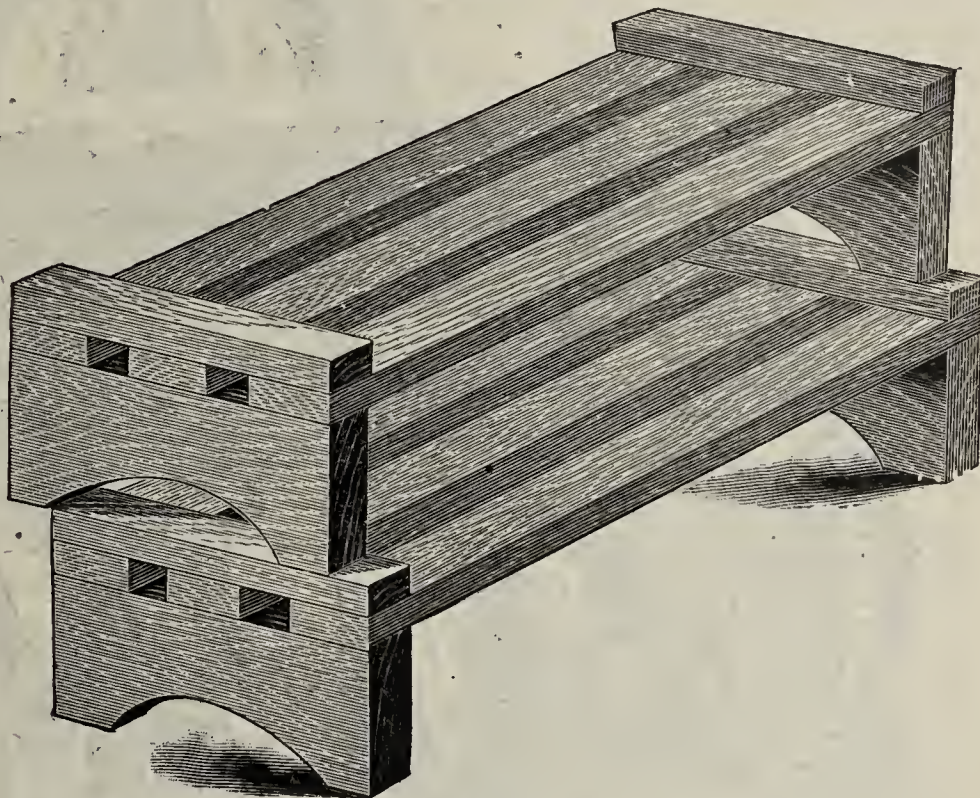
THE CLAY-WORKER.

97

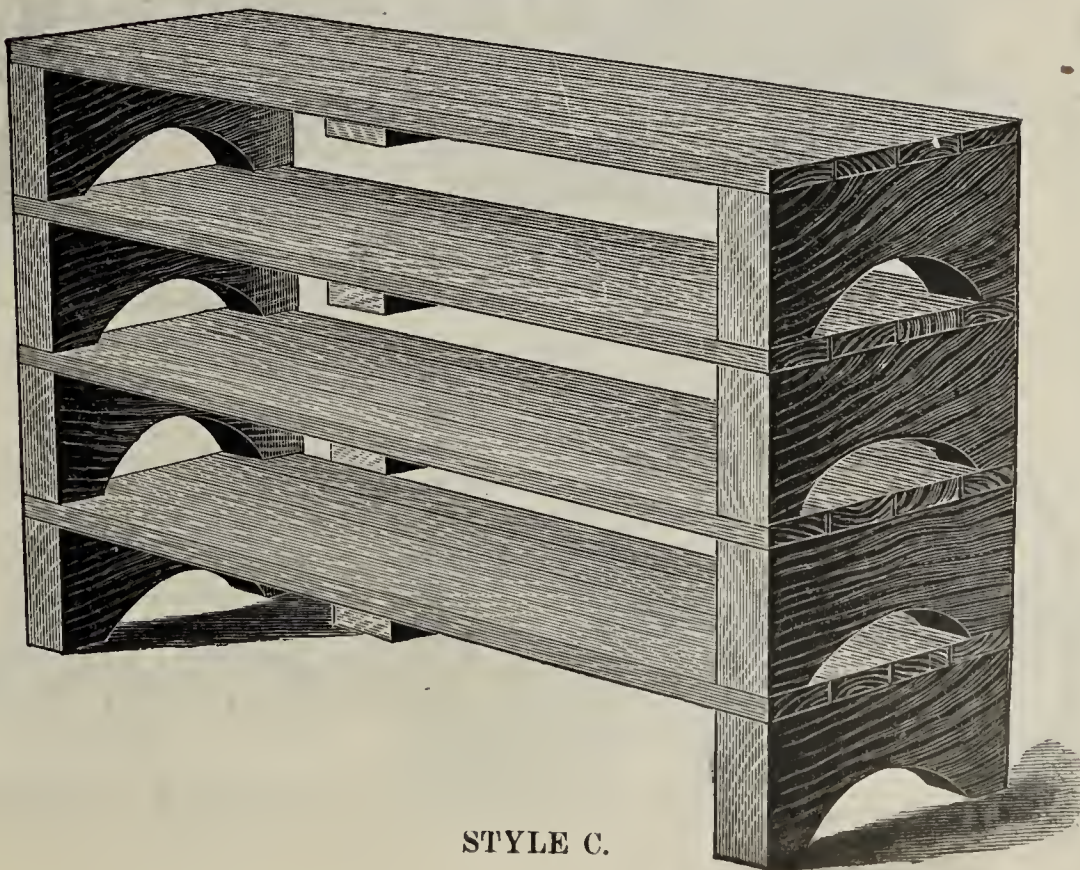
Delivered on Cars at your  
nearest station.



STYLE A.

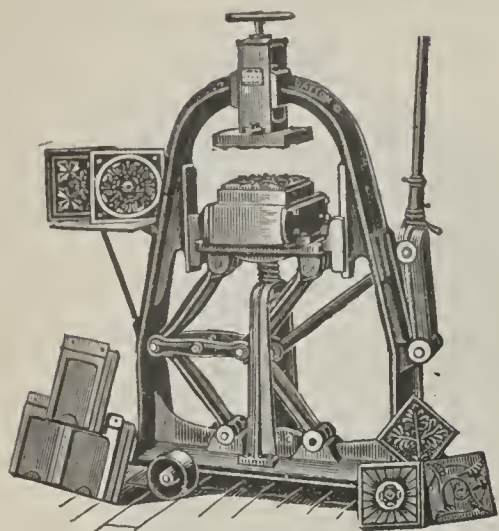


STYLE B.



STYLE C.



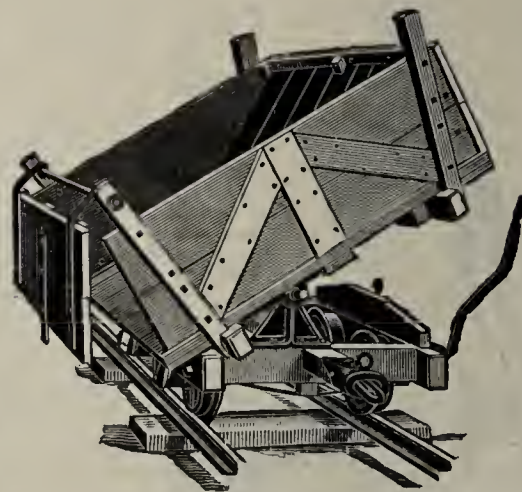


Raymond's Perfection Brick Press.

The largest line of hand and power re-presses in the world. 8 different styles.

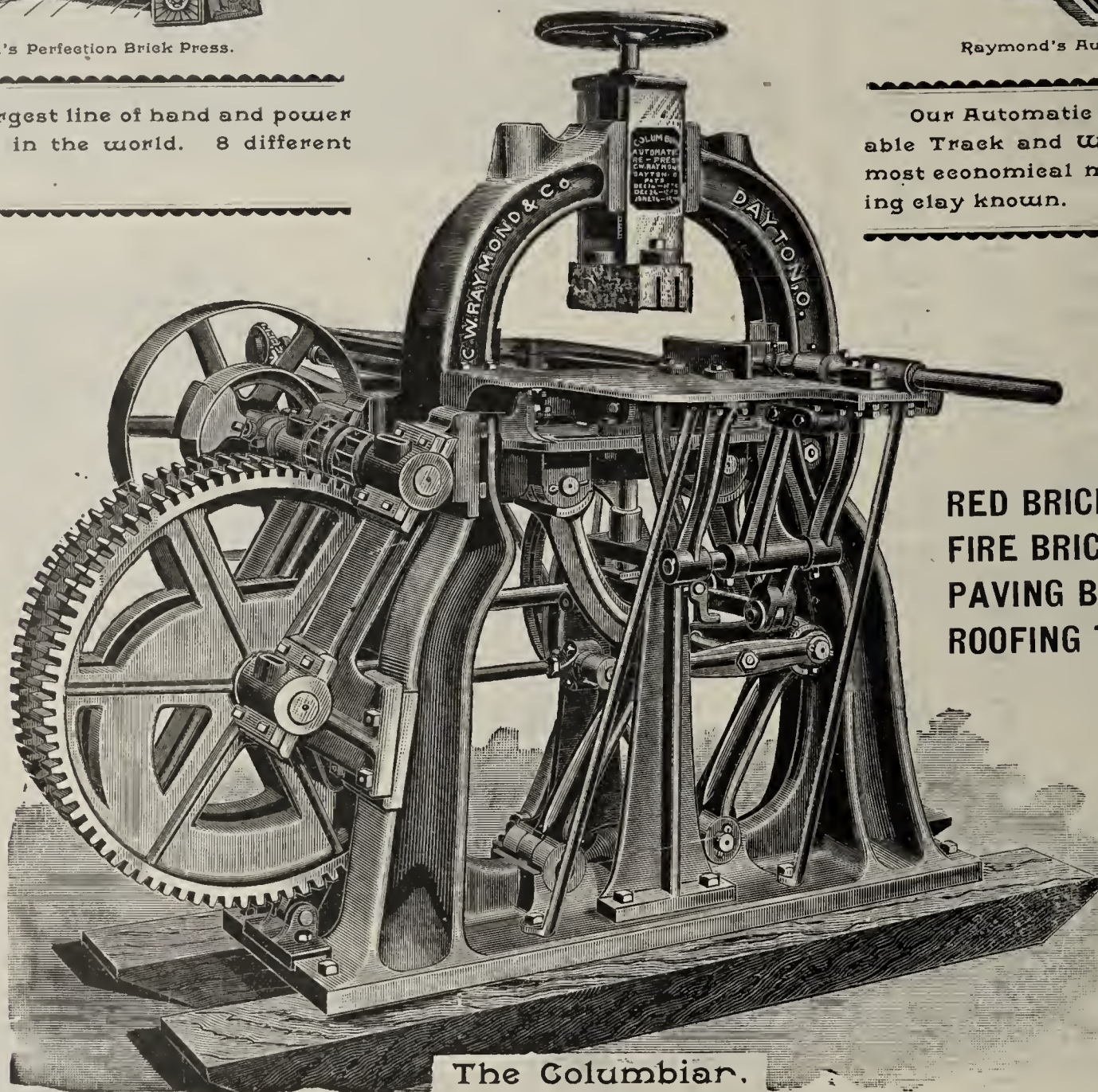
# 99 1/2%

Of all the re-pressed brick used in the U. S. for street paving in 1890 and '91 were re-pressed on the Raymond Automatic Power Press.



Raymond's Automatic Dumping Car.

Our Automatic Dumping Car, Portable Track and Winding Drum. The most economical method of transferring clay known.



The Columbian.

RED BRICK  
FIRE BRICK  
PAVING BLOCKS  
ROOFING TILE

Can be  
made on  
the one  
press.

Automatic Feed and  
Delivery.

30,000 lbs. pressure

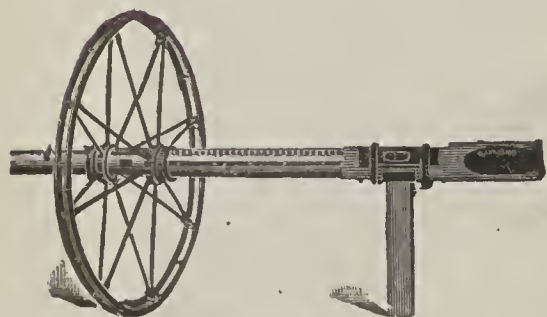
## "We Are the People"

Who manufacture the "Columbian," "Automatic" and "Perfection" Presses.

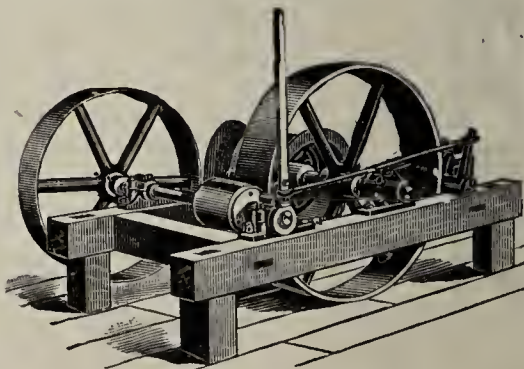
Accept no substitute for a Raymond  
Press. There isn't any.

E. W. RAYMOND & CO.,

DAYTON, OHIO.



Raymond's Wrought Iron Tempering Wheel



Self Contained Winding Drum.



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

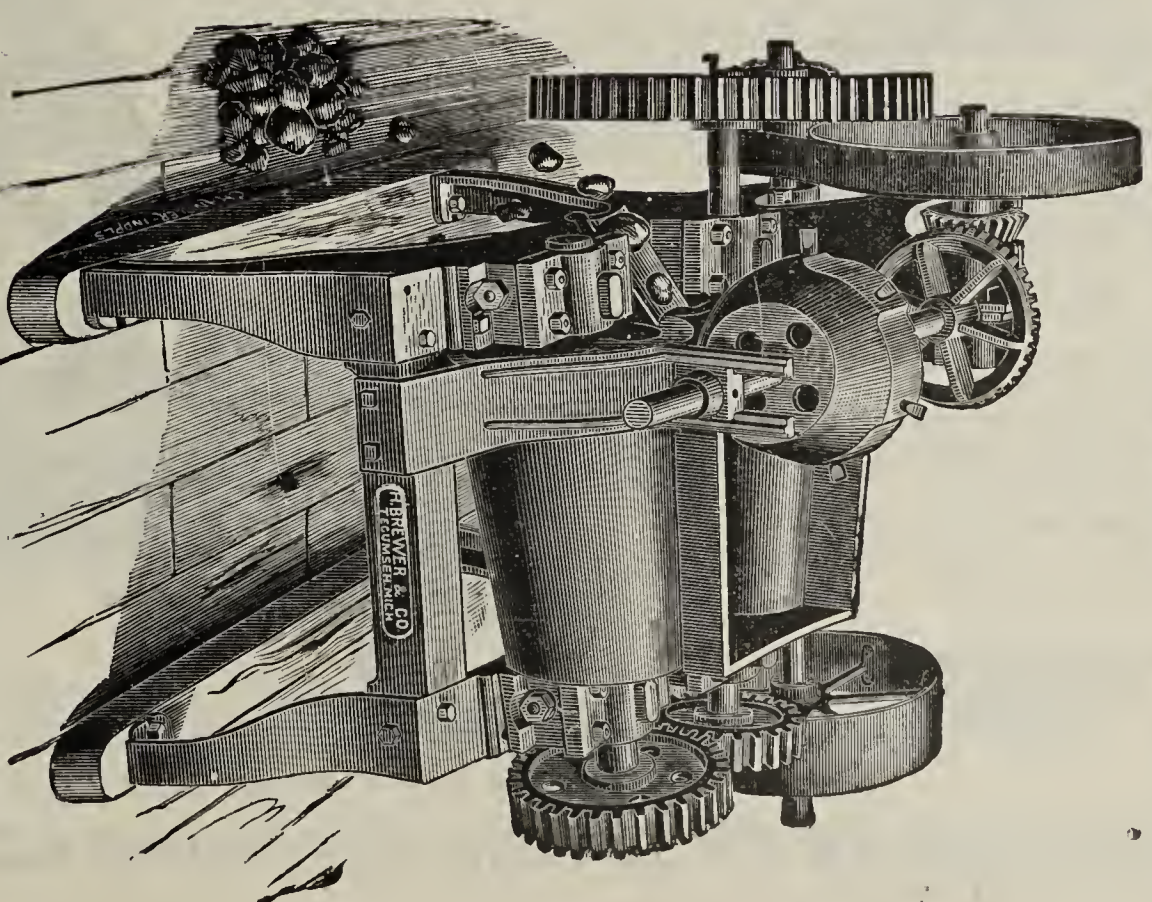
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

### H. BREWER & CO.,

[Mention the Clay-Worker.]

### Tecumseh, Mich.



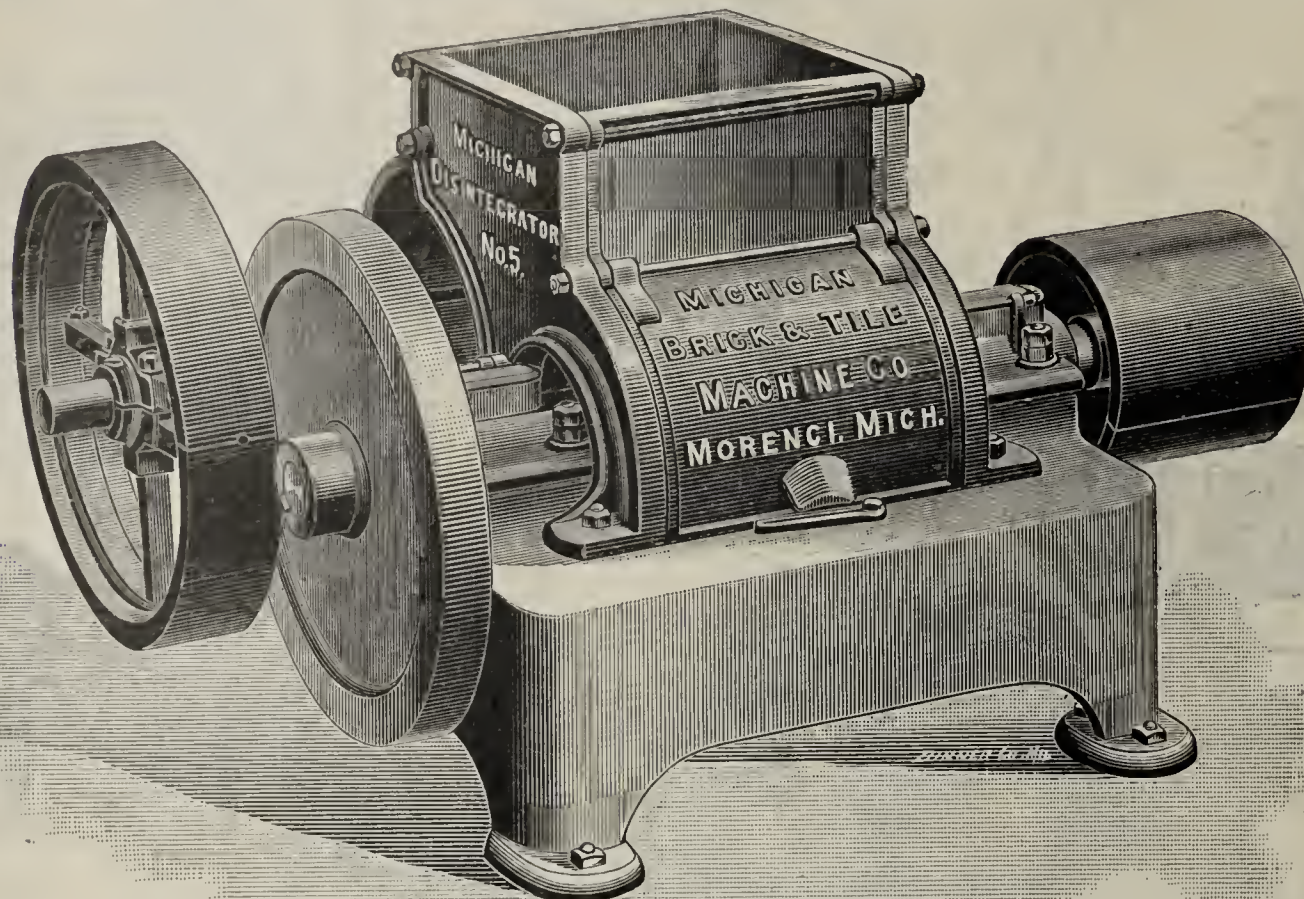
H. Brewer & Co's Combined Clay Crusher and Stone Separator.



The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



# MICHIGAN ❖ DISINTEGRATOR



G. S. DORNEY.



*Better Than  
the Best.*

## POINTERS:

Main Frame with bearings for Fast Roll cast solid. Speed of Fast Roll, 1,000.

Knives of the best tempered steel and very large, held in planed recess by planed and bolted key, running the entire length of knives.

All bearings extra long. Outer bearing to Fast Roll at Pulley end.

Made in sizes with capacity up to 100,000 per day.

The strongest, most durable, and with the high speed of the Fast Roll does better and more work than any other on the market.



C. C. HARRIS.

❖ DORNEY & HARRIS, ❖

MANUFACTURERS OF

Drain Tile and Large Pipe, Fire Brick, Common Brick, Flue Lining, Etc.

OFFICE: { Opposite Court House.  
City Office Phone 135.  
Factory Phone 197.

WORKS ON T. C. &amp; C. R. R.

Michigan Brick & Tile Machine Co., Morenci, Mich.

FINDLAY, OHIO, Dec. 24th, 1892.

DEAR SIR:—In reply to yours of the 23rd, inquiring as to how we are getting along with the No. 5 Disintegrator we purchased of you some time ago, will say we have been doing our work with it, very satisfactorily and we figure that we make enough better quality of goods to pay the price you ask, once a month over the smooth Roll Crusher we have been running. We have been running frozen lumps through it for several days past and have been making 15,000 4-inch tile for a day's work, and it seems to do its work with scarcely any effort on its part and runs very light and steady, and we see nothing to get out of repair. Trusting you will have a good trade, we remain

Truly Yours,

DORNEY &amp; HARRIS.



SOMETHING OLD.

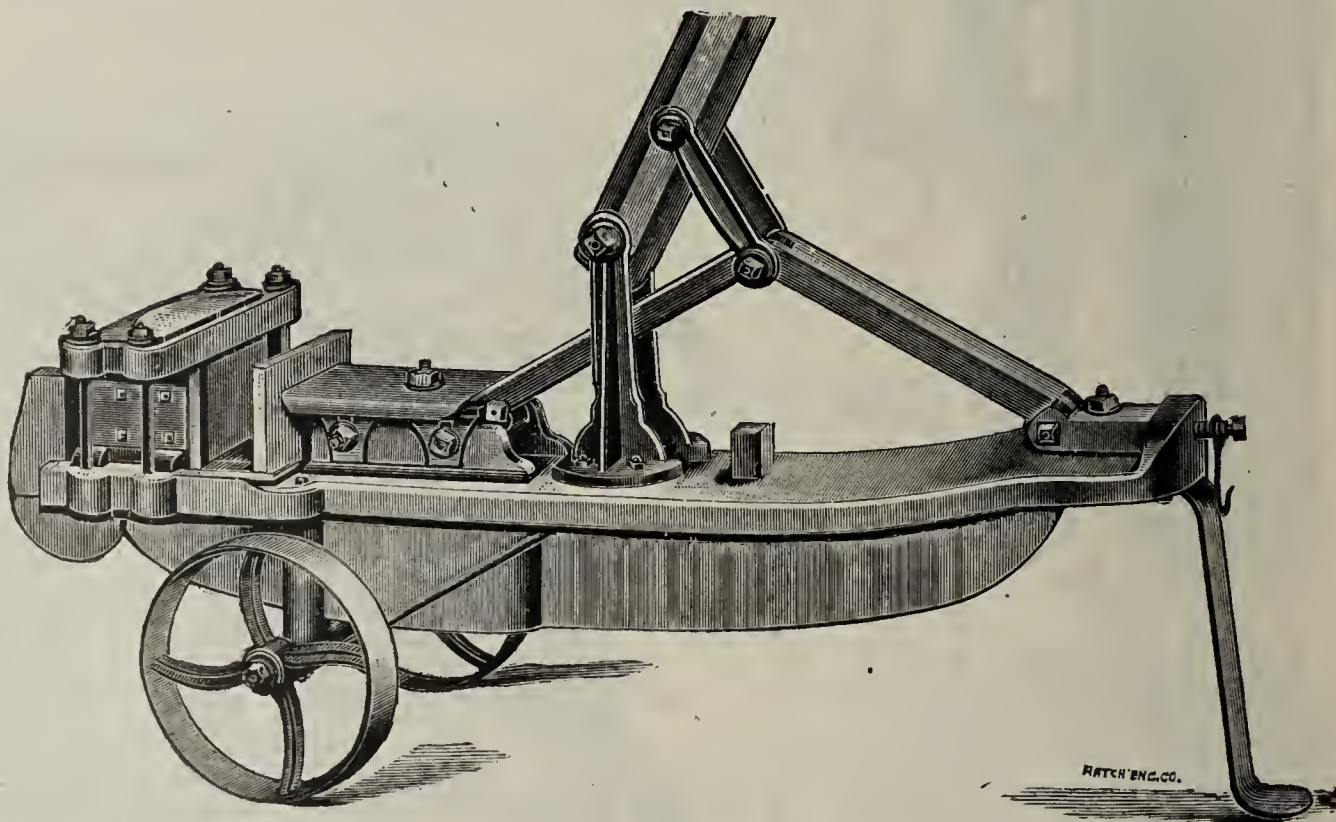
“Little Giant” Re-press

Patented 1870.

We have been making this Press for twenty-two years and sell it now as during the past, fully guaranteed. Capacity, 6,000 brick per day.

For perfect work it has no superior.

Price reasonable.

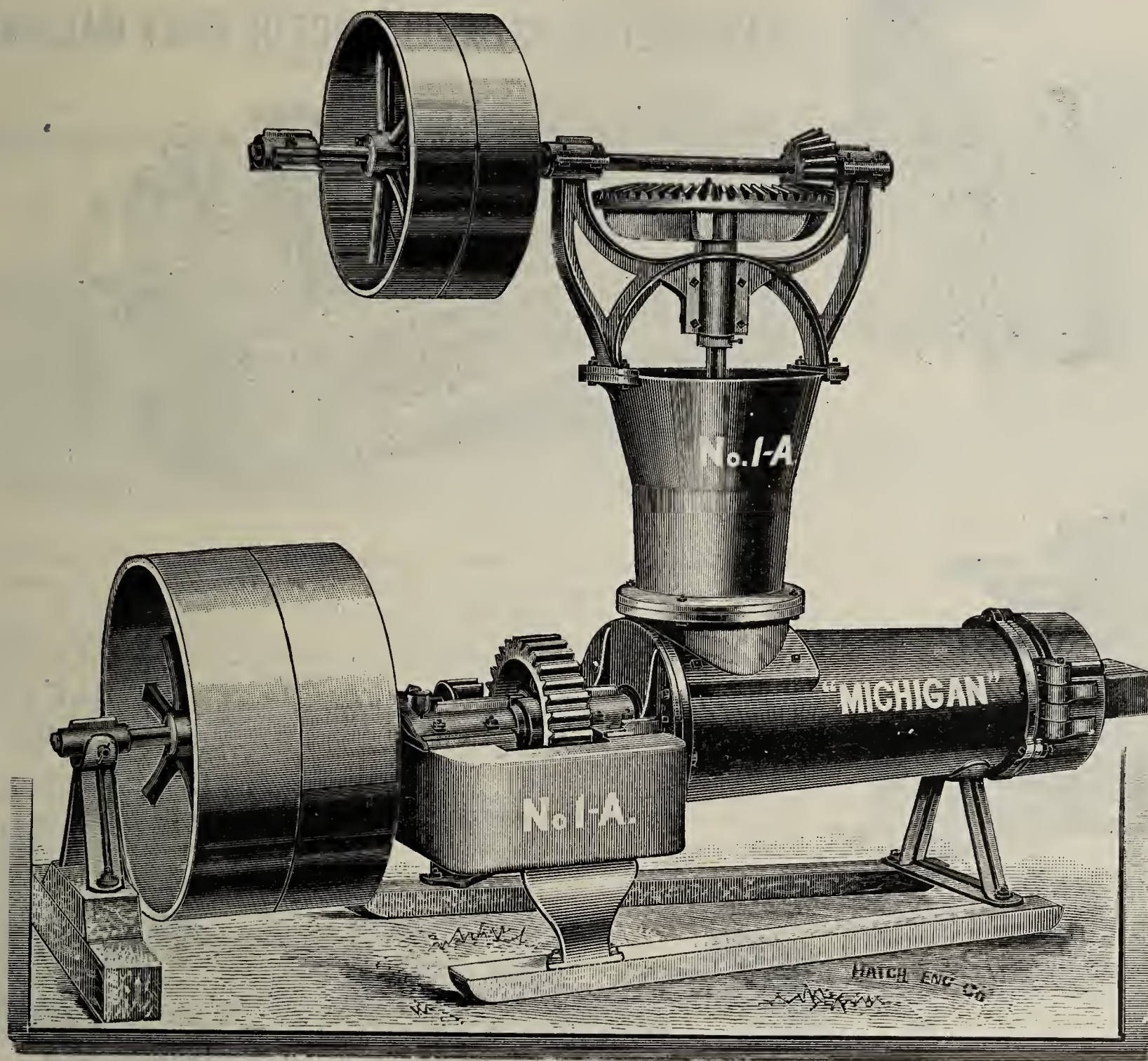


Send for Our New Catalogue and Price List.

MICHIGAN BRICK & TILE MACHINE CO., Morenci, Lenawee Co., Mich.



## No. 1 A Machine with No. 1 A Upright Pug Mill



**T**HIS is our medium size Brick and Tile Machine. Compound Gear, Safety Hinged Nose Piece, with Upright Pug Mill attached. Over seven feet of clay under constant pressure, thoroughly pugging and mixing the same and guaranteeing a steady and strong feed which increases the capacity and also improves the quality of the output. Main Frame with bearings cast solid. Tub cast solid. No joints and bolts to get loose.

The best on the market. No doubt about it. Write to us for Catalogue and Price List. If you want a machine of large capacity ask us about our "Eli" machine, which, like its namesake, "gets there."

### Michigan Brick & Tile Machine Co.,

[Mention the Clay-Worker.]

MORENCI, MICH.

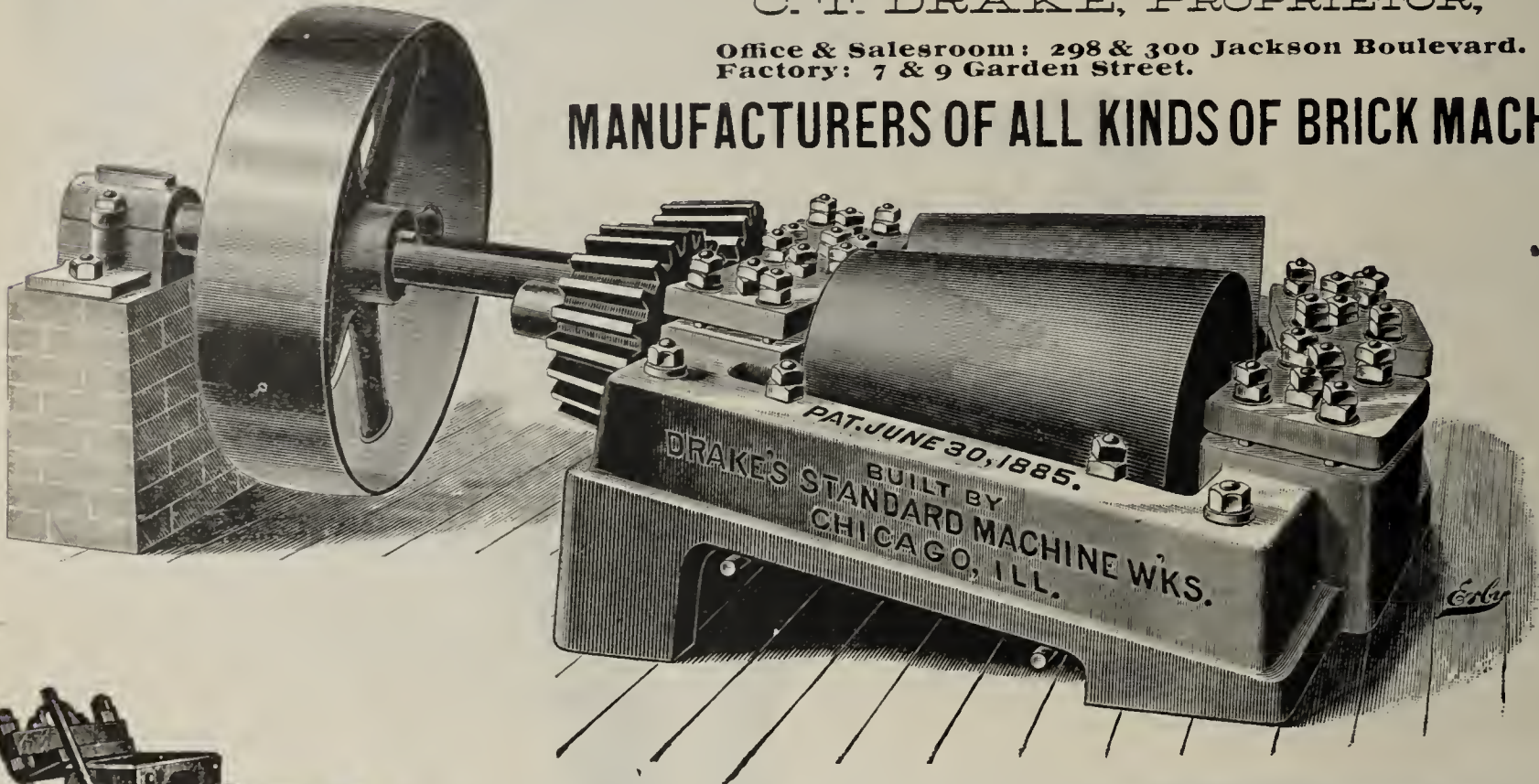


# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

**MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY**

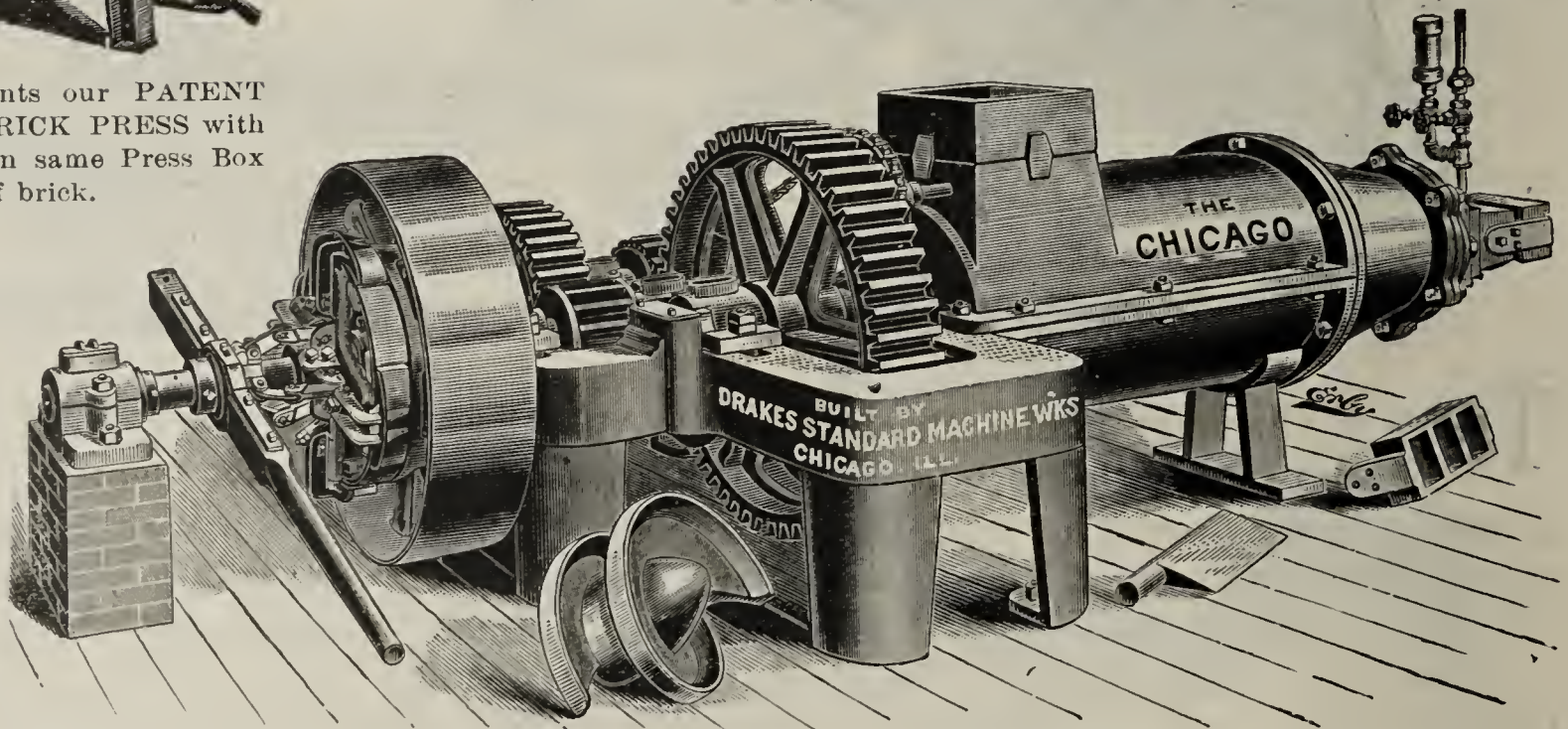


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 6 Crushers; Hayt & Alsip Co. is running 4 Crushers; Purlington, Kimbell Brick Co. is running 8 Crushers; May, Purlington & Bonner B. Co. is running 4 Crushers; J. B. Legnard is running 4 Crushers; Weckler Brick Co. is running 1 Crusher; Adam J. Weckler is running 1 Crusher; Weckler Prussing Brick Co. is running 1 Crusher; Chicago Brick Co. is running 3 Crushers; Union Brick Co. is running 2 Crushers; M. Myers is running 2 Crushers; Wahl Bros. is running 2 Crushers; Pullman Brick Co. is running 2 Crushers; Fred Zapel is running 1 Crusher; Myers & Toll is running 2 Crushers; Harms & Schlake Brick Co. is running 1 Crusher; L. Wehrheim & Son is running 1 Crusher; Alexander Burke is running 1 Crusher; John Sexton is running 1 Crusher; John Busse, Jr., & Co. is running 1 Crusher; Star Brick Co. is running 1 Crusher; John Busse is running 1 Crusher.

**NOTICE:**—Any parties manufacturing, or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

This cut represents our PATENT RED and FIRE BRICK PRESS with change of liners in same Press Box for different style of brick.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 1." Capacity from 30,000 to 40,000 brick per day. Surpassed by none.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 2). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, ETC., ETC.

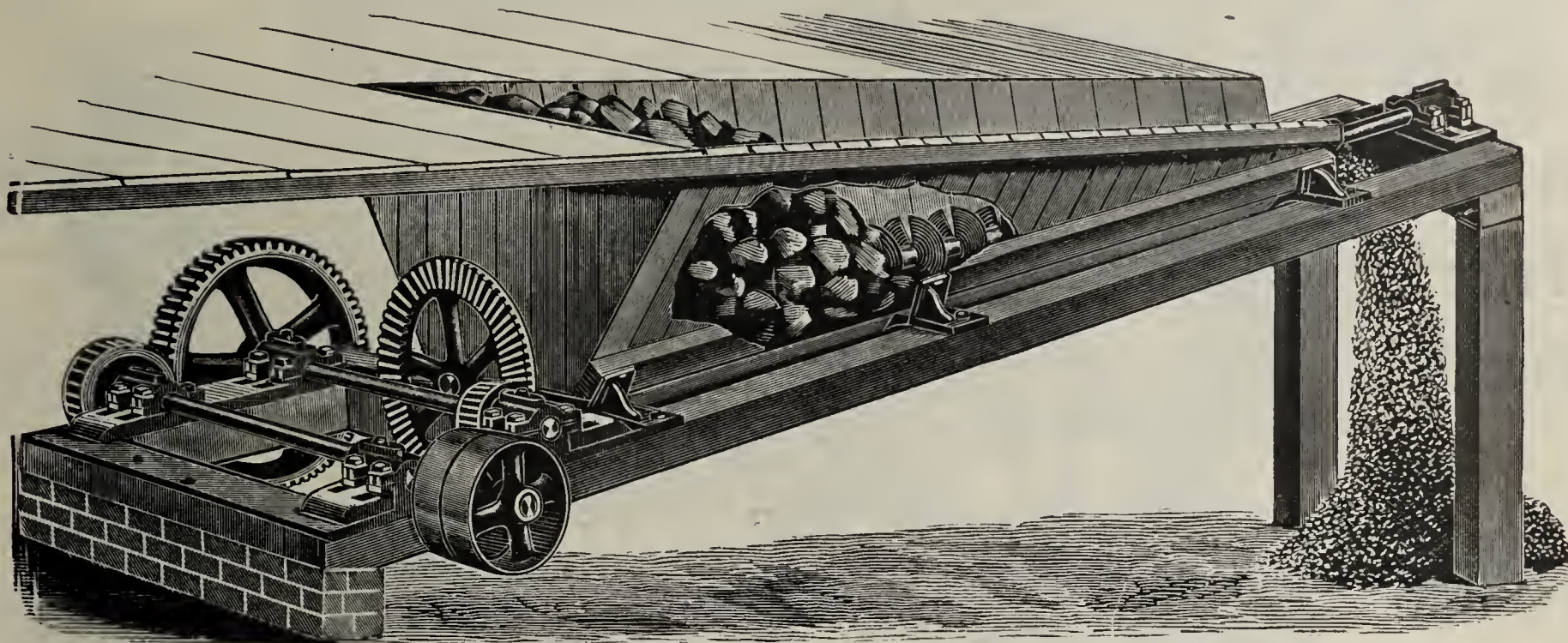
Send for circular of our GRANULATOR, it is the leader in Chicago, so says: Alsip Brick Co., Hayt & Alsip Co., May, Purlington & Bonner Brick Co., Kimbell Brick Co., Purlington-Kimbell Brick Co., and others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED.**



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard; Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

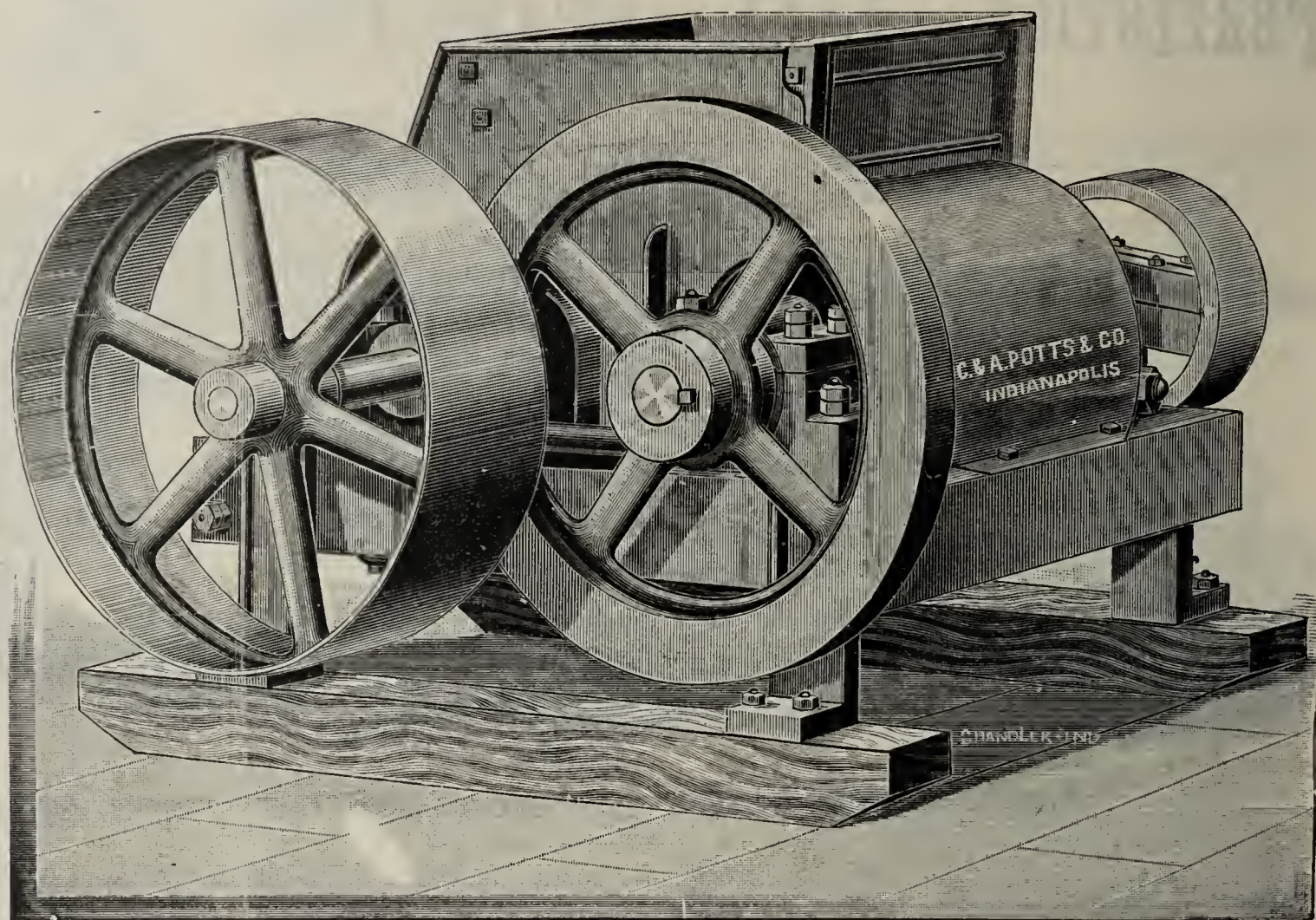
MUSKEGON, MICH.

Mention Clay-Worker.



# The Average Brick Manufacturer

Wants  
to Pay  
an Honest  
Price for  
Honest  
Goods.  
To Him  
We Offer  
the



## POTTS DISINTEGRATORS

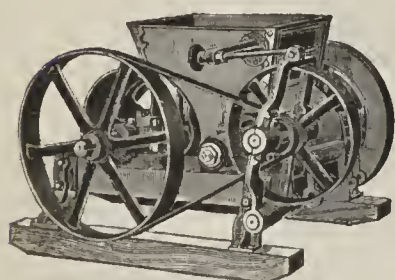
*As Being the Best and Most Durable Machine of the Kind Made*

We have spared neither time nor money to make them the *best*. We use none but the best material in their construction. The Rolls are cast from the best grades of iron and thoroughly **CHILLED**.

They are the only machines made that will take any clay direct from the bank and not choke or clog.

We make twelve sizes, having capacity of 15,000 to 120,000 per day.

### The Two Things Necessary



DISINTEGRATOR.

To Improve Quality  
and Reduce  
Cost of Production.



ALL IRON PUG MILL.

A Potts Disintegrator to grind the hard lumps and separate the stone.

A Potts Pug Mill to thoroughly temper and pug the clay.

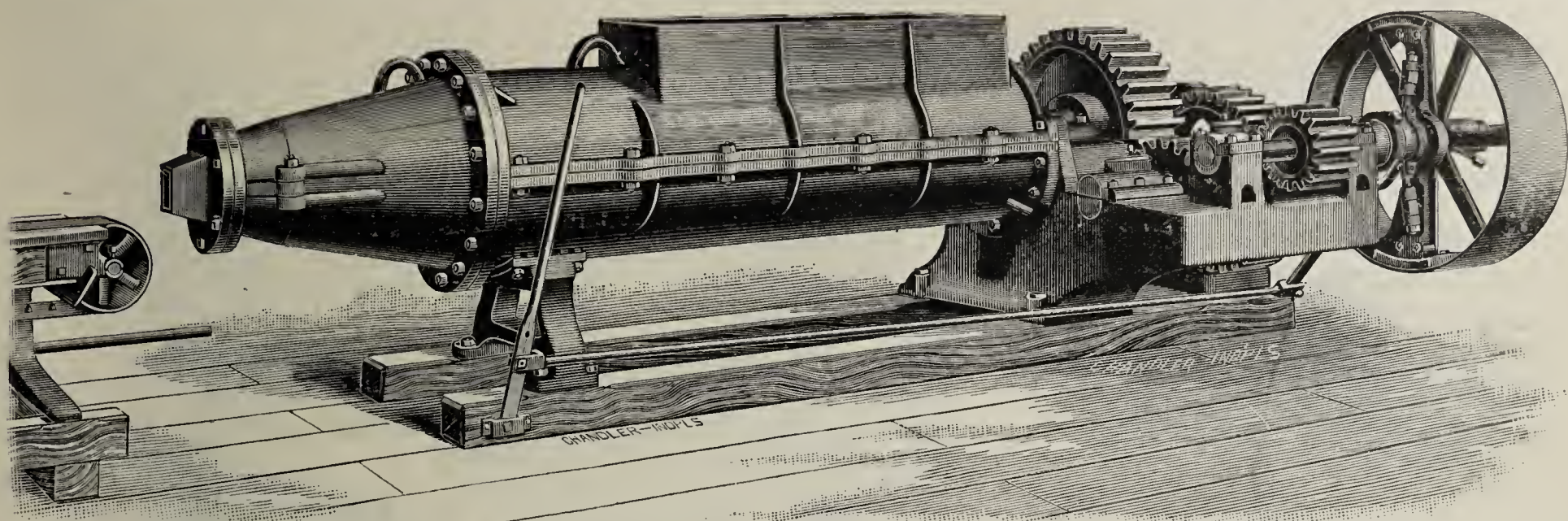
It will pay you to write us for prices and terms. We manufacture and keep in stock a full line of Clayworking Machinery and Yard Supplies.

## C. & A. POTTS & CO.,

INDIANAPOLIS, IND.



# Machinery for Manufacturing Street Pavers



*No. 1 Auger Mill.*

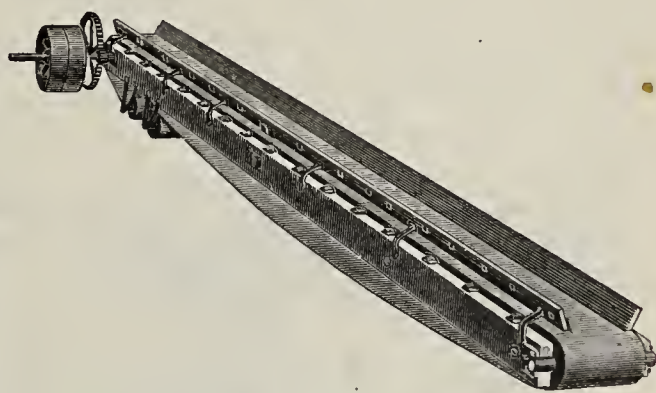
These Mills are made with either Automatic End-cut or Side-cut Board Delivery Tables.

These Mills are strictly high grade machines. They are built on the most improved principles, and are capable of doing a full day's work without breakage or unusual wear.

The gears are made from specially cut patterns, thus insuring smooth and true running.

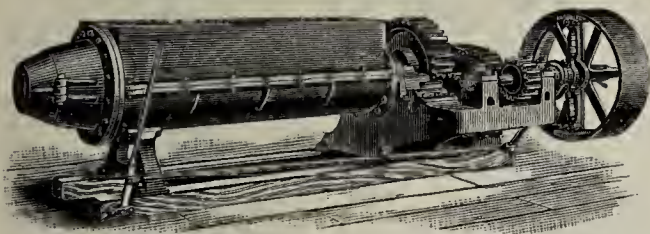
The shafts are steel, large in diameter and having long bearings, which are well protected from dust.

They are made in three sizes, having a capacity from 15,000 to 60,000 brick per day.



*Elevators made in any width desired.*

## Open Top Taper Pug Mills



Are the newest thing in the way of Pug Mills. They are strong and heavy, built especially for hard labor.

We manufacture a full line of Machinery for the manufacture of Street Pavers.

It will pay you to write us for prices.

**C. & A. POTTS & CO.,**

-

-

**Indianapolis, Ind.**



"IT SURPRISES EVERYONE."



**No. 1 Bucyrus Giant Brick Machine with Automatic Cutting Table.**

**The Frey-Sheckler Company,**

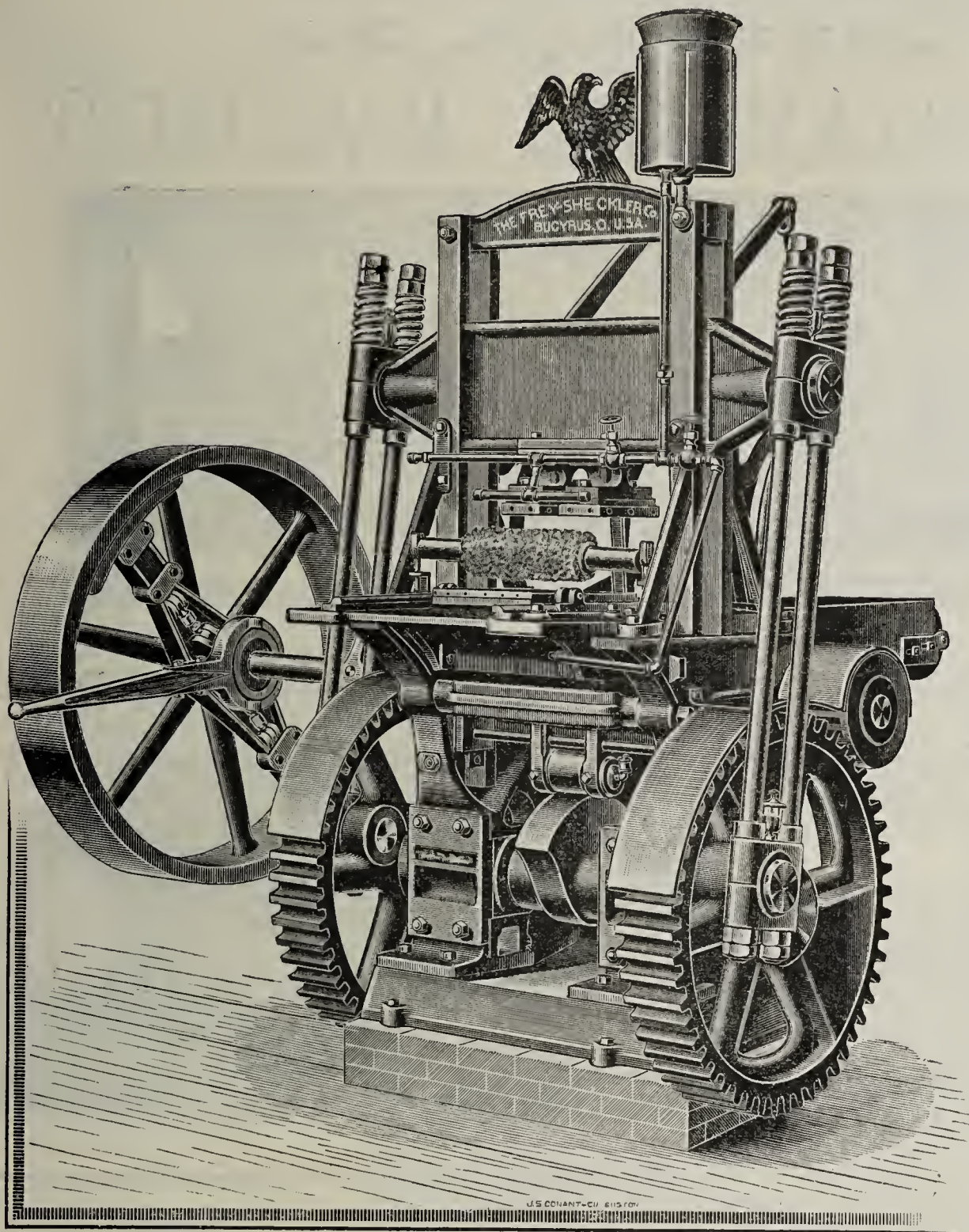
Manufacturers of Clayworking Machinery,

Send for New 1893 Catalogue.

BUCYRUS, OHIO, U. S. A.



# The Frey-Sheckler Co., Brick Machinery



Double-Die Steam Power Re-press.

We manufacture eight sizes of Brick, Tile and Terra Cotta Machines; Dry Pans, Wet Pans, Crushers, Pug Mills, Automatic and Hand-Power Cutting Tables, Winding Drums, Dump Cars, Conveyors and Elevators, Re-presses, Brick and Tile Trucks, Boilers, Engines, Line Shafting, Pulleys, Belting, Steam Dryers and full Factory Outfits.

Send for new 1893 Catalogue.

## The Frey-Sheckler Co.,

Manufacturers,

Bucyrus, Ohio, U. S. A.

[Mention the Clay-Worker.]

Isaac Harter, Josiah Correll, E. D. Keplinger  
Pres. V. Pres. Sec'y & Treas.

The Imperial Shale Brick Co.,

MANUFACTURERS OF

"Imperial Block Pavers"

CANTON, O., Dec. 16th, 1892.

THE FREY-SHECKLER CO.,

BUCYRUS, OHIO.

GENTLEMEN:—

We are in receipt of yours of the 15th inst., asking for samples of blocks made on your re-press. We will forward blocks to-day, and hope they will reach you in good condition. We think they are as near perfect as it is possible to get them, and attribute a great deal of the "perfection" to your press. We are very well pleased with the working of press, and think it the equal, if not the superior, of any press in the market to-day. It is a great saver of oil—which is no small matter in a re-press.

Wishing you the success which you deserve with this re-press, we are,

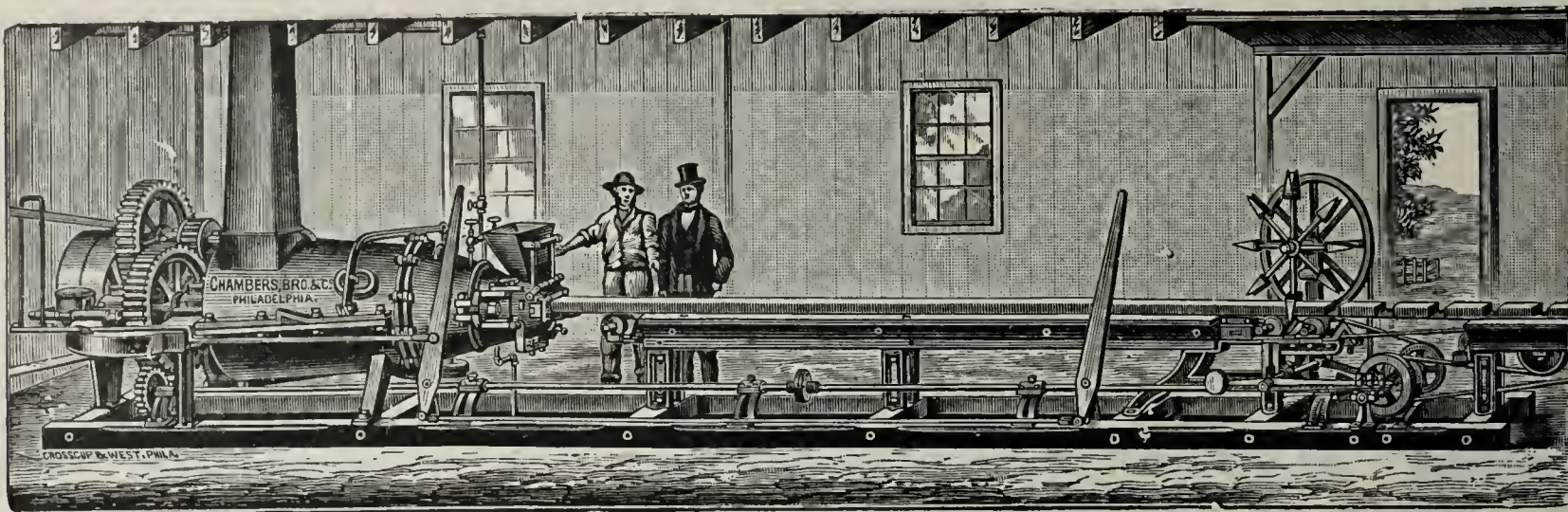
Very truly yours,

THE IMPERIAL SHALE BRICK CO.



# CHAMBERS BROTHERS Co.,

FIFTY-SECOND ST., BELOW LANCASTER AVE.,  
 PHILADELPHIA, PA.  
 IMPROVED BRICKMAKING MACHINERY.



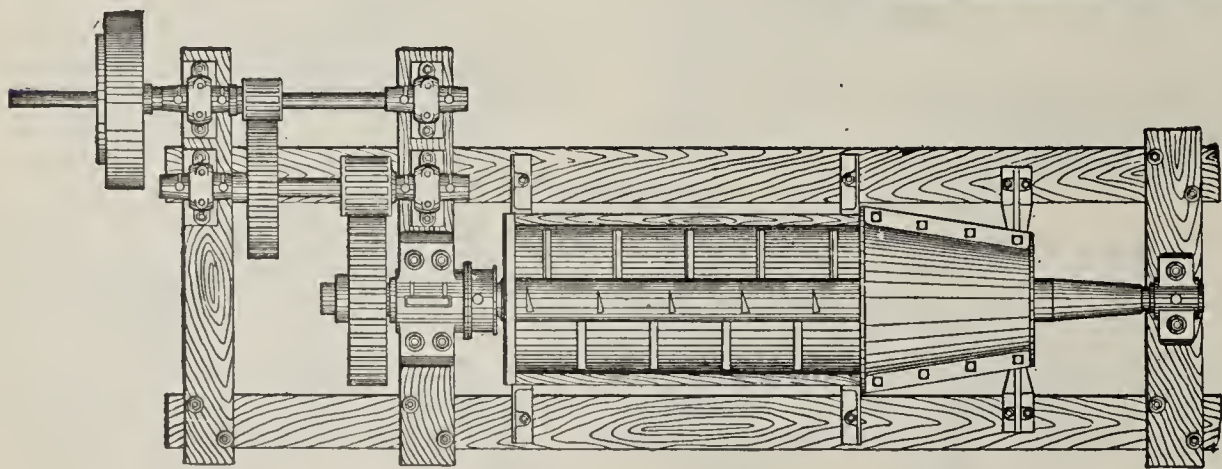
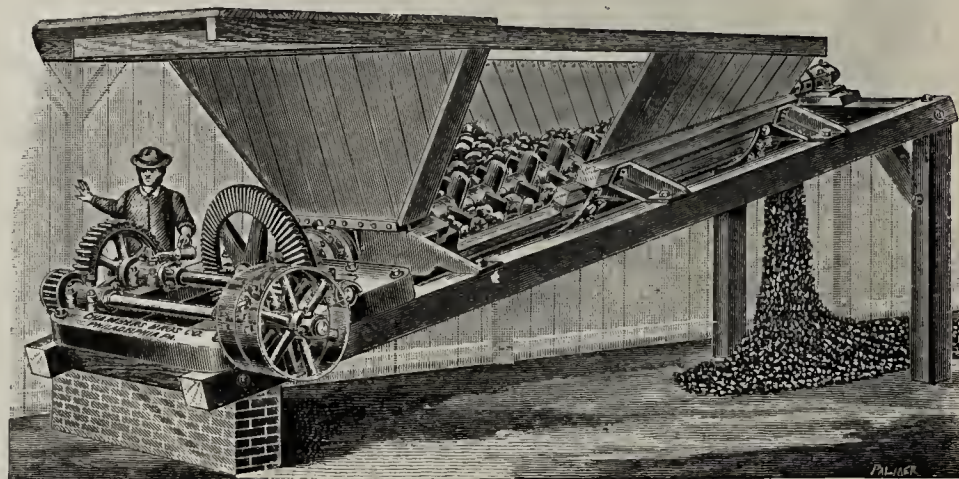
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
 PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS,  
 CRUSHING ROLLERS,  
 CLAY ELEVATORS.  
 Kiln Castings of All Descriptions.



# CHAMBERS BROTHERS Co.,

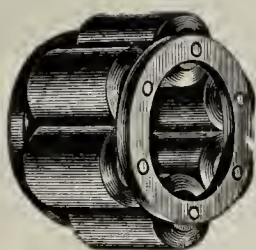
FIFTY-SECOND ST., BELOW LANCASTER AVE.,

PHILADELPHIA, PA.

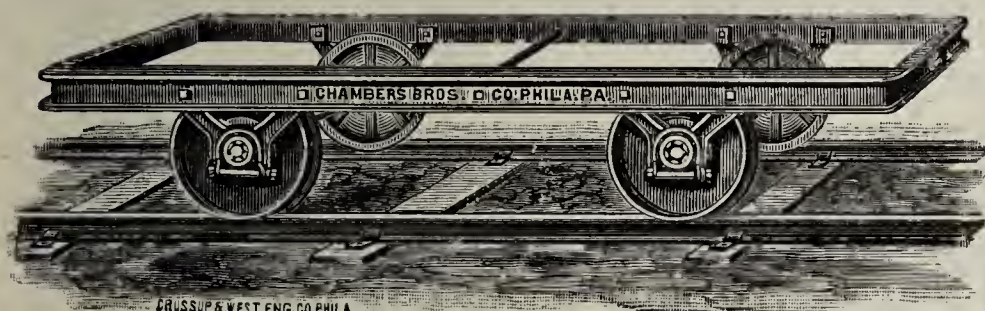
## Improved Tunnel Dryers For Common Brick

Cars and Complete Equipment for Artificial Dryers of all Kinds.

### STEEL PALLETS.



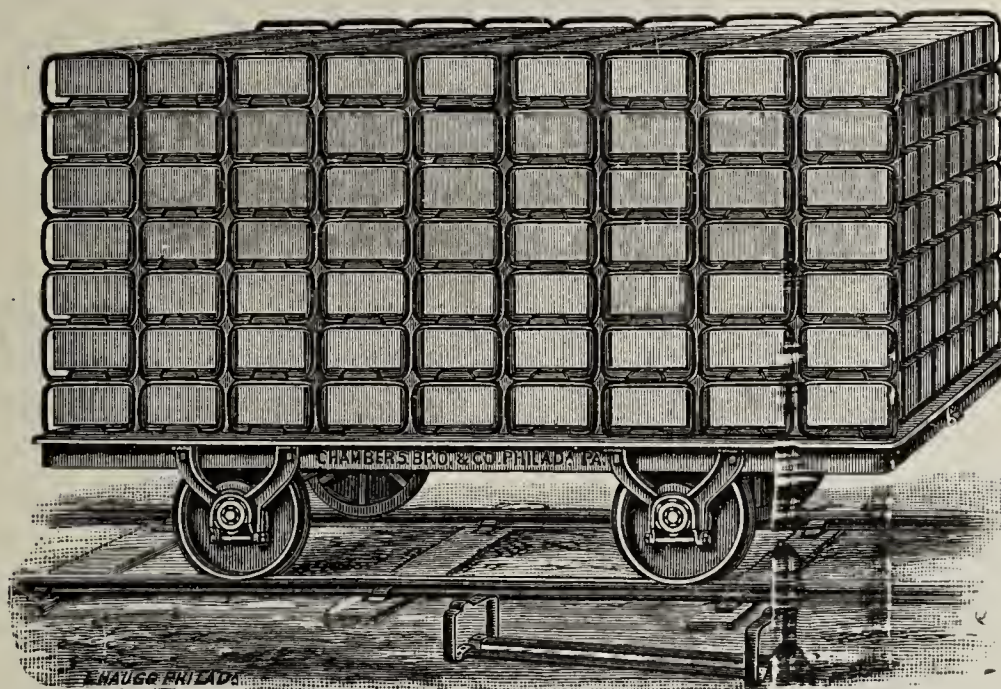
The Anti-friction Cage Roller Bearing used on our Cars.



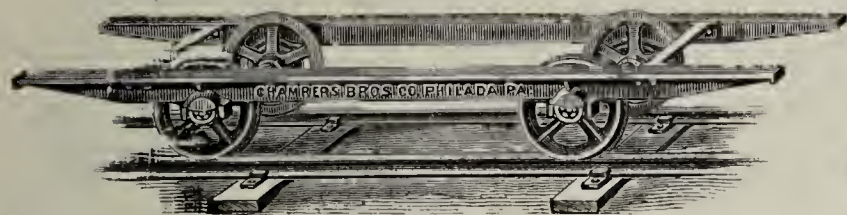
(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)



Car loaded with 63 pallets and 504 Chambers' Machine Brick.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

[Mention the Clay-Worker.]



FRANKLIN, PA., Nov. 19th, 1892.  
E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:—In regard to the working of the machine, we are much pleased with it and believe it is going to do our work better than any we have ever tried. Our clay is very hard to work, but your machine appears to handle it easily.

Yours truly,  
FRANKLIN PAVING BRICK CO.

FRANKLIN, PA., Dec. 19th, 1892.  
E. M. FREESE & Co.,  
GALION, OHIO.  
GENTLEMEN:—We enclose draft for balance of bill. The machine and press are working splendidly, and we feel assured are going to answer our purpose better than anything we have tried before.

Yours truly,  
FRANKLIN PAVING BRICK CO.,  
GEORGE ALLEN, Sec'y.

CANTON, OHIO, Nov. 2nd, 1892.  
MESSRS. E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:—

In reply to yours of the 19th ult., will say, that the "OHIO MAMMOTH" Machine has given entire satisfaction, we are making 45,000 to 50,000 brick per day, and brick that are second to none. It is very likely that we shall be in the market for another machine next Spring.

Yours truly,  
THE IMPERIAL SHALE BRICK CO.

# THE OHIO

OAK HILL, JACKSON CO., Oct. 4, 1892.  
To E. M. FREESE & Co.,  
GALION, OHIO.

DEAR SIRS:

Your letter to hand with inquiry as to operation of No. 1 Pug Mill. We have been working about six weeks and making three grades of brick. The flint clay for crown brick tempers better and more evenly than the wet pans we formerly used. For the No. 1 and No. 2 brick it works as well as can be and would not want any better.

As to capacity we cannot tell, as we are making only eight to ten thousand per day, and if we were to temper more per day, the Pug Mill would do better.

Yours truly,  
ÆTNA FIRE BRICK CO.,  
Per J. J. JONES, Ag't.

HARMARVILLE, PA., Oct. 29th, 1892.  
MESSRS. E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:

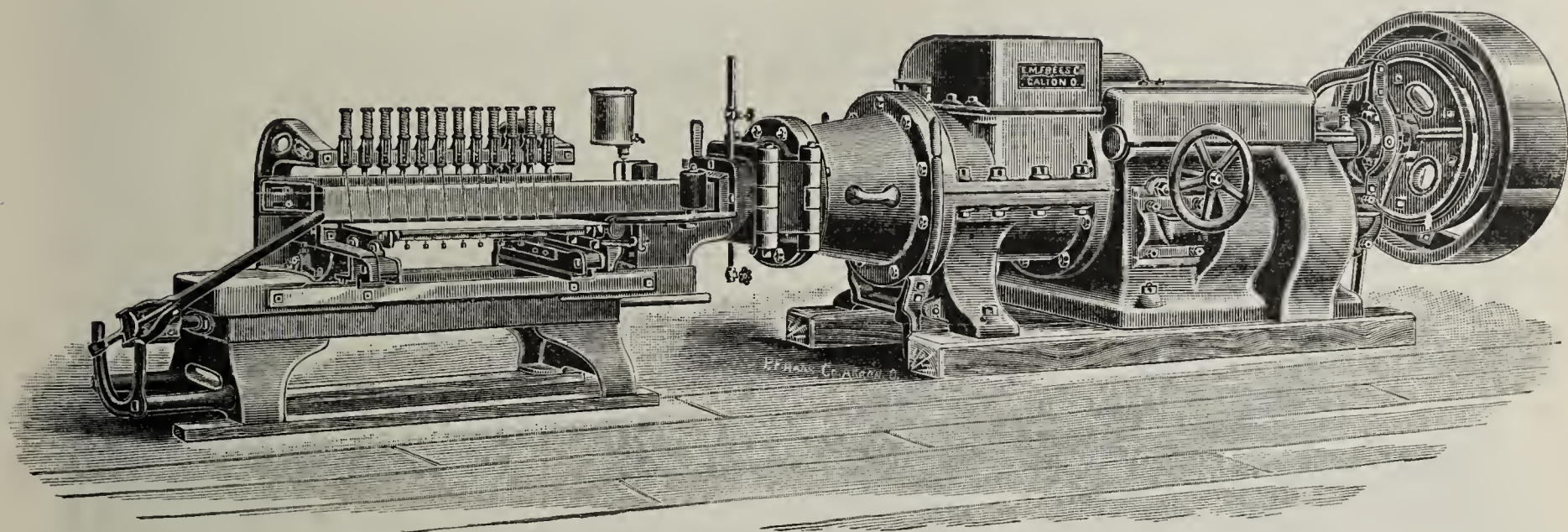
Yours of the 22nd has been received. As to the "Ohio" Brick Machine we can say unqualifiedly, that after five months' trial it reaches all our expectations as regards product, strength and apparent durability. Our material is very hard to work but your machine seems to solve the mystery, as we feel positive that we are making the strongest and most regular brick in our vicinity. Our output is 40,000 red brick per day, but this of course is not nearly the capacity of the machine. We remain,

Faithfully yours,  
KOUNTZ BROS.



## ✧ THE COST REDUCED! ✧

By the use of our Improved Machinery, the cost of producing the best quality of Paving, Building and Fire Brick is greatly reduced.



### The "Mammoth Junior."

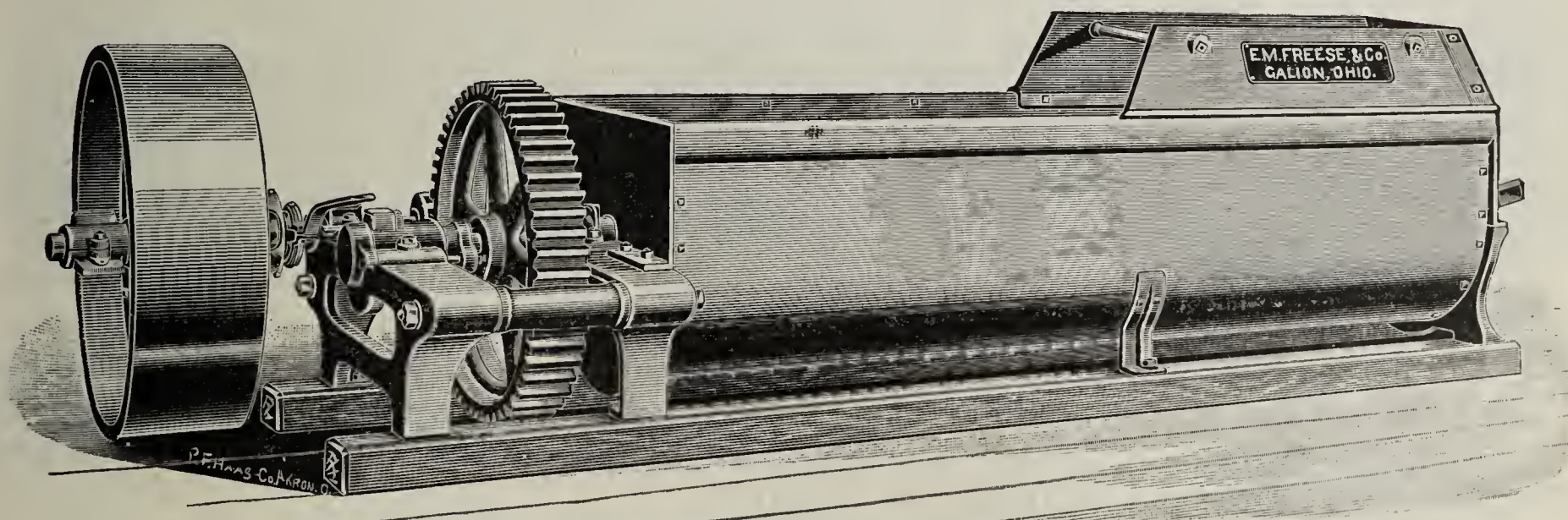
NEWEST PATTERN.      LATEST DESIGN.  
MONEY SAVING.      MONEY EARNING.

✧ Brick as fast as you want them, and in form and texture to suit you. ✧

We would like to tell you all about the innumerable special points in which this Machine has the advantage, and will do so if you are sufficiently interested to write us.

Our address is,

**E. M. FREESE & CO., GALION, OHIO.**

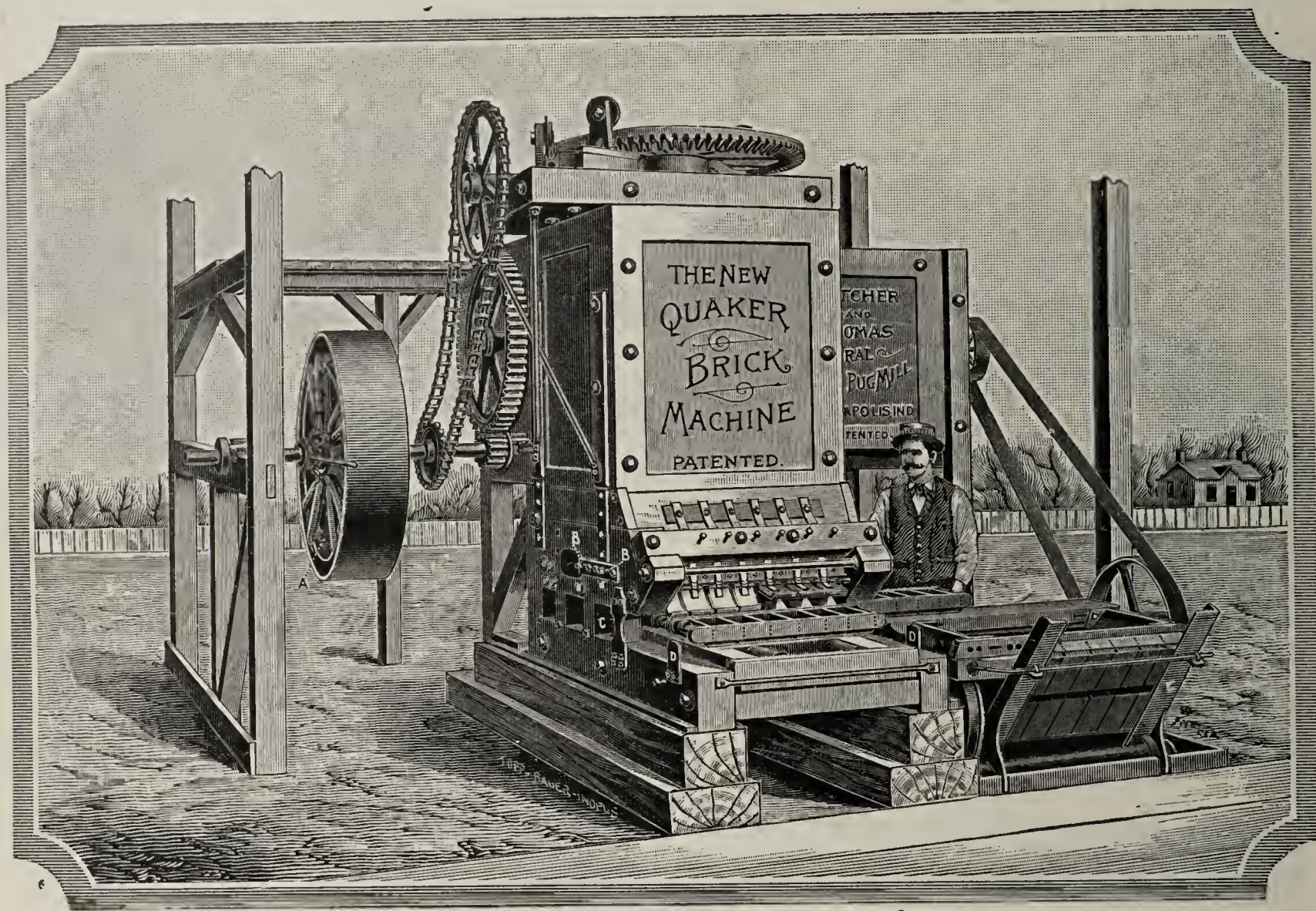


### No. 1 Pug Mill.

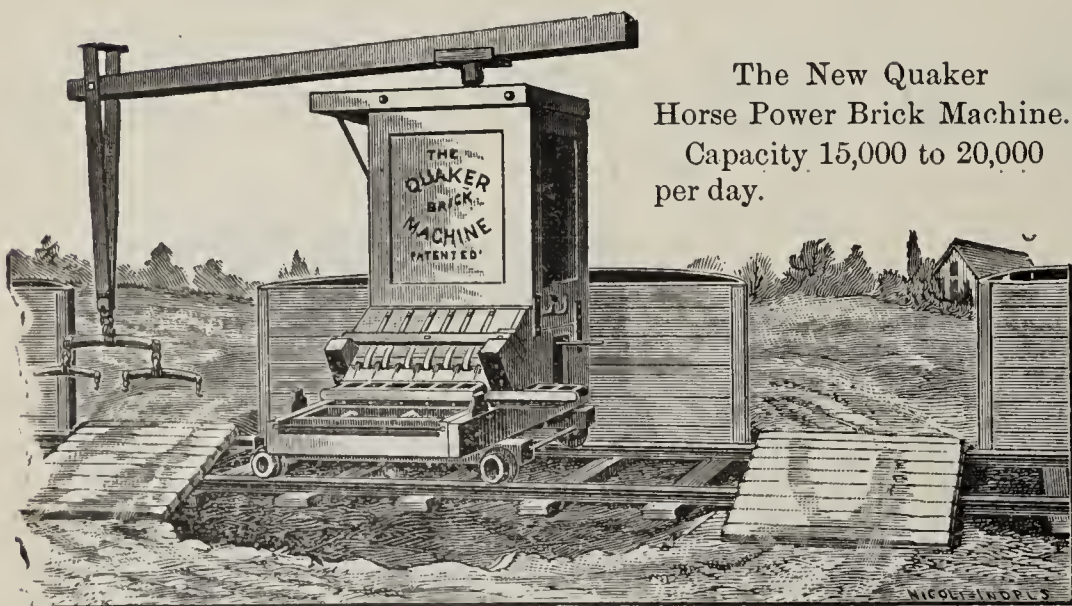
We build a variety of sizes and styles of Pug Mills to meet your requirements.



FLETCHER & THOMAS, INDIANAPOLIS, IND.  
 —MANUFACTURERS AND DEALERS IN—  
 BRICK MACHINERY AND BRICKMAKERS' SUPPLIES.



The New Quaker Extra Heavy Brick Machine. Pug Mill, etc., Complete. Capacity, 50,000 per day.



The New Quaker  
 Horse Power Brick Machine.  
 Capacity 15,000 to 20,000  
 per day.

If you want a machine for good practical every day work that has no complicated traps and triggers about it to get out of order, one that any person of ordinary judgment can full understand and operate, and one at is the most reasonable in price of any first-class brick machine made, then get the **NEW QUAKER**. Do not purchase elsewhere until you have seen our catalogue and prices.

We make a specialty of completely equipping yards both large and small, sending a man to set up and start everything where desired. Also furnish Engines, Boilers, Shafting, Belting, etc., etc., and keep constantly on hand Moulds, Barrows, Kiln Doors and Frames, Kiln Grates and all Brickyard Supplies.

Send for catalogue. Correspondence solicited.

FLETCHER & THOMAS, - - Indianapolis, Ind.

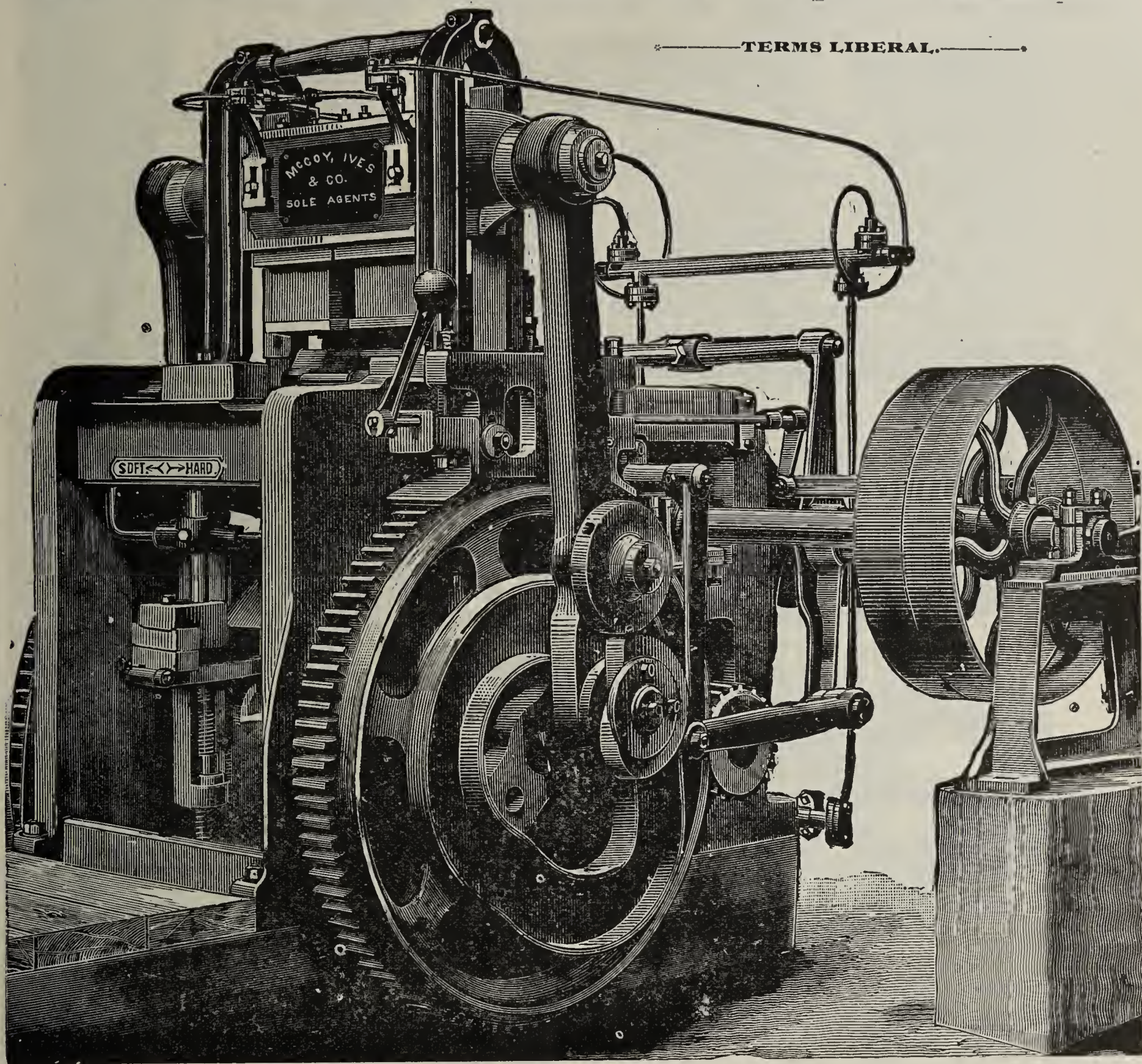


# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



WE now have a new Improved FOUR MOULD WHITTAKER.

This machine will fill a long felt want to the many who are now manufacturing brick by the Dry or Semi-Dry process, and will prove a boon to one and all contemplating the manufacture of brick.

Clay sent to us at St. Louis (freight prepaid) will be carefully tested, free of charge.

**IVES & LEONHARDT,**

ST. LOUIS, MO., U. S. A.

Mention the CLAY-WORKER.

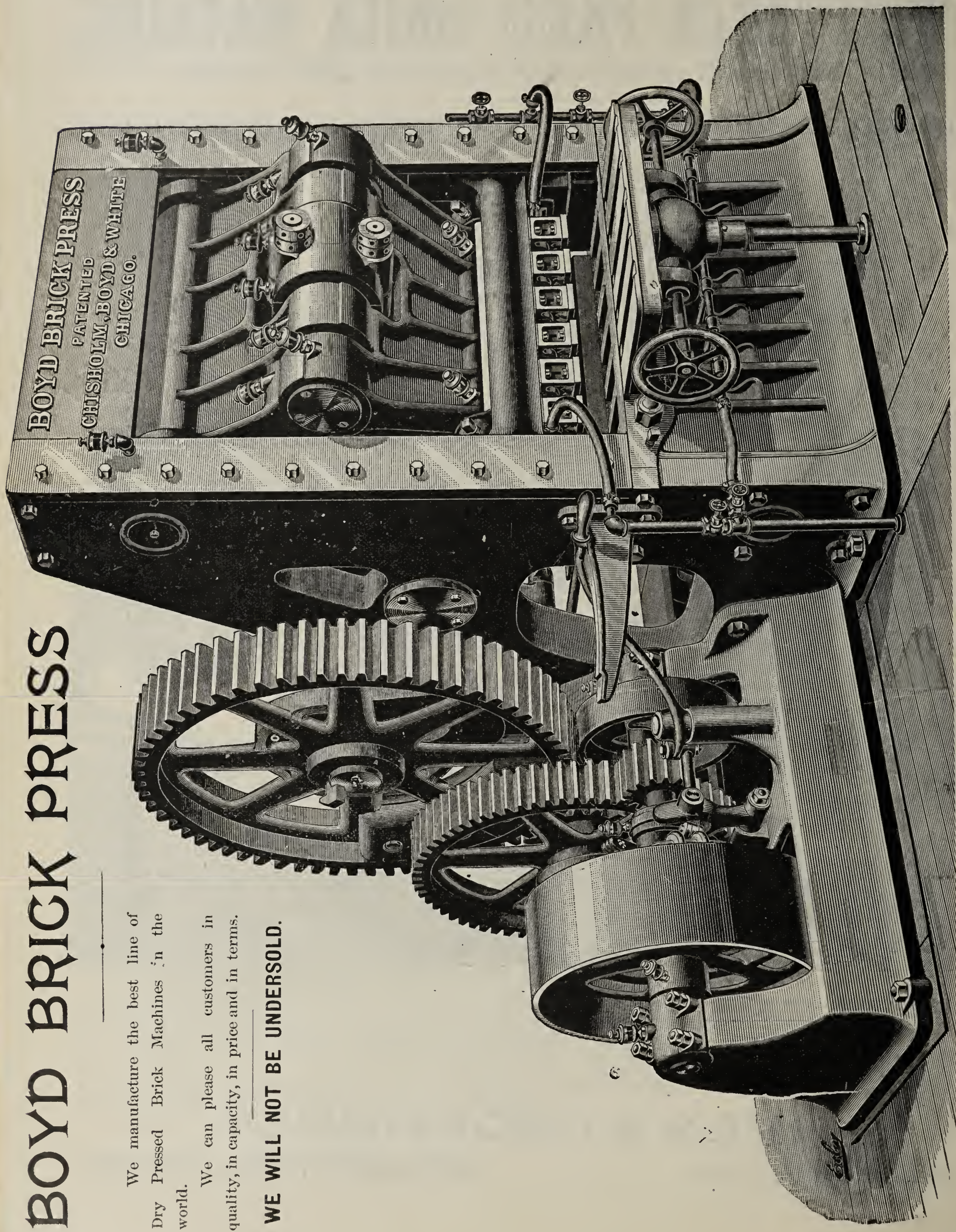


# BOYD BRICK PRESS

We manufacture the best line of Dry Pressed Brick Machines in the world.

We can please all customers in quality, in capacity, in price and in terms.

**WE WILL NOT BE UNDERSOLD.**



ADDRESS **Chisholm, Boyd & White, Monon Block, Chicago.**



### A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing the Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be our own in case of failure. Why experiment when you can have a sure thing.

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

CHICAGO.



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

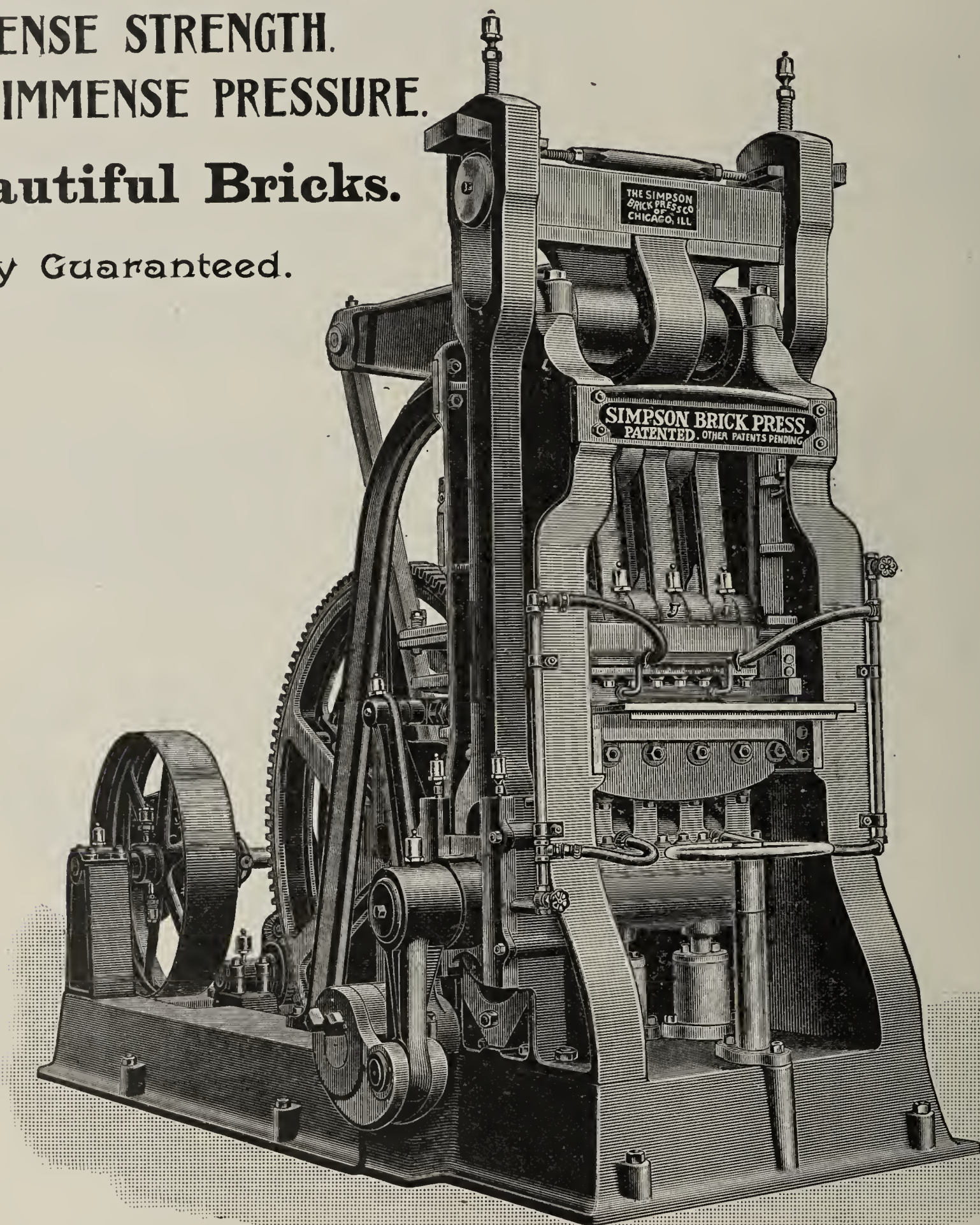
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

**Beautiful Bricks.**

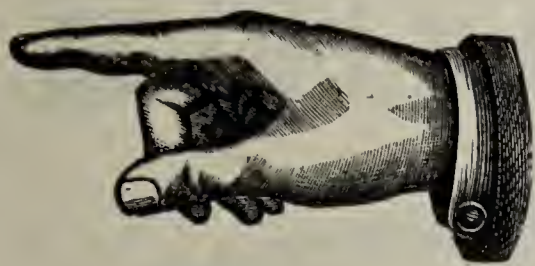
Fully Guaranteed.



APPLY TO  
**THE SIMPSON BRICK PRESS CO.,**  
 Room 210, 87 89 and Wash, St., Chicago, Ill.

Agent for the South, D. B. DRUMMOND,  
 313 Commercial Bld'g, St. Louis, Mo.  
 Agents for Canada, WATEROUS ENGINE WORKS CO.,  
 Brantford, Canada.





# See the SIMPSON PRESS.

READ WHAT A USER THINKS OF IT.

TELEPHONE 2934.

O. W. McFARLAND, President.  
CHAS. BRANAH, SR., Vice-President.  
R. F. KILDEN, Secy and Treas., 112 N. 6TH STREET.  
M. J. REILLY, Superintendent.

COTE BRILLIANT PRESSED BRICK CO.

OFFICE, 5216 ST. LOUIS AVENUE

St. Louis, Mo. Sept 3<sup>rd</sup> 1892

Messrs Simpson Brick Press Co  
Chicago

Gentlemen  
After using your Dry Press  
Brick machine for about 16 months we are  
thoroughly convinced that it is the very  
best machine in market to-day. And we would  
not exchange for any other machine known.  
We average 20,000 brick per day of 10 hours  
when making common brick - And when making stock  
brick we average 17 to 18,000. Our Repair bills have  
been a little less than \$14.00 per month. And we have  
not lost 3 consecutive hours at any one time  
since we started, on account of the machines.

We began with one machine in April 1891.  
So well did we like it that we put in another  
in July 1891. And our confidence was so  
great and satisfaction so complete, we put  
in another in April 1892. And if we are  
ever in need of more machines. The  
"Simpson" is our choice. We would not  
buy any other.

Sincerely, Yours

Cote Brilliant Pressed Brick Co M J Reilly



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

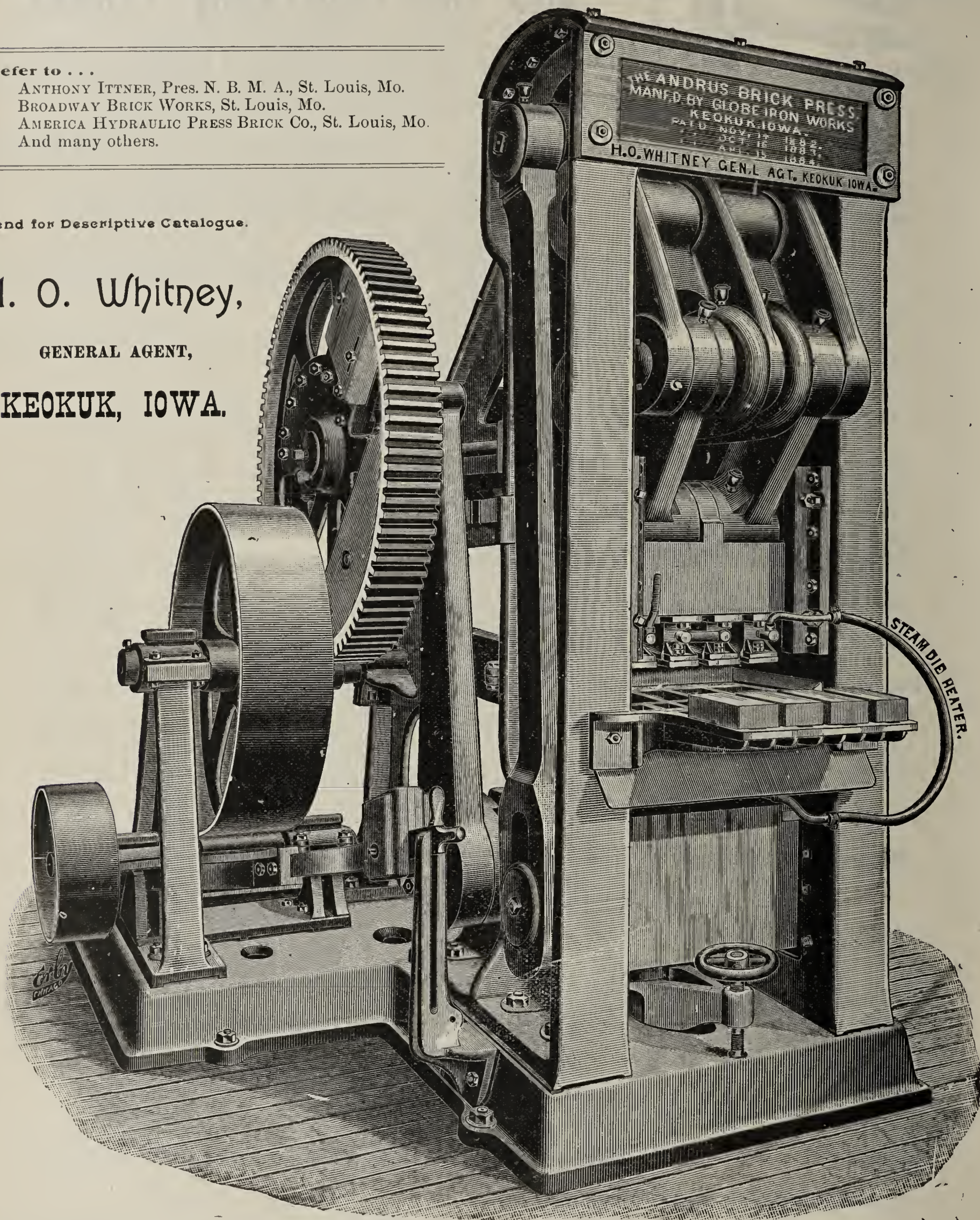
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.



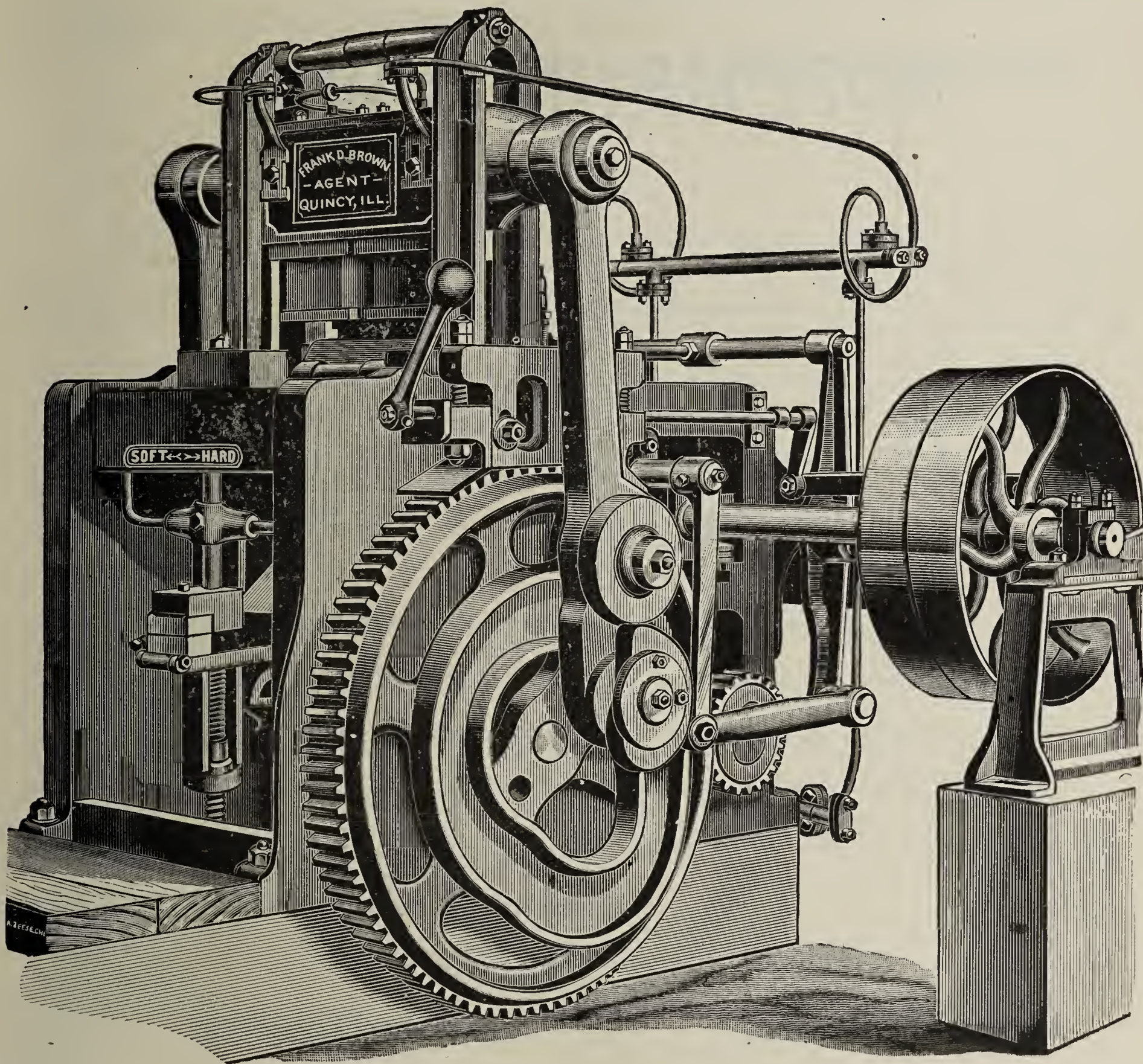


# Whittaker Press Brick Machine

Works Clay Semi-plastic, Semi-dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



Clay sent freight prepaid will be pulverized, pressed and burned free of charge.

**FRANK D. BROWN, Sole Owner and Agent,**

For Territory East of Mississippi River,  
Except Minnesota and Wisconsin.



QUINCY, ILL.



# HOFFMANN KILNS.

---

## Plans for Building Genuine

HOFFMAN KILNS with all late improvements are furnished, at low rates, by the inventor, Fred Hoffman, 7 Kessels St., Berlin, Germany. ∴ ∴ ∴ ∴

Brickmakers who intend to erect Hoffman Kilns should state how many brick they want to burn in the Kiln per season, also, size of brick and kind of fuel used, coal or wood?

FRED HOFFMANN,  
7 Kessels Street, Berlin, Germany.



✧ ED. H. CALLAWAY, ✧

CONSTRUCTING ENGINEER AND BRICK MANUFACTURING EXPERT,

— WITH —

PHŒNIX FOUNDRY & MACHINE CO.

Manufacturers of Brick Drying Cars, Transfer Cars, Turn Tables,

and full Dryer Equipments. Engines and Boilers and General Machinery.

SYRACUSE, NEW YORK.



General Agent for Sharer's Improved Brick Dryers and Calorific Kilns. Will construct Brick Manufacturing Plants Complete, furnishing all necessary Machinery. Plans and Estimates furnished. CLAYS TESTED. NO TROUBLE TO ANSWER INQUIRIES.

Ten years practical experience.

PAVING BRICK PLANTS A SPECIALTY.

We are wedded to no particular Brick Machine or system of manufacturing bricks, but will examine your clay, location and all conditions, and put in the machinery on system best adapted to your clay and locality. We will build the plant and turn it over to you and guarantee it to make first-class bricks, as economically as they can be produced in that particular section.

WE TAKE ALL THE RISK.

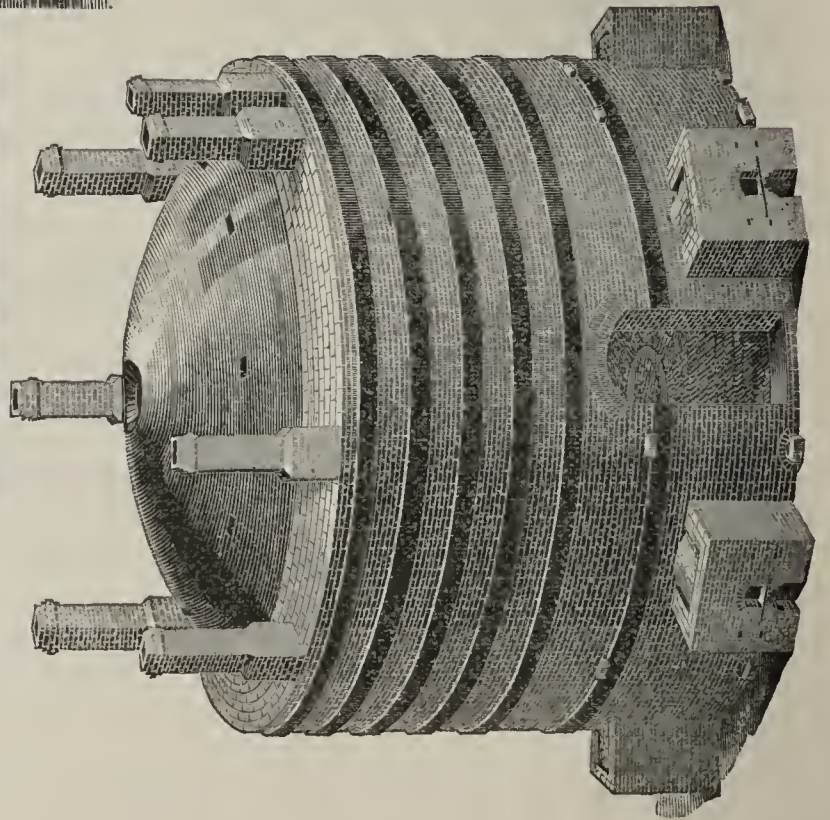
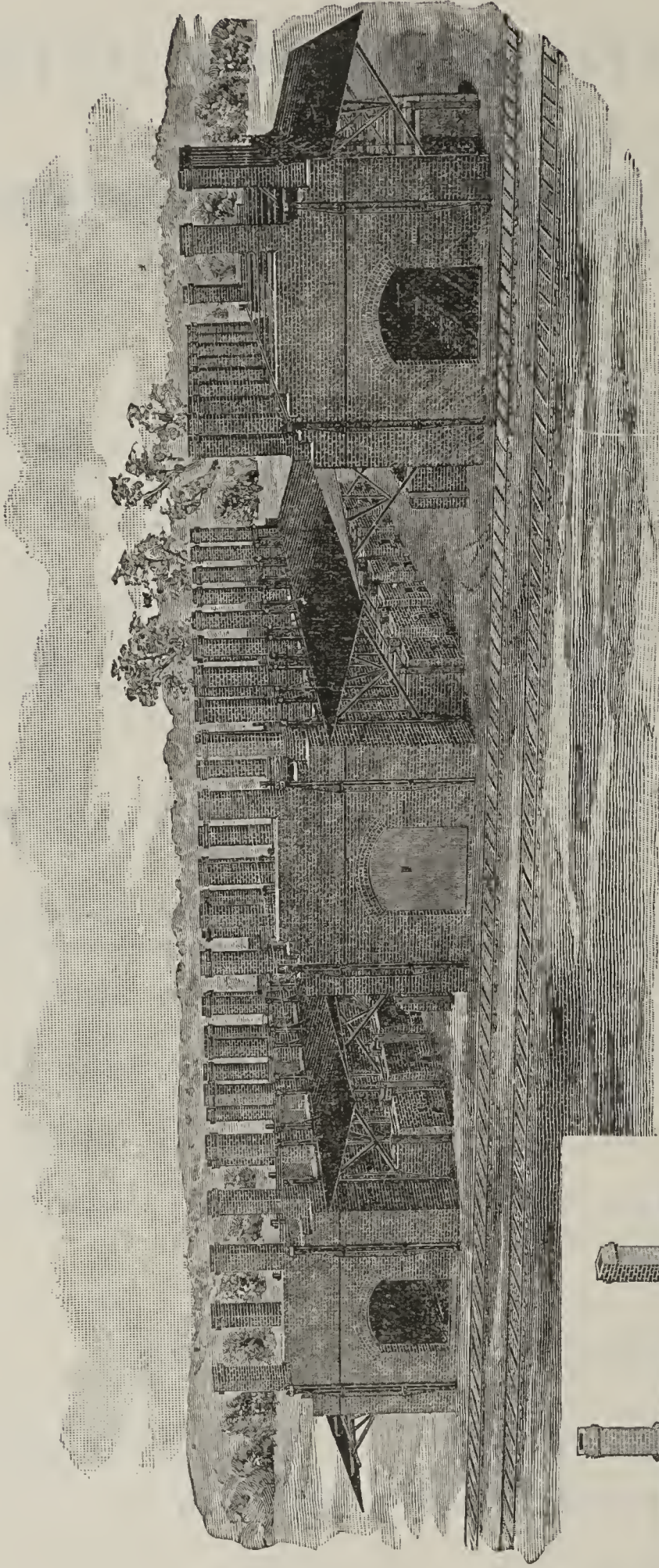
New beginners should not fail to consult us before erecting a plant. And "old timers" might get some good points from us. Correspondence solicited.

500 EAST WATER STREET,

SYRACUSE, N. Y.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,  
64 Johnston Buildings,  
Cincinnati, Ohio.





# SERCOMBE'S PATENT CHAMBER KILN.



**SPECIALTIES:—Perfect Control of the Fire. Perfect Combustion. Perfect Results and Perfect Economy in Erection and Operating.**

November 22, 1892.

## To American Brickmakers:

We respectfully request your attention to the following particulars of our "Patent Perfect Kiln." Naturally you may desire to see the same in operation before deciding to erect one of them. We therefore take pleasure in informing you that our Mr. Sercombe has left England for the purpose of operating the kiln erected by Messrs. The Ostrander Fire Brick Company, Fords, N. J., and he will be pleased to exhibit the same to you when ready for inspection; will you kindly communicate with him on the matter at your convenience, and we trust that business will result.

The kiln has proved a grand success in England, as may be judged by the testimonials we have received and the references we can give, and large numbers of kilns are being erected or converted to our system in various countries.

We get what has never before been obtainable in any Chamber kiln, viz.: (1) PERFECT CONTROL OF THE FIRE; (2) PERFECT COMBUSTION; (3) PERFECT RESULTS; and (4) PERFECT ECONOMY IN ERECTION AND OPERATING.

We can burn ordinary bricks (all hard) with 2-cwt dust coal to the 1000, and we have lately—as a test—burnt for Messrs Martin Bros., Ltd., of Plymouth, a Chamber of the most refractory Fire Bricks in the world, with 3½-cwt., the same goods requiring 15-cwt. rubble in down draft kilns. The proprietors were so well pleased with the result that they immediately gave us an order for a big kiln, and intimated their intention of erecting four more of them later on.

The cost of erecting the various sizes will differ, according to cost of materials and labor in the different districts. We give approximate estimates below:

### FOR A NUMBER 1 KILN,

Containing 14 chambers, each chamber being 13x14x8, and holding about 11,000 bricks, 9x4½x2½ when burnt, and turning out from 30,000 to 75,000 per week, according to the supply of bricks and requirements.

49,000 for 98 feet chimney stack.

209,000 for kiln.

20 tons of lime.

4 tons of castings.

Sand and rubble.

Labor in England varies from \$1,000 to \$1,250. (Calculated at from 12 to 18 cents for masons and 8 to 12 cents for laborers.)

License fee, \$625, payable half down.

### FOR A NUMBER 2 KILN,

Fourteen chambers, 16x17x10, each holding about 22,000 bricks, and turning out from 40,000 to 110,000 weekly.

49,000 for 98-foot chimney stack.

370,000 for kiln.

30 tons of lime.

5 tons of castings.

Sand and rubble.

Labor in England \$1,500 to \$1,750.

License fee \$875, payable half down.

### FOR A NUMBER 3 KILN,

Sixteen chambers, 16x17x10, 22,000 capacity, and turning out from 60,000 to 130,000 weekly.

60,000 for 112-foot chimney stack.

425,000 for kiln.

35 tons of lime.

5½ tons of castings.

Sand and rubble.

Labor in England \$1,750 to \$2,000.

License fee, \$1,000, payable half down.

FOR A NUMBER 4 KILN, double the capacity of a No. 2, the cost would be nearly double No. 2, and the fee would be \$1,750, payable half down. Only two burners are required for this kiln, same as for the others.

Correspondence solicited.

## SERCOMBE, OSMAN & WARREN,

Exmouth, England.

Mention the CLAY-WORKER.



# MORRISON'S

## IMPROVED KILNS

### FOR BURNING CLAY WARES.

---

DAILY PRODUCT OF OUR KILNS IN UNITED STATES---ONE MILLION BRICKS.

---

Especially adapted to burning paving, repressed, ornamental and common bricks.

\* \* PATENTED IN UNITED STATES AND CANADA. \* \*

SUCCESSFUL.



DURABLE.

Pressed bricks burned without fire marks, of uniform color. Arch bricks all fronts or pavers

————— AND NONE DAMAGED. —————

Coal screenings preferred for fuel. Will burn either wood or coal. One fireman for two hundred thousand bricks.

  THE  ONLY  KILN  

That regulates the temperature of heat, and directs its course by a system of air drafts, giving complete control of the degree of heat, as well as its manipulation. This system we have covered by letters patent. Parties using these air drafts are liable to prosecution for infringement.

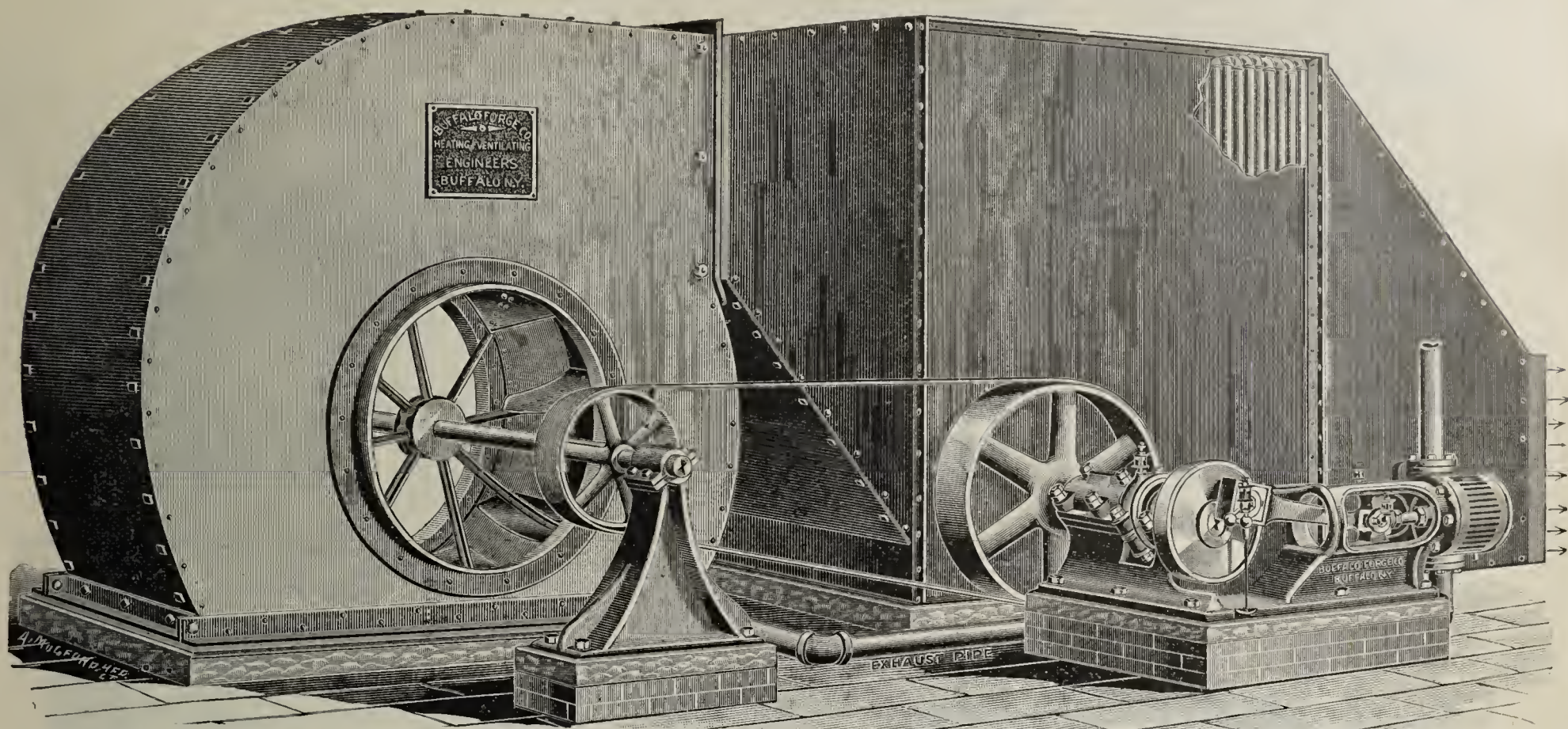
For descriptive circulars, prices, terms, etc., address us, stating what you want.

R. B. MORRISON & CO.,  
PROPRIETORS,

Box 335,

ROME, GEORGIA.





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To **CLAIM** that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is **ONE** thing; to **PROVE** it is **QUITE ANOTHER**.

The proof that **Buffalo Progressive Brick Dryers** embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO. Buffalo, N. Y.**

## WE CANNOT MAKE WORLD'S COLUMBIAN

### Souvenir Silver Half Dollars,

But we can give information that will enable brick manufacturers to make brick at a large profit and which will be in as much demand as the Souvenir Silver Half Dollar.

Read the following testimonial, then come and judge for yourself:

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

ST. LOUIS, Mo., Nov. 29th, 1892.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

ANTHONY ITTNER.

For further information and Illustrated Circular, address,

**WM. & S. H. ALSIP,**

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



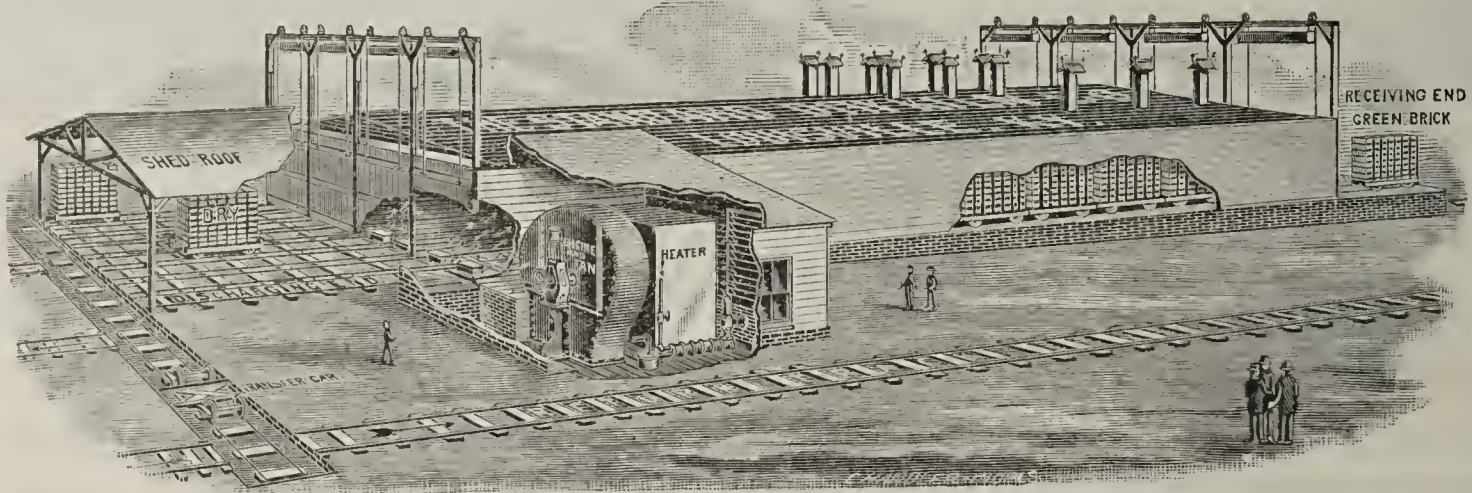
## NOTICE TO THE CRAFT.



# THE STANDARD

## PATENT

# Forced Draft Brick Drier



➔ Still Maintains the Lead ➔

As the most practical, reliable and efficient DRIER for all kinds of Brick, Tile, Terra Cotta, etc. :: :: ::

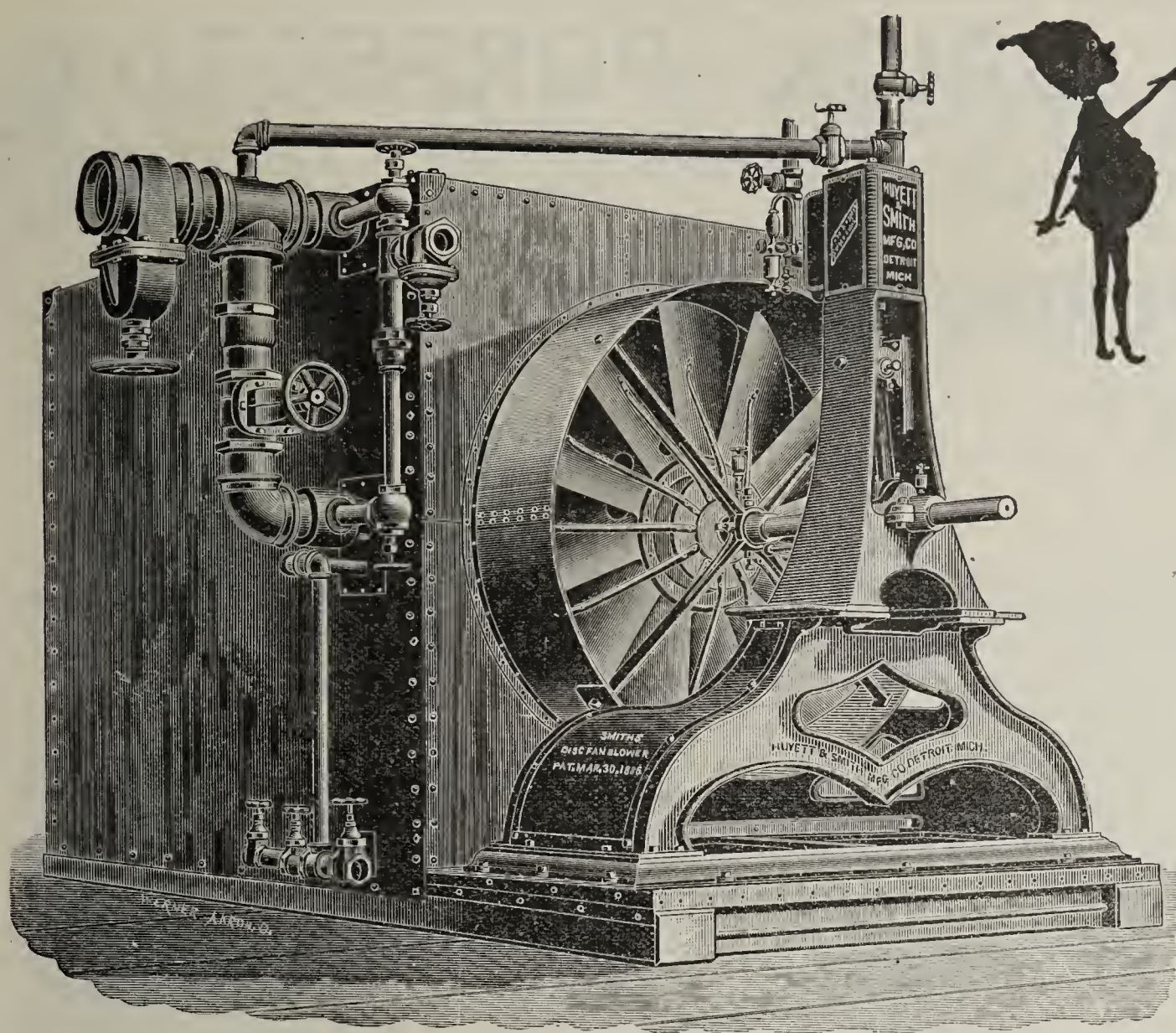


1. IT IS the only drier susceptible of perfect regulation.
2. IT IS the only drier in which the elements of drying are under perfect control.
3. IT IS the only drier in which conditions can be changed so that ALL CLAY PRODUCTS can be successfully and economically dried.
4. IT IS so arranged that ventilation is perfect, and water-smoke may be removed at will.

Address .....

**THE STANDARD DRY KILN CO.,** Office & Salesrooms: 923 and 925 West Main Street, **Louisville, Ky.**





THE  
National  
Brick  
Convention  
Has  
Adjourned.



Not much was said on the subject of *Artificial Brick Drying* but the undercurrent sentiment of the Convention was decidedly in favor of the

## SMITH HOT BLAST DRYER

And hundreds of the attendants went home with the following memorandum in their pocket :



For Estimates, and Plans those who  
have not already done so should  
write to

Jan'y 24.  
Bought Ordered a Hot  
Blast Drying Apparatus  
of the Huyett & Smith  
Mfg. Co. to be  
shipped at once -

NEW YORK.  
CHICAGO.  
BOSTON.

The Huyett Smith Mfg. Co.,

DETROIT, MICH.



# DRYING BRICK PERFECTLY.

CHAS. S. PURINGTON,  
PRES. & GENERAL MANAGER.

T. S. DOBBINS,  
SECRETARY.

## PURINGTON BRICK CO.

OFFICE:

ROOM 50, 163 LA SALLE ST.

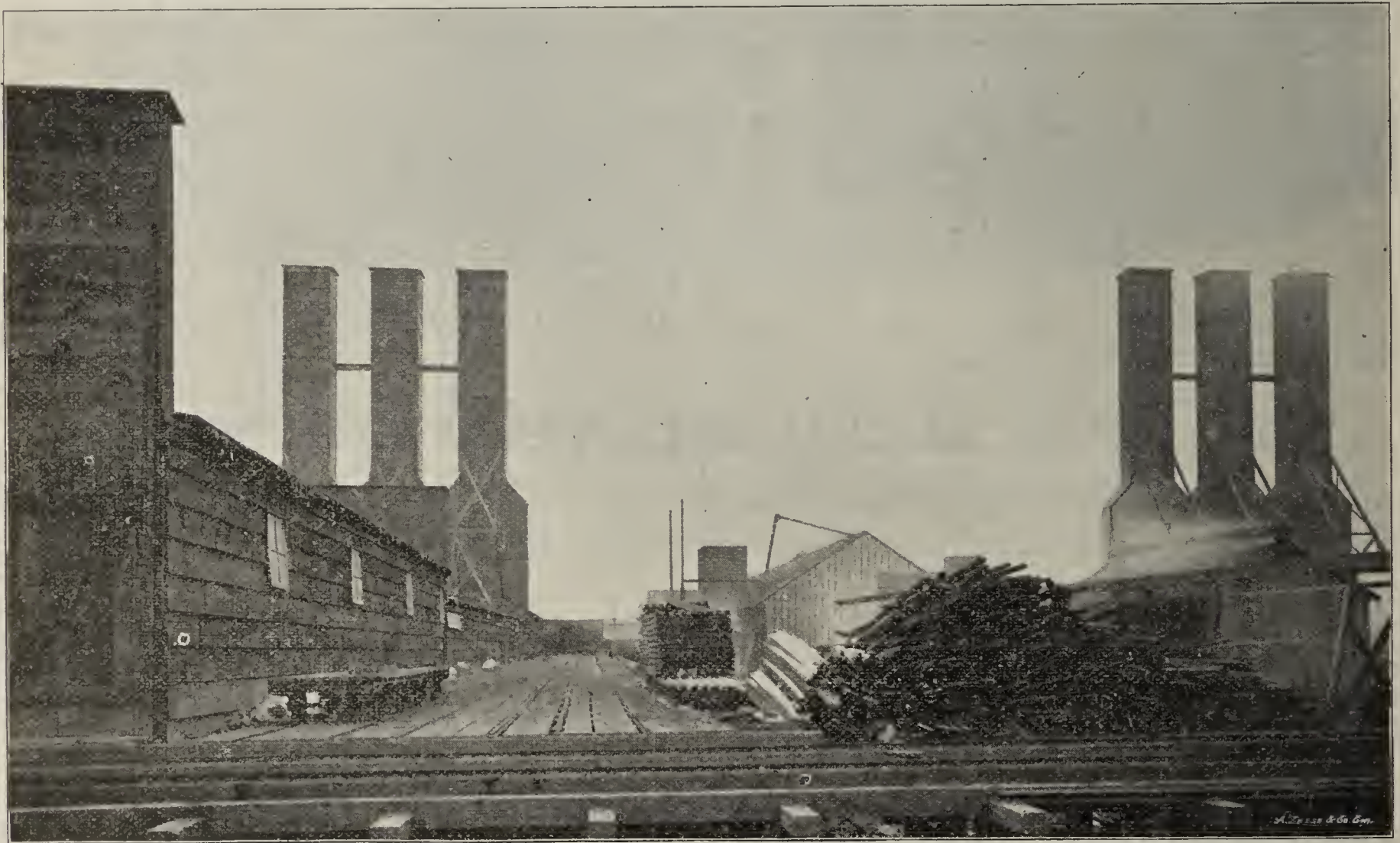
TELEPHONE, MAIN 3752.

CHICAGO, Jan. 5, 1893.

IRON CLAD DRYER CO.,  
CHICAGO, ILL.

GENTLEMEN:—I have been using the two Dryers you erected for me last fall constantly since completion, and I would say, I am perfectly satisfied with the working of the same. We have no trouble drying the brick perfectly without any injury, and it seems that this cold weather we are now having, does not retard the drying in the least, and we have dried as many as 150,000 bricks per day when the mercury out doors registered near zero.

The heating apparatus, which was constructed under your new system, is simply perfect—it is easily kept in repair, in



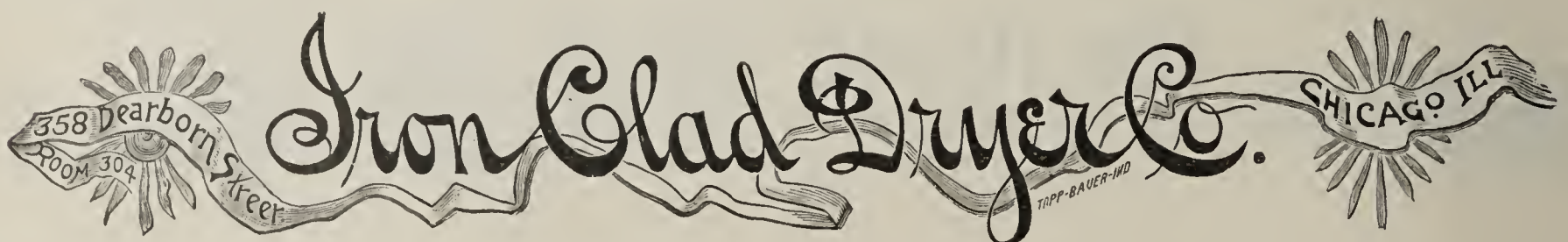
DRYERS OF THE PURINGTON BRICK CO., BERNICE, ILL., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

fact we have very little repairing to do, and since you finished it, cold weather does not seem to have any effect on it, and we would consider that freezing up the pipes would be simply carelessness on the part of the men that attend to the Dryer.

Wishing you a prosperous new year, we remain,  
[See cut of Dryer on last cover page.]

Yours respectfully,

PURINGTON BRICK CO., C. S. PURINGTON, Pres't.





# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., FEBRUARY, 1893.

No. 2s.



## OFFICIAL REPORT.

### Proceedings of the Seventh Annual Convention of the National Brick Manufacturers' Association.

LOUISVILLE, KY., Jan. 24 to 28, 1893.

THE convention met in the Board of Trade Hall, a large and splendidly lighted room, the use of which was granted gratuitously by the Louisville Board of Trade, and was called to order by President Chas. B. Pearson, Washington, D. C., Tuesday, 2:30 P. M., January 24, 1893. Seats had been provided for about four hundred, and there were very few vacant chairs when the gavel sounded the call to order.

PRESIDENT PEARSON—The time has arrived for us to open our session and before proceeding to business the Rev. S. S. Waltz, of this city, will lead us in prayer.

REV. S. S. WALTZ—Our Father, who art in heaven, we acknowledge thee in all things, the author of all things, and without thy blessing we can do nothing. We thank thee, Almighty God, that thy benediction rests upon every noble enterprise, upon every useful institution in this world. That God Almighty blesses all the powers with which he endowed man. We thank thee, our Father, that thou hast made us to be industrious creatures, social creatures, as well as religious creatures. We thank thee, our Father, that thou hast brought together these men from different parts of the country to counsel together in regard to the great industry they represent. We thank thee for the great part they have performed in the building up of this great country, for the blessing thou hast rested upon them, and we pray thy blessing upon them as they gather together, and upon this great Association, and upon the great industry they represent. God bless their business interests at home; God bless them in a commercial way; God bless and watch over their loved ones at home, and as we welcome them to our city we pray thy blessing to

be upon the cities and homes represented. Wilt thou bless them in this meeting. Guide us in the building up of that great structure, the human soul, and at last bring us that building and that city whose foundations have been laid by God and whose architect is the great Ruler of all things. We ask this in the name of our Lord Jesus Christ. Amen.

PRESIDENT PEARSON—Gentlemen of the seventh annual convention of the National Brick Manufacturers' Association, it gives me great pleasure to present to you the mayor of Louisville, Mr. Henry S. Tyler, who wishes to speak to us a few words of welcome.

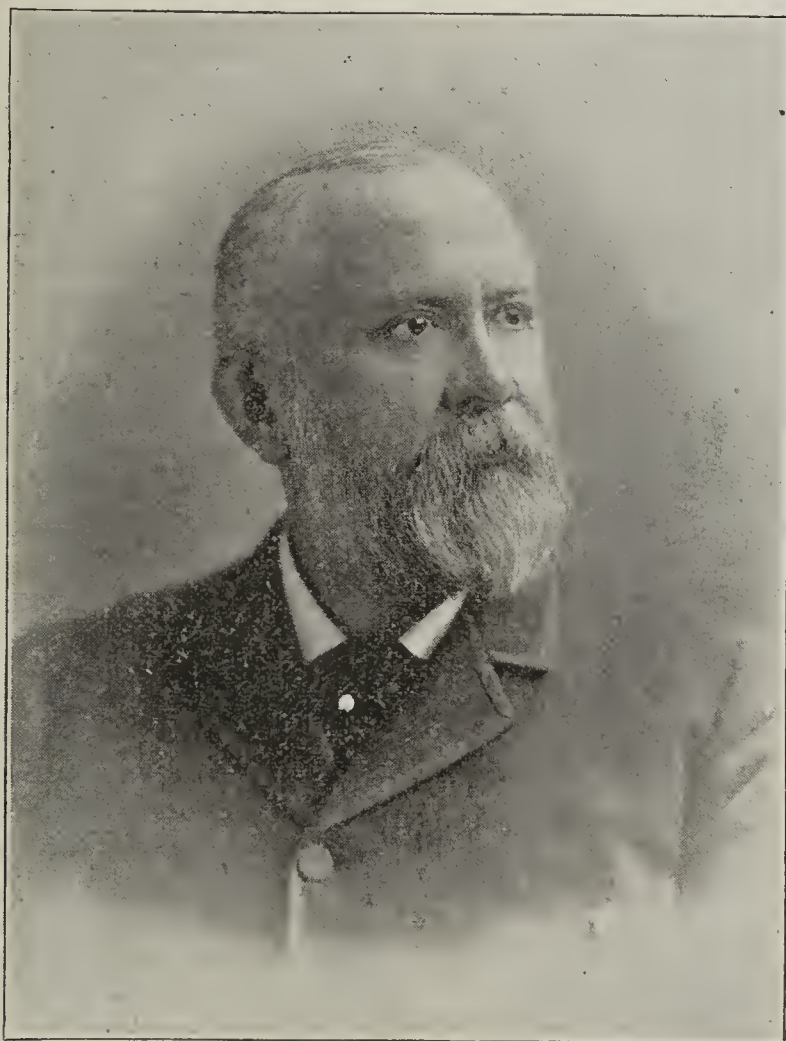
MAYOR TYLER, Louisville, Ky.—Gentlemen of the Convention: In the matter of conventions, we Louisville people are like Oliver Twist—we can't get too much. We have an insatiable hunger for them, and, of course, with such a keen appetite, each convention that comes within our gates brings us the same gratification that Oliver derived from the filling up of his soup bowl. There are distinctions in conventions and our amount of gratification depends upon the character of the former. Without any intention, Mr. Presi-

dent, to flatter, I am constrained to say that after all the conventions that we have entertained, none have impressed us more than yours. I can assure you it is a pleasure to have such bodies as your Association honor us with their presence. We think so well of you that we feel the inadequacy of our words to reveal our thoughts. We know full well and appreciate the extremely important part you play in the human family. We can see the evidence of your work wherever civilization exists and reviewing that evidence we can only feel what a deplorable condition we would be in without people to make brick. But, gentlemen, I am not here to make you a speech, but to bid you welcome to our city, and I desire to add with sincerity that I extend to you the good wishes of our citizens. We bid you a hearty welcome within the gates of our city which itself is a monument to your calling. Gentlemen, we wish you pleasure. [Applause.]

PRESIDENT PEARSON—Gentlemen, I am pleased to meet you once more, and I am, also, pleased to find such marked evidence of good will in every heart and I trust that our gathering together upon this occasion may not only be pleasant but profitable to each and every one. The first business in order is the calling of the roll.

T. B. McAVOX, Philadelphia, Pa.—Mr. President, I move the calling of the roll be dispensed with.

The motion was seconded by E. M. Pike, Chenoa, Ill., and carried unanimously.



CHAS. B. PEARSON, WASHINGTON, D. C., EX-PRESIDENT NATIONAL BRICK MANUFACTURERS' ASSOCIATION.



SECRETARY RANDALL—The next in order on the programme is the annual address of our president, C. B. Pearson. I presume he is prepared to talk to you an hour or two. [Laughter.]

PRESIDENT PEARSON—Forbid that I should do anything of the sort the secretary suggests. Should I do such a thing, before I got through there would not be a dozen men in the room and those few, perhaps, would be asleep.

The president then delivered his annual address as follows:

#### PRESIDENT'S ANNUAL ADDRESS.

C. B. PEARSON, WASHINGTON, D. C.

*Gentlemen of the Convention:*

It gives me pleasure to greet you upon the opening of the seventh annual convention of our Association.

I am conscious of the fact, and I need hardly remind you that we represent one of the most important industries of our country, and one which will claim a far larger place in the enterprise, inventive skill and capital of our people in the future than it yet has in the past. By every consideration of ornament and utility, the architecture of American homes, business blocks, school-houses, church edifices, public structures and charitable buildings is one of very large moment, as touching upon the culture and prosperity of the people. The variety of shades, the elegant finish and the diversity of ornamentation of brick afford the widest possible scope for pleasing and artistic finish of walls. The old square angle, which made a brick building look so stiff and forbidding, has given place to the broken angle and the curve, by which it is possible for us to mould brick with which we can produce in a wall anything which the architect can create upon paper. Along this line the demands of the future will be practically unlimited.

Our industry during the past twelve months has not been so profitable to some as in former years, but it is greatly enlarged, and the lessons learned, I am persuaded, will prove a benefit in the coming season now about to open upon us, and give to the thousands upon thousands of the now unemployed, work that will furnish them with dollars and cents to aid them in procuring food, raiment, shelter and happiness.

The manufacture of brick ever increasing—employing so many hands—with an immense capital invested, produces smaller profits than any other industry, trade or calling, of equal investments of labor and capital, and, while some are not satisfied, the majority manage to get a fair return and are being enriched in this world's goods. And while doing so, may we all *forget not* to lay up treasures in heaven.

Since our meeting in Washington city last year the Washington Brick Exchange has been fully organized and the outlook is good, not only for a better understanding how to make superior brick, but how to get more money out of the brick we make and sell, and withal mutually benefited by greeting each other in the monthly meeting.

Gentlemen, in retiring from the presidency I do so with grateful feeling for the honor shown me by raising me to this position at the sixth annual convention in Washington city, and equally for the kind and good feelings which have prevailed throughout our entire membership, while I at the same time am mindful of the light which has come to me through many of our members.

And now, in conclusion, allow me to express the highest hope and honest wish that our sessions of the seventh annual convention may be delightful as well as profitable to each and every one, that health and happiness may attend the members; and that as a result of our deliberations we may have still more light enabling us to do still better work in the future. [Loud applause.]

PRESIDENT PEARSON—The next thing in order of business is the report of the treasurer, Frank B. McAvoy, Philadelphia.

TREASURER McAVOY then read his report as follows:

#### TREASURER'S REPORT.

|                                                 |          |
|-------------------------------------------------|----------|
| Balance in treasury, account 1891.....          | \$153 39 |
| Membership fees collected—account 1892—340..... | 680 00   |
| Total receipts.....                             | 833 39   |

#### DISBURSEMENTS.

|                                                                          |                |
|--------------------------------------------------------------------------|----------------|
| Paid for printing 1,000 programmes, 8 pages and cover, per voucher ..... | \$33 50        |
| Envelopes, postage, etc., for same.....                                  | 10 50— \$44 00 |
| Paid for printing 500 copies official report—232 pages and cover .....   | 242 00         |
| Envelopes, postage, etc., for same.....                                  | 27 00— 269 00  |
| Traveling expenses corresponding secretary.....                          | 250 00         |
| Postage, stationery, etc., for recording secretary.....                  | \$22 52        |
| Postage, stationery, etc., for corresponding secretary.....              | 41 50— 64 02   |
| Total expenditures.....                                                  | 627 02         |

|                           |          |
|---------------------------|----------|
| Balance in treasury ..... | \$206 37 |
|---------------------------|----------|

PRESIDENT PEARSON—You have heard the report of your treasurer. What shall we do with it?

THOS. FLOOD, Philadelphia, Pa.—The report reads that money

has been expended by the corresponding secretary for traveling expenses. Does this include the stenographer's bill?

SECRETARY RANDALL—The stenographer has been paid.

MR. FLOOD—Yes; but did the Association pay the bill, or did the secretary?

SECRETARY RANDALL—Year before last the Association paid the bill; this year I paid it.

MR. FLOOD—Now, gentlemen, why should our secretary pay our stenographer? If an association of this kind composed of so many members can not pay the stenographer, but must let the secretary do it for them, I think we had better disband. There is no reason why we should allow our secretary so much for traveling expenses, which he expends judiciously, and then out of his own pocket pay the stenographer. I ask you all whether it is fair? The stenographer ought to be paid by the Association. (Stenographer is a big word for a man to say when he is out of humor). If the Association can not afford to pay it, I think we had better pay it out of our own pockets. I know that some of the machine men who are getting rich off us poor miserable brickmakers would be willing to help. Now, I move you, Mr. President, that the secretary be instructed to draw an order on the treasurer for the amount of the stenographer's bill for last year.

THOS. B. McAVOY—Second the motion.

PRESIDENT PEARSON—What shall we do with the treasurer's report?

D. V. PURINGTON, Chicago—I move that the report be accepted and placed on file with the recording secretary.

Motion seconded by Mr. Harper, Akron, Ohio, and carried unanimously.

SECRETARY RANDALL—Before this motion is put I would like to say that had I known that Mr. Flood was going to make such a motion I should have tried to head him off.

MR. FLOOD—Now, I do not want our secretary to find any fault. I say that a gentleman who gives so much time and attention to the Association should not pay out of his own money for our benefit, and I think we should at least pay the stenographer. I know Mr. Randall is a big-hearted fellow, although he don't drink. He is a good man. (Laughter). He should be reimbursed for the money that he paid out of his own pocket last year. He is justly entitled to it. The Association allows him so much for traveling expenses and then he pays the stenographer out of it. I say it is not fair. I think the Association should pay the money.

MR. EUPALY—I would like to know if the item of "publishing the official report" does not include the stenographer's bill.

SECRETARY RANDALL—It does not.

Cries of Question.

President Pearson then put Mr. Flood's motion before the house and same was carried.

PRESIDENT PEARSON—The next in order of business is the report of the recording secretary, C. P. Merwin, Berlin, Conn.

RECORDING SECRETARY MERWIN—Mr. President, I really have no formal report and will only say that the membership list of last year included 340 members. Is it the wish of the convention that I read the minutes of the last meeting?

J. C. ADAMS, Indianapolis, Ind.—I move that the reading of the minutes be dispensed with.

JAS. BEGGS, Wilmington, Del.—I second the motion.

PRESIDENT PEARSON—(Holding up a book, 232 pages). That you know what you are voting on, please look at this book. [Laughter.]

Motion carried.

#### ELECTION OF OFFICERS.

PRESIDENT PEARSON—This brings us to the election of officers to serve you for the ensuing year.

SECRETARY RANDALL—I think it would be well before nominations are made to make known our method of electing officers, as many of the gentlemen with us are new members and not familiar with our rules. Article V of our Constitution reads as follows:

Section 1. The officers of this Association shall consist of a presi-



dent, three (3) vice-presidents, recording secretary, corresponding secretary, and treasurer, who shall be elected by ballot at each regular meeting.

PRESIDENT PEARSON—Nominations for president are now in order.

S. P. CRAFTS, New Haven, Conn.—Mr. President and gentlemen of the convention: In accordance with our usual custom of selecting our president from the city where we hold our meeting, and in recognition of the hospitality of the Louisville brethren, I take pleasure in nominating Mr. A. L. McDonald, of Louisville, Ky., for president.

MR. A. L. McDONALD, Louisville, Ky.—I thank the gentleman who has made the nomination in my own behalf and that of our local organization. We appreciate the honor too much to undervalue it in any way, and while we recognize that, like the nomination of a democratic governor of Kentucky, a nomination is practically an election, at the same time the gentleman says that the nomination is made in accordance with a custom which imposes upon this Association, composed of men from all parts of this great country, the necessity of leaving the selection of their presiding officer, a gentleman who ought to be generally acquainted with the membership from having attended several meetings to the local delegation. Gentlemen, this is a very undemocratic proceeding and the country is all democratic this year. [Laughter]. Now, we ask the privilege of breaking away from the precedent which has been established, which, if followed, will eventually place the Association in a very embarrassing position. You will find that some time you will meet in a city where you will find no one capable of presiding over your meetings, and you will then have to ignore the local membership and elect some one who is capable of filling the chair. Now, you can at this time break down this precedent without any difficulty or embarrassment, and we ask that it be done and that we have the privilege of naming a gentleman from another city for the presiding officer of this convention. It is not necessary that I say anything in eulogy of the man who we, last March, selected among ourselves. He is well known among the profession; has been in the business many years; has had a large experience in other lines. I think I need say no more than to name Mr. Anthony Ittner, of St. Louis, Mo. [Loud applause.]

EDWIN MCGRAW, Pittsburgh, Pa.—I must most decidedly object to the nomination Mr. McDonald has made, and I must decidedly take exceptions to the remarks of my friend Eudaly. It seems to me that from what Mr. Eudaly has said, that there was not material enough in the city of Louisville—

MR. EUDALY—I beg the gentleman's pardon. What I did say was purely in commendation of the brethren of Louisville. I had no intention whatever to intimate that the city of Louisville had no material. I have the highest respect and regard for Brother McDonald, and know he would make a competent president, and I have no doubt but that there are other brickmakers in Louisville who could also fill the chair in an acceptable manner. I thought it proper and right to say what I did in commendation of the liberality of Mr. McDonald and the other Louisville brethren.

PRESIDENT PEARSON—I think Mr. McGraw is entirely mistaken in regard to the remarks of our friend Eudaly.

W. A. EUDALY, Cincinnati, Ohio—I thought that I would have nothing to say about this nomination, as I formerly have, but this speech of Mr. McDonald's is certainly one that we ought to be duly grateful for, because of the sentiment it contains; and that is, that while this beautiful city has in its grasp the presidency of this Association, they are willing for this Association to break down a precedent that has been established, and I do feel that we should be duly thankful to the brickmakers of this city for taking the matter in their own hands. I therefore take pleasure in seconding Mr. Ittner's nomination for president.

MR. MCGRAW—I wish to make a few remarks in regard to this matter. This is our seventh annual convention. Each and every time the president has been selected from the city in which our

convention has been held. Why should we break this precedent now? It seems to me that such action will be an intimation that there is no proper material in the city of Louisville, and I know such is not the case. Mr. Ittner is a fine man, a remarkable man, and if I were in the city of St. Louis I would jump in, heart and soul, and work for him for president of this Association. But, gentlemen, I am here in the city of Louisville, and I am going to work for Mr. A. L. McDonald for our next president. Mr. President, if we were down in South America holding our convention and I was asked to hunt out a man for our next president, I would pick out Mr. McDonald. He is a gentleman in every sense of the word, a gentleman full of virtue, and modesty is his greatest fault. It is possible Mr. McDonald does not want the office. It is a case of the office seeking the man and not the man seeking the office. If we think this is a dangerous precedent, and that we may eventually meet in some city where we could not select a competent president—but I want to say we are not in a bad way in the city of Louisville—I say if this seems to be the trouble, let us sometime during the sessions of this convention, say to-morrow, or any day



ANTHONY ITTNER, PRESIDENT, ST. LOUIS, MO.

of our meeting, pass a resolution doing away with this precedent, for we do not know in what city our next convention will be held.

B. W. BLAIR, Cincinnati, Ohio—As I understand the question, it is not a question of the fitness or propriety of electing Mr. McDonald president of our Association, but it is the request, not only of Mr. McDonald, but of the entire Louisville Association, that Mr. Ittner assume the chair, and I think it would be indecorous on our part and show a lack of gratitude if we ignore their request.

MR. MCGRAW—The city of Louisville is not electing the president of this Association.

ALEXANDER PRUSSING, Chicago, Ill.—If I understand it, the brethren of Louisville do not wish to circumscribe the work of this convention by placing in nomination a certain gentleman and ask that he be elected. Giving them all due credit for their modesty, the precedent once established that the president of the Association be elected from the city in which the convention is held, should not be broken under any circumstances. I believe if Mr. McDonald should refuse to accept the nomination that some other gentleman from Louisville should be placed in nomination



and take the chair, presiding as officer of this Association. The excuses given, the—what do I want to say—well, gentlemen, I think this matter has been cut and dried.

R. B. MORRISON, Rome, Ga.—I wish to know if the discussion of this question is in order. We are here to elect our president and not here to discuss a precedent.

PRESIDENT PEARSON—The discussion so far as nominations are concerned is in order, but the discussion of the precedent is not.

MR. McDONALD—I desire to make a few remarks before the nominations are closed, in reply to the remarks of our five-year-old—I believe he has gained a year. [Laughter.] We resent the intimation that there is no one here capable to fill the chair. [Applause.] We stated our reasons why we did not want to accept it. If, Mr. President, my friend from Chicago thinks I have assumed too much in speaking for the Louisville delegation, I would just like to ask him to call the roll of the Louisville delegation and see whether my sentiments are not correct. I nominated Mr. Ittner in accordance with the wishes of the Louisville brethren, and ask the convention consider it.

MR. CRAFTS—I desire to second the nomination of Mr. Ittner and move that the nominations be closed.

PRESIDENT PEARSON—The question is that the nominations for presiding officer be closed.

D. V. PURINGTON, Chicago, Ill.—Do I understand that you do not recognize the nomination of Mr. Ittner? It seems to me Mr. McDonald has a right to name the man to be elected. He has withdrawn his own name and nominated Mr. Ittner. I think we have no right to force a man to accept a position, and Mr. McDonald evidently does not desire the presidency.

MR. MCGRAW—I think the whole trouble lies in the fact that the people of the sunny South are too hospitable. I move that the declination of Mr. McDonald be refused and that his name as we have it now before the house be voted on.

A MEMBER—What is the question before the house.

PRESIDENT PEARSON—There have been two nominations for president, that of Mr. McDonald, of Louisville, and Mr. Ittner, of St. Louis. That the nomination now be closed is the question before the house.

MR. MCCOLLUM, Louisville, Ky.—It would be a favor to us if you elect another member from the body of this Association.

MR. McDONALD—I beg leave to withdraw my name.

ANTHONY ITTNER, St. Louis, Mo.—Mr. President, I desire to say a few words on this subject, and I arise with a great deal of diffidence. I would not assume to speak at all were it not for the remarks that were dropped from the lips of a gentleman on this floor. I would like to say that Anthony Ittner was fifty-five years old the eighth day of last October, and that he has never yet, up to this time, entered any combination, or scheme, or clique that cuts and dries anything. [Applause.] Gentlemen, you may have thought it was "cut and dried" at Memphis, but every man here present that was present on that occasion knows that I was virtually elected president then, when I got up and protested and put a man, a citizen of Memphis, a brick manufacturer, in nomination, and he was elected. [Applause.] I think the phrase "cut and dried" was unfortunate. It grated harshly upon my ears. I will say that the course that seems to have been mapped out was not at all agreeable to me. Mr. McDonald came to me this morning in the lobby of the Louisville Hotel and spoke to me upon this matter, and I tried, then and there, to induce him to accept this position. I said to him, "Mr. McDonald, can you not accept this office? You are a man my peer in years and my superior in education, but if you do not want it, can you not get some other craftsman of Louisville to accept it?" That is the kind of "cutting and drying" I was doing this morning. [Applause.] I regret the shape that this matter seems to have assumed. I do not desire to be placed in nomination against my friend McDonald, and there is no member of this Association that is more heartily in favor of his election than myself. I desire that Mr. McDonald himself shall be elected by acclamation. [Applause.] That, Mr. President, is

my personal and individual desire. I am honest in this. I hope that this convention will not place Anthony Ittner as candidate for the presidency of this Association against my friend McDonald. This is all I ask. I desire to see Mr. McDonald elected to that position, and I will not go into a contest with him for it.

C. McDERMOTT, Wellington, Ohio—There is an easy way out of this matter. It seems there is a desire to follow the precedent, and at the same time if the Louisville brethren do not want the presidency they ought not to have it. Now, I think the proper thing for us to do is to elect Mr. McDonald. If he does not want it, all he has got to do is not to accept. Then we can elect Mr. Ittner.

MR. MCGRAW—I do not agree with Mr. McDermott. The idea of electing a man to a position with a string tied to it to pull it back. This office of president is an honorable one, and one that any city should be proud to accept. I say right here, as I have said before, that Mr. McDonald is my choice for the president, and if we elect him there should be no string tied to it to pull it back again.

ALEXANDER PRUSSING—I desire to answer Mr. Ittner's remarks in regard to my statement that this matter was "cut and dried." Gentlemen of the convention, I still stand by what I said that it was "cut and dried." I do not mean to say that Mr. Ittner was a party to any combination to elect himself, because I know Mr. Ittner is a man who stands before you to-day a man without reproach. I believe the convention will concur with me in that statement. We do not question Mr. Ittner's honor in this matter at all. It is simply a question whether we shall follow the precedent laid down for us by this National Association. If Mr. McDonald does not desire the presidency, why not elect some one else from the city of Louisville. There are plenty of men capable of filling the position in the city of Louisville. The precedent once established should be carried out. As in former cases, will now, I think, redound to the benefit of the Association. I am very sorry that Mr. Ittner has misconstrued my meaning, and if I have hurt his feelings I most humbly apologize.

MR. CRAFTS—I have been thinking this matter over and it impresses me this way. We are here simply at the invitation of the Louisville brethren. We have come here at their request to hold this convention, and the very first request they make of us through their representatives we refuse to grant. I do not think it quite a fitting way to treat the first request they make.

MR. ITTNER—As it does not seem to be the disposition of this body to accept the declination of Mr. McDonald, I now ask you to accept mine.

MR. McDONALD—I desire to say I have taken this stand with the full approval and hearty co-operation of every one of our local association. We may have "cut and dried" this matter among ourselves last March. It is the first time we have spoken to any one on the subject. Mr. Ittner was known personally only to my self and one other member of our organization. It was then settled that it should be a compliment presented by our organization. We think that the precedent established is a bad precedent to follow; therefore we decline the presidency. We will have no candidate in the field. [Applause.]

MR. FLOOD—Now, Mr. President and gentlemen, what is the use of all this monkey business. [Laughter.] Mr. McDonald don't want the presidency, and will not take it even if we present it to him on a silver platter. Now, Mr. Ittner will take it. Let us give it to him unanimously, and so comply with the request of the Louisville brethren.

MR. ADAMS—I move that the rules be suspended and that the secretary be instructed to cast the unanimous ballot of this Association for Anthony Ittner, of St. Louis, Mo., for president.

MR. MORRISON—Second the motion.

Motion carried.

SECRETARY RANDALL—The vote has been cast. [Applause.]

PRESIDENT PEARSON—Nominations for first vice-president are now in order.

MR. G. S. ETTLA, of Pa.—I wish to place in nomination the name of Mr. A. L. McDonald for first vice-president.



J. A. SNELL—Second the motion.

R. C. PENFIELD—I move the rules be suspended and that the secretary be instructed to cast the unanimous ballot of this Association for Mr. A. L. McDonald for first vice-president.

W. RIEMAN, Vincennes, Ind.—Second the motion.

Motion carried.

SECRETARY RANDALL—The vote has been cast.

PRESIDENT PEARSON—I declare M. A. L. McDonald your first vice-president. Nominations are now in order for second and third vice-presidents.

MR. CRAFTS—I would like to nominate for a vice-president a gentleman from the "Windy City," W. D. Gates, that is, if Chicago will accept anything.

W. D. RICHARDSON, North Baltimore, Ohio—I would like to place in nomination Mr. B. W. Blair, Cincinnati, Ohio.

C. P. McDERMOTT, Wellington, Ohio—It has been usual to scatter these vice-presidents. The two already nominated are close together geographically, and I nominate M. Frank L. Stiles, North Haven, Conn.

MR. STILES—When I first came in I was very proud I belonged to this Association of brick manufacturers, but after being in here a little while and seeing the disposition of some of these people I thought I would like to belong to some other body and see if they behave the same way. I thank you for bringing my name before the convention for vice-president, but I decline the nomination and move that the nominations be closed.

MR. PRUSSING—I just want to tell Mr. Stiles that the brick manufacturers are the best natured people in the world. [Laughter.]

JAS. TAYLOR, New York, N. Y.—I second Mr. Stiles' motion.

Motion carried.

MR. McKENNA—I move that the rules be suspended and that the secretary be instructed to cast the unanimous ballot of the Association for the gentlemen nominated for second and third vice-president in the order in which they were named.

The motion was seconded and carried, and the ballot cast by the secretary.

PRESIDENT PEARSON—I declare W. D. Gates, of Illinois, your second vice-president, and B. W. Blair, of Ohio, your third vice-president. Nomination for recording secretary are now in order.

MR. ADAMS—I place in nomination C. P. Merwin, of Berlin, Conn.

A. R. BATLEY, Bucyrus, Ohio—I nominate J. Dixie Doyle, of Chicago, Ill.

MR. McGRAW—Move the nominations be closed.

Motion seconded and carried.

On motion of Mr. James Taylor, of New York, seconded by T. B. McAvoy, Philadelphia, Pa., President Pearson appointed Mr. J. C. Adams, of Indianapolis, A. R. Batley, Bucyrus, Ohio, and James Taylor, of New York, tellers to collect and report the votes.

An intermission of ten minutes was taken during the counting of the votes.

PRESIDENT PEARSON—Gentlemen, the total number of votes cast was 156. Number necessary to a choice, 79. Mr. Merwin received 88 and Mr. Doyle 68.

MR. DOYLE—I move that the election of Mr. Merwin be made unanimous.

Motion seconded and carried.

PRESIDENT PEARSON—I declare Mr. Merwin your recording secretary. Nominations are now in order for corresponding secretary.

THOMAS J. FLOOD—I nominate Theodore A. Randall, of Indianapolis.

J. A. BLAFFER, New Orleans, La.—Second the nomination.

MICHAEL MEYERS, Chicago, Ill.—I move the rules be suspended and that Mr. Flood be instructed to cast the unanimous vote of the Association for Theodore A. Randall for corresponding secretary. [Applause.]

J. J. McKENNA—Second the motion.

Motion carried.

This Mr. Flood did by going forward to the speaker's desk, taking a brick on which Mr. Randall's name was inscribed, placing it

in a valise in front of the speaker, closing and locking same, and solemnly declared the ballot cast amid much laughter.

PRESIDENT PEARSON—I declare Mr. Randall elected corresponding secretary for the ensuing year. Nominations are now in order for treasurer.

R. B. MORRISON, Rome, Ga.—I nominate John W. Sibley, of Coaldale, Ala., for treasurer.

MR. FLOOD—I nominate Mr. Frank McAvoy, of Philadelphia.

MR. McAVOY—I desire to decline. The Association has broken the rule and made me treasurer for two years in succession, something they have never done before. I appreciate the honor and desire to withdraw in favor of Mr. Sibley.

MR. CRAFT—I move the nominations be closed.

JOHN LELLYETT, Nashville, Tenn.—Second the motion and move that Secretary Randall cast the unanimous vote of this Association for Mr. Sibley.



A. L. McDONALD, FIRST VICE-PRESIDENT, LOUISVILLE, KY.

PRESIDENT PEARSON—The vote has been cast and I declare Mr. Sibley your treasurer. The next order of business is the

#### INSTALLATION OF OFFICERS.

MR. ADAMS—I move the president appoint a committee of three to escort the newly elected president to the chair.

Motion seconded and carried.

PRESIDENT PEARSON—I appoint Mr. Adams, of Indianapolis, Mr. McCollum, of Louisville, and Mr. McGraw, of Pittsburgh, a committee to conduct our newly elected president to the platform.

Mr. Ittner was then escorted to the chair and introduced to the convention.

PRESIDENT PEARSON—Gentlemen of the Convention, it gives me great delight, I assure you, not only in stepping down and out after having fulfilled so indifferently the duties devolving upon the president of so large and intelligent Association, but, also, to introduce a gentleman so well known to all of you to take my place, who I know will conduct the affairs of this Association with considerable more ability than I have done, but if I have made mis-



takes, it was of the head and not of the heart. I introduce to you Mr. Anthony Ittner, of St. Louis, Mo., who will now preside over your sessions.

#### PRESIDENT ITTNER'S ADDRESS.

*Gentlemen of the National Brick Manufacturers' Association of the United States:*

I can not help but express my most heartfelt gratitude on this occasion for the high honor that has been conferred upon me by this convention. I want to say furthermore that since the precedent has been broken—it being the second time the attempt has been made, and at last succeeded—I desire to extend to the brethren of this city my sincere thanks for the very high compliment they have extended to me in suggesting me as a proper person to fill this office. We are here to transact the business that calls us together—and I have said it before, but I desire to say it again as your president, that if there were no other object to accomplish by our annual gatherings than the pleasant, sociable and agreeable features that are connected with them I would favor their continuance. But there is much more to be accomplished, and that is the elevation, the progress and the advancement of our calling. It has been said, in fact, I think, I read it within the last few days, that within the last ten years the progress in the manufacture of brick in the United States has been equal to the progress made in the previous four thousand years. I think, perhaps, this is rather a strong statement of the case, yet the strides that have been made within the last ten years are simply enormous. The advancement that will be made within the next ten years will be quite as great. And, gentlemen, it is competition that more than anything else has brought about this condition of affairs. The change made from year to year is wonderful. I am reminded of our fourth annual convention, when we met in Philadelphia three years ago, knowing as I did the prejudice that existed in the minds of the Philadelphia brethren toward the manufacture of brick by machinery. I was especially interested at that time in the manufacture of brick by the dry press process and I made there a prediction that within ten years the brickmakers of Philadelphia would be turning their attention to the manufacture of brick by what is known as the dry press process. Now I was pleased to read in one of our clay journals the other day that in the city of Philadelphia there is now in course of erection one of the largest dry press brick manufacturing works in the world. So that my prediction has been fulfilled much in advance of the time that I thought it might be.

Gentlemen of the Convention, I would like to speak to you in *extenso*, but I know that your time is short, and will now thank you again for the honor you have conferred upon me, and ask that you bear with me in my mistakes and shortcomings and that you give to me the same good will that you have given to your retiring officer. We will now proceed with the order of business.

MR. McKENNA, of Chicago—I move that a vote of thanks be tendered the retiring officers.

W. H. ALSIP—I second the motion and ask for a rising vote.

Carried unanimously.

PRESIDENT ITTNER—I would ask that the gentlemen who so kindly escorted me to the platform now perform that duty for the three vice-presidents.

The three gentlemen were escorted to the chair.

PRESIDENT ITTNER—I take pleasure in introducing to you your first vice-president, Mr. A. L. McDonald.

Cries of "Speech."

MR. McDONALD—I take this occasion of extending my thanks for the honor conferred upon me in electing me first vice-president, and extend my compliments to Mr. Flood, and say that I have it in for him, and will get even on the very first occasion. [Applause.]

PRESIDENT ITTNER—I now have the pleasure of introducing to you Mr. W. D. Gates, of Chicago, our second vice-president.

MR. GATES—It is hardly necessary for me to say that I appreciate the honor of being elected to this office. It is one of the proud things of my life that I have attended every meeting but one of this Association, and that time I was kept away by having made so much money that I was afraid to go away and leave it for fear the brick machine men would get hold of it in my absence. [Laughter.] The duties of my office will not be very heavy, owing to the efficient president and first vice-president you have chosen. The only thing I will have to do will be to allow my name to go on the official programme and stationery, and if I do not perform these duties in a satisfactory manner it will be a mistake of the brain and not of the heart. [Laughter.] As I look over the convention I feel convinced that the distinguished member "Keystone" is among us, and will say no more. [Applause.]

PRESIDENT ITTNER—I now take pleasure in introducing Mr. B. W. Blair, of Cincinnati.

MR. BLAIR—Gentlemen of the Convention, I sincerely thank you

for the high honor you have conferred upon me to-day. I am very proud to be a member of this official family, with our honorable friend Mr. Ittner, of St. Louis, Messrs. McDonald, and that wit, W. D. Gates, of Chicago. I am glad that over sixteen years ago I began to learn to make brick. I had at that time embraced the profession of the law, and I now say that I am delighted that sixteen years ago I threw Blackstone out of the window and commenced the study of the manufacture of brick, one of the noblest professions in the world. [Applause.] The small beginning that was made in Cincinnati seven years ago by the organization of this Association has been growing, and will continue to grow, until it is one of the most important Associations in the world. [Applause.]

PRESIDENT ITTNER—I think it would be in order to have a few remarks from our corresponding secretary, Mr. Randall.

SECRETARY RANDALL—I am not exactly in order. My worthy compeer, Mr. Merwin, is ahead of me on the list of officers. I will say to you again, as I have many times before, that I thank you for the compliment. It means more to me, perhaps, than any other officer of this Association—it means a world of work. As Mr. Blair says, we met first seven years ago in Cincinnati. There were gathered together at that time some fifty or more representatives of the brick industry throughout the country. There are present in this convention some twelve or fifteen of the original charter members who first came together at that time. From then until the present time I have served you as corresponding secretary, and have assumed the business end of the Association's work. In all this time there has been scarcely one unpleasant feature connected with it. The unbroken line of friendships that has grown up and now exists between the general membership and more especially the Executive Committee, is something, I think, that rarely occurs among large bodies of men so aggressive in nature, as you may have seen this afternoon. [Laughter.] The absence of factional feeling is really remarkable. May we ever continue to dwell together in harmony. Again, gentlemen, I thank you.

PRESIDENT ITTNER—As Mr. Merwin is not in the room, I will introduce our new treasurer, Mr. J. W. Sibley, of Alabama.

MR. SIBLEY—Mr. President and gentlemen of the convention, I assure you, I appreciate very much the compliment you have bestowed upon one so young, in electing me to be the watch-dog of your treasury. It is very unexpected, and I appreciate it all the more for that reason. I will endeavor to faithfully guard your interests.

PRESIDENT ITTNER—The next in order of business is an essay on Enameling Brick, by Mr. Isaac Hardy, Aberdare, England.

MR. McKENNA—I move that in view of the fact that it is getting quite late, that the rest of the programme be taken up to-morrow morning.

Motion seconded and carried.

SECRETARY RANDALL—I have here a telegram from an absent member.

PRESIDENT ITTNER—The secretary will please read the telegram.

SECRETARY RANDALL then read the telegram as follows:

SUMMERVILLE, S. C., Jan. 24, 1893.

T. A. Randall, Corresponding Secretary N. B. M. A., Louisville, Ky.:

Sunshine for the convention, starlight for the powwow. May no visions of salmon or soot disturb the deliberations of the former and no "cold spots" mar the pleasures of the latter. Fraternally, F. W. STANLAND.

SECRETARY RANDALL—I also have a letter that the committee on entertainment desires me to read to the convention.

Messrs. A. L. McDonald, Philip Donahue, F. W. Maury and others, Committee of Entertainment, Louisville, Ky.:

GENTLEMEN—I take pleasure in extending herewith, on behalf of the Louisville, St. Louis and Texas Railway Co., an invitation to the delegates and members of the National Brick Manufacturers' Association now in session at Louisville, to make a trip to Cloverport, Ky., to visit the vitrified brick works at that point.

Train will leave the Seventh street depot at 7:40 A. M., Friday January 27. The citizens of Cloverport propose furnishing a lunch for the guests while at Cloverport.

Please furnish me a list of the members who will go, and transportation will be furnished for them. Very truly yours,

J. K. MCCracken, Gen'l Manager.



J. F. ELSON, New Albany, Ind.—I move that the invitation be accepted and that we extend to this committee the hearty thanks of this entire convention for the invitation.

Motion seconded and carried.

SECRETARY RANDALL—I desire to say a word in regard to the Powwow. It does not occur in this room, as the Committee on Entertainment had previously announced. They have changed their plans, and the Powwow will be held at the Galt House. The badge that we are wearing will admit all the members or guests of this Association to the Powwow.

MR. FLOOD—Did I understand Mr. Randall to say the "dog house?"

SECRETARY RANDALL—No, not "dog house" nor malt house [loud laughter], but Galt House.

On motion of Mr. J. R. Eastes, of Chicago, the convention adjourned till 9:30 Wednesday morning.

### THE FIFTH ANNUAL POWWOW.

#### Under the Auspices of the Louisville Brick Manufacturers' Association.

The chief social feature of the seventh annual convention of the N. B. M. A. was the informal reception and banquet tendered the national body by the local craftsmen.

Instead of the simple collation in the convention hall, that the visitors had anticipated, a splendid banquet was served in the large dining hall of the Galt House.

For fully an hour previous to the time announced for the beginning of the ceremonies, the spacious corridors and parlors of this noted hostelry were crowded with as jovial a set as might well be imagined. Hearty good fellowship was the prevailing spirit, and so warm and cordial was the reception that greeted one on every side that a man of ice, had there been one, would soon have melted and gone to pieces, but brickmakers and members of the N. B. M. A. are not built that way.

The Chicago Brickmakers' Club had established headquarters in the cosy music hall of the Galt House and were *at home* to all callers throughout the week. But on this occasion they, to a man, donned full dress and proceeded to do the honors in true Chicago style.

At nine o'clock the main entrance to the great banquet hall was thrown open, disclosing a tempting sight. Many rows of tables, heavy laden with beautiful flowers and choice fruits, made a picture very fair to look upon. A fine orchestra that had been discoursing sweet music for an hour or more struck up a lively march, and following the lead of master of ceremonies, Mr. J. P. McCollum, President Anthony Ittner, Vice-president A. L. McDonald and others of the Executive Committee, the gentlemen marched in, took full possession and proceeded to lay waste the feast so generously prepared for them.

Plates had been laid for 350, but the attendance fell some short of that number.

Before being seated a blessing was asked by Rev. S. S. Waltz, of Louisville.

#### THE BANQUET.

For an hour, or more, the hall presented a very animated appearance. An excellent dinner was well served and disposed of with a heartiness that told more eloquently than words how well it was appreciated. Wine flowed freely, but not more so than did the good cheer and fellowship which these occasions are intended to foster. Then, as Brother Oldtimer would say, the decks were cleared, cigars were brought out and the brethren assumed a more quiet attitude, that enabled the master of ceremonies to obtain perfect order, almost instantly, and, remarkable to relate, this condition prevailed throughout the balance of the evening, very few, if any, leaving the hall until the last word was spoken. Every

speaker was accorded a most attentive hearing, something that can not truthfully be said usually on such occasions.

#### THE FEAST OF REASON AND FLOW OF SOUL.

The master of ceremonies, Mr. J. P. McCollum, of Louisville, called for order and said:

*Gentlemen of the National Brick Manufacturers' Association:*

To me has been assigned the pleasant duty of acting as spokesman this evening. On behalf of the Louisville Brick Manufacturers' Association, I wish to say that we, one and all, rejoice to have you with us. The little we have to offer you is but a slight intimation of what we would like to do if it lay within our power. We desire to make your brief stay with us as pleasant and agreeable as is possible, and sincerely hope that when the business that brings you here has been accomplished, you may each and every one return to your homes in safety, carrying with you none but pleasant recollections of your visit to our city. While you are with us, however, I assure you that in so far as it lies within our power to bestow, pleasure and profit shall be yours. [Loud applause.]

In conclusion, permit me to say that I have never looked into the faces of a finer looking body of men than I now see before me.



WM. D. GATES, SECOND VICE-PRESIDENT, CHICAGO, ILL.

Gentlemen, we have no formal programme of toasts for this evening, but will call on some of you for a few remarks. First, I want to hear from our new president, Mr. Anthony Ittner, St. Louis, Mo.

#### MR. ANTHONY ITTNER'S ADDRESS.

Gentlemen and Friends—The toast-master has paid us all a very nice compliment, and it is these nice compliments that go so far to make up the pleasant features of our annual gatherings.

I am pleased to see before me so many whom I have met at previous conventions from year to year since this Association was established. There are also many faces here to-night that I have never had the pleasure of meeting before, but which I sincerely hope and expect to see at many future conventions, wherever we may meet.

We come from different sections of the country, we rub shoulder to shoulder, we converse together, we exchange ideas, and it is this which makes the whole world kin. The good feeling that has been shown by the Louisville people is such that it can not help commending itself to every person who can appreciate fine sentiment [applause], and, gentlemen, that I have been the marked and conspicuous individual upon whom that preference has fallen, makes me, therefore, doubly grateful.

I wish, Mr. Toastmaster, to say a few words in commendation of the general principles upon which our Association is founded, and which I believe, are to



advance our calling and hence benefit each individual member of our great craft. There is no great body of men, there is no individual personage, unless he asserts his individuality and his power, that will ever be regarded as anything of a figure in this country. It may be asked of this Association as it has of another association of which I have happened to be a member, Of what use is the National Brick Manufacturers' Association? Of what use is the National Association of Builders? Gentlemen, in answer to these questions, I could say, of what use is the family? Of what use is society? Of what use are municipalities? Of what use are neighborhoods? Of what use are states? Of what use is the nation? Our Association is founded upon the fundamental principle which underlies our Government, and why any man should ask the question as to the purpose and objects of such an association as ours, is something I can not understand.

But such questions are asked, and they must be answered. Now then, this Association has met in the city of Louisville, and we start off in this pleasant manner this evening, and I say now that this is a pleasant departure on the part of the citizens of this city.

A MEMBER—These gentlemen of Louisville always do the right thing. [Laughter.]

MR. ITTNER, continuing—I think, perhaps, in future conventions we may follow this precedent, because it brings us together in advance of our business session, and brings us to know each other better and to have a more kindly feeling for each other; and I hope the custom will prevail at subsequent meetings. The industry in which we are engaged is a great industry. One of the greatest difficulties under which we are laboring—and that is what the Association should take hold of and remedy—is the lack of statistics. We should have a most complete system of statistics in the different states, so that we could know the magnitude and importance of the business in which we are engaged. The brick industry has increased greatly in the last ten or fifteen years, and will increase continually, and as it increases, the usefulness of this Association will become more apparent and be appreciated in a much larger degree than it is to-day.

Gentlemen, I should like to say much more than I have said but as there are some twenty-five or thirty speakers to follow me, I will not tax your patience longer, but I desire to repeat before taking my seat, the sentiment that now prevails in this section of the country, and is voiced by our good friend Blaffer of New Orleans, and by our new treasurer Mr. Sibley, of Alabama:—The National feature of our organization, the feature, that, though we come from all quarters of this great country, binds and cements us together in one band or brotherhood.

A National body bound together by ties of friendship. These are the sentiments I most wish to see cherished. We are brothers of a common calling, and of one common country and should ever unite together in upholding the flag of our fathers. "Long may it wave o'er the land of the free and the home of the brave." [Prolonged applause.]

MR. W. D. GATES, of Chicago, being introduced by the toast-master, spoke as follows:

#### MR. W. D. GATES' ADDRESS.

A long, long time ago, way way back in that dim and distant, musty, dusty time that borders on that mysterious period known to childhood as the realm of "once upon a time," there was a little band of commonplace appearing men walking over a commonplace road past a commonplace blind beggar. The beggar hearing them pass, importuned for aid. Hearing this the leader of the men stooped and taking up clay worked it by the soft mud process and applied it to the eyes of the beggar and the beggar saw.

Mr. Toast-master, from that distant period to this, from time to time, and all the time, clay has been an eye opener. From the man who started dabbling in it with large pocket book and small experience to the oldest brethren, all are increasing their experience through frequent eye openers. I need speak no further of anything so self-evident.

Gentlemen, it has been two years since I met with you. You knew me as modest then. I want to say to you that I have grown more modest since then. In the part of the country where I have been living; in a quiet, happy, peaceful valley, looking out upon a row of hills, of green pastures and shady ravines, over a valley flecked with sunshine and shadow of passing cloud, with the silver thread of a little brook winding in and out from shadowy willow to brightest sunshine, and with hills on the other side also—yes, a funny thing—a valley with hills on both sides. The main characteristics of this valley is modesty. Why, the very atmosphere of this valley is so fully charged with modesty that the little dog that comes to welcome you wears a smile and pants.

Besides being modest the inhabitants are content. They labor, eat and sleep contentedly until election day when they go quietly to the polls, vote for Jackson and return home. They do not wish to be moved by the fury whirl of eloquence, and when a neighbor shows symptoms of eloquence they warn him; if he still persists, they kill him. Gentlemen, I have always felt perfectly safe in that valley, and being modest, and not having eloquence, I will no longer stand in the way of other speakers here.

MR. ALLEN McDONALD, Louisville—Mr. toast-master, I am reminded by the remarks of Mr. Gates, that we have with us the distinguished gentlemen, whose sobriquet, "Keystone," is on every tongue, and I want to hear from him—I refer to Mr. Edwin McGraw, of Pittsburgh, Pa. [Applause.]

#### MR. EDWIN MCGRAW'S ADDRESS.

*Mr. Toast-master and Gentlemen of The National Association:*

Any of you who may accuse me of being "Keystone" are most decidedly wrong. Keystone said that McGraw, of Pittsburgh, put his foot down his own throat the first time he opened his mouth. Surely I would not write so truthfully about myself, but Mr. Toast master, a few moments ago, in looking over this vast assembly of intelligent faces it seemed to me that we had a gathering—not of brickmakers—but of some professional men, men who did not delve in clay for a living. Permit me to tell you one thing right here and it is this: There are two classes of brickmakers in this world. The first class are those bright, enterprising, go a-head manufacturers who are making money in the business; and the second class are sore heads who are continually growling and making mistakes instead of money. This latter class stay at home, and the bright, prospering money makers come here to our convention and meet with us. In this prospering class we must place the new beginner, for although he may not yet be classed a money maker, yet he shows his judgment and enterprise in coming here. I would not say that every prosperous brickmaker attends these conventions, but I do say that any brickmaker who does attend shows that he is either now a prosperous manufacturer or soon will be one. I consider the assembly before me as representing the flower of the brickmaking industry.

Mr. Toast-master I am glad that I am here and am pleased to see so many others here. Our Washington convention was the first meeting I attended, and I understood that our meeting was larger than the one at Indianapolis one year before, and we certainly have more people here than we had at Washington. It shows that we are growing in members and importance year by year, and I believe that a few years more will see us with one of the grandest organizations of our kind in the United States. I thank you for your kind attention.

D. V. PURINGTON, of Chicago, being introduced by the toast-master, spoke as follows:

#### MR. D. V. PURINGTON'S ADDRESS.

*Mr. Chairman and Gentlemen:*

Those of you who have attended the powwows of previous conventions know that this is my first appearance as a speaker.

I want, however, to take exception to one remark of Mr. McGraw, that this does not appear to him to be an assemblage of brickmakers but a gathering of professional gentlemen. Now I desire to say that in my judgment the two terms are synonymous. If they are not, if the brickmakers here present are not professional gentlemen, it is the object and purpose of the National Association of Brick Manufacturers to make professional gentlemen of them. I can remember the time when nearly every brickmaker in Chicago was a foreign born citizen and for years I was dubbed "the Yankee" by my brother brickmakers. It is no discredit to those who were foreign born to say that in no city or no part of our country has greater progress in our art been made than in Chicago. Chicago, by the way has been called the "Windy City." I do not claim to represent her in that capacity. There are several gentlemen here who will fitly represent that portion of Chicago whom you will hear from before the final adjournment of this convention. It has been suggested that as all the members of this Association will doubtless attend the World's Columbian Exposition, it would be a good idea to hold a mid-summer meeting of this National Association. All that would be required to make this meeting a success, would be that the brick manufacturers should be in Chicago at the same time. I am authorized by the Chicago delegation to tender them a hearty welcome and to promise that we will do all in our power to make their stay pleasant and profitable. We do not pretend that we can vie with Louisville or to compete with the magnificent hospitality we are receiving here to-night, but we do promise to do the best we can and I feel sure that I echo the sentiments of every Chicago brickmaker when I say this.

I do not like to talk shop on an occasion of this kind. You are all feeling good. Your hearts are warmed by the good southern wine you have drank and by the southern hospitality you have been greeted with, but your chairman asked me as I entered this hall to repeat a statement I made to him and some other Louisville gentlemen yesterday. That statement was to the effect that good paving brick are harder, more durable and more serviceable than granite blocks. I make that assertion without fear of successful contradiction. The time will come and at no distant day when this whole country will endorse my statement that brick pavements fill every possible requirement better than any other known material.

And now I want to thank the Louisville Association for this magnificent specimen of southern hospitality and to say that while it is beautiful, grand and generous it is no more than we expected of them.

MR. J. C. ADAMS, of Indianapolis, being introduced by the toast-master, spoke as follows:

#### MR. J. C. ADAMS' ADDRESS.

*Mr. Toast-master, Brethren of the Louisville Association and Brethren of the National Brick Manufacturers' Association:*

Indeed I can say nothing that would add to the interest of this occasion or that would be interesting or instructive to you; but in response to your kind call I can say that we feel that we are in the house of our friends, being with and



among you. In the north it is a fact that we are accustomed to hear of the fine, bluegrass of Kentucky and her magnificent horses. We are also advised of the fact that her ladies are the most charming and beautiful in the land, and we are further sensible that the whisky from her stills is unsurpassed; but until to-day we were not advised that modesty on the part of the Association of Louisville was a characteristic of the brickmaker. I want to say that this is the first city in which I have seen the brickmakers so modest and self-sacrificing of their own interests. We are sensible of this unstinted hospitality. We come from all over this broad land. I come as a boy expecting a vacation in anticipation of the meeting, and would feel disappointed if I could not be with you. Mr. Blaffer comes from away off in the south land, and my friend on the right, from far off Maine, to enjoy the good things of life as set before us to-night. On every hand we see evidence of abundant joy on the part of all around us. But we come with the intelligent aim to better the business of our life and to catch ideas, compare views with one another. I understand our friend Keystone, from the rugged hills of Pennsylvania, makes no mistakes. I will say that I come from a brickmaking family, as our friend the toast-master will tell you. Over fifty years ago, he off-bore brick for my father in Philadelphia; and I tell you that brickmakers who never make mistakes are ready for white wings and to pass over to the silent majority. I have had a good measure of prosperity; but all along the line of my life are mistakes mingled with success. We can sing that good old Methodist song, "The mistakes of this life have been many," which our friend Keystone when he has traveled the road many years can better appreciate. We meet in convention, and we have our little matters of difference; but when we gather round the festive board, we are all of one mind, and that is that the brickmakers of Louisville are perfect bricks and hard to beat. [Applause.]

Mr. J. A. BLAFFER, of New Orleans, La., being introduced by the toast-master, spoke as follows:

#### MR. J. A. BLAFFER'S ADDRESS.

*Mr. Toast-master and Gentlemen:*

It is pleasant indeed to be among you, and to feel that we are all welcomed guests of our Louisville brethren, and I not only trust but feel assured that this union will bring immense pleasure and delight to our hearts.

Hailing, as I do from the South, I feel particularly complimented at the action of our able Executive Committee in having selected a southern city as our place of meeting, a fact which ought to bring out a full attendance of our brethren from the South, who, I regret to say, have been somewhat backward in their attendance in the past. From the evidences around me, I am sure that our Louisville brethren have arranged a tempting programme to make our stay one continued "feast of reason and flow of soul."

It is well then that we should put aside the restraints of care and toil, and spend a short session in good fellowship and kindly greetings, and thus be better prepared for the year of labor before us, and I sincerely trust that the deliberations and practical experiences of the next few days may afford us all sufficient food for reflection to solve that serious question which ought to agitate the mind of every progressive brickmaker, and supply the long felt want of producing a good and perfect brick.

Mr. McClarty, of Louisville, being introduced by the toast-master, spoke as follows:

*Mr. Toast-master and Gentlemen:*

I am not a brickmaker, though I belong to a business very closely correlated to the brickmaking business—I am a banker. [Laughter.] I said, when invited to attend your meetings, that I had no business to meet with you; but knowing the capacity of these Louisville friends of mine to surprise people with things of this sort I accepted and am here. My friend McDonald met me on the street recently, and startled me with an array of figures showing the magnitude of this business. I concluded when I went home last night that I would look into the matter and picked up an encyclopedia; but the more I read of the article, the less I knew about it. I found I could not tell about the different constituents that went to make up a brick. I had never seen a brick machine. I knew that if I had learned nothing about a brick machine and I did not know what went to make up a brick I could hardly appreciate a good brick—I concluded that if I could not get the bricks in my head, I would have to come away with them in my hat. Of course I can not answer for the brickmakers of Louisville, but I feel extremely grateful to my friend McDonald for the pleasure of being here to-night. It has introduced me to a business I never knew before, and introduced me to a class of citizens from all portions of the country. I have made the personal acquaintance of those in my immediate neighborhood, and find them very pleasant and agreeable companions. I thank you, gentlemen, for your kindness. [Applause.]

W. H. ALSIP, of Chicago, being introduced by the toast-master, spoke as follows:

#### MR. W. H. ALSIP'S ADDRESS.

*Mr. Toast-master and Gentlemen:*

Some time yesterday or to-day (I am at a loss to know where yesterday ended and to-day began) Mr. Randall met me in the corridor of the Galt House and asked me to make an address to-night.

Being in an unsatisfactory condition as regards my voice, I shall ask your

indulgence. I will try to make myself heard, but in case I fail please do not shout "Louder," "please, sir, louder."

The natural inquiry which presents itself to my mind is, "Why are we here?" Gentlemen, I am not plagiarizing from Mr. Flanagan of Texas. We represent in this vast convocation the intelligence of the brickmaking fraternity of our country. We are here to learn, to find out wherein we are weak, and to discover a remedy for our weaknesses, if possible; we are here with the first confession which marks the successful man; the confession that we still have something to learn. The beginning of all wisdom is a confession of ignorance. The man who knows it all, the man who is selfish in the desire to guard his wisdom, the man who does not know enough to appreciate his own ignorance, is not with us to-night. He is not part or portion of us and has nothing in common with us.

The first great lesson which we have learned was a lesson in magnanimity; where a man put aside his personal ambition and refused the honor of being the president of this great body, in order that we might get away from a precedent established upon a false hypothesis, a precedent which was wrong in theory, and fact, and rising to a full appreciation of the highest order of patriotism placed the welfare of this organization above his own personal ambition. We have learned a lesson in hospitality as well. The Gateway City of the South has set us an example of limitless hospitality such as we have never before witnessed in



B. W. BLAIR, THIRD VICE-PRESIDENT, CINCINNATI, O.

the cities which have heretofore honored our body by a call for our National Convention.

Again I ask, why are we here? We are met to-night, we are assembled in convention in this metropolis of the northern south, to reaffirm and cement friendships established in the past, to renew those feelings of good fellowship which makes the "whole world kin" and which had their growth in previous assemblies; and this alone is worth all it costs to bring this vast concourse of people together from all parts of our common country. That prince of good fellows, that energetic worker in the cause of building, Mr. W. H. Sayward, of Boston, has always advocated the wisdom of fellow craftsmen meeting in social intercourse. He says that much good may be done by craftsmen sitting down and eating together and smoking together and having some cordial and a fragrant cigar to assist them in the digestion of the viands they enjoy.

Our country owes much to the class of craftsmen to which we belong. The convenience, the comfort, the luxuries of our race largely depend upon you. You are always reaching out for some new idea, which will cater to the demands, that will anticipate the necessities of our countrymen. Gentlemen, all over our broad land, from Maine to Oregon, and from California to Florida, the surface of the earth is being disfigured by our delving in it and wresting from its bosom the materials out of which are being constructed those beautiful designs in clay, which delight the eye and adorn the luxurious homes and grand temples of trade and commerce which constitute the metropolis of our country. It has been stated that I represented the State of Illinois in this Convention. I believe the greater portion of Illinois is in Chicago. I am from Chicago, and I do, therefore, represent Illinois. Let me say a word about the Chicago brickmakers.



The Chicago brethren have taken up the social idea of this National Convention, and have organized themselves into a club. We meet once a month, I admit, we occasionally meet between times, but we meet once a month as an organization, and I can not too heartily commend that part of our scheme. We sit down to a banquet, and when we get around the table, shoulder to shoulder, conscience to conscience, we find we are all actuated by the same motives, have the same sympathies and troubles, and by an interchange of experiences a better fellowship is established, and when it has been reported that one of our members has done something wrong, at the next meeting an explanation is called for. That explanation is usually satisfactory, and let me say, that during the past year we have never convicted one of our members of unbusinesslike or ungentlemanly conduct toward his fellow-members.

I want to speak of the order of intelligence presented in the faces of the gentlemen who surround this board to-night. I maintain, that to conduct a successful brickmaking business requires an order of intelligence far in advance of that required to conduct the ordinary mercantile lines, to measure tape, to shave notes, or do a pettifogging law business. I do not include the ministry, because that would be unfair. It requires mechanical skill, engineering ability, financial sagacity, and a world of perseverance and hope. Our business is one in which the lines of Pope are exemplified.

"Hope springs eternal in the human breast."

He was thinking of the brickmakers when he said that. But the hope part only applies to the fellows who staid at home. We have got past that point.

The brickmaker who knows it all, and those who had not the means to get here are not with us to-night. I should like so say to those who remained away on account of a supposed lack of funds, that the best thing for them to do would have been to borrow the money to come. Everything I have seen here strengthened me in that position. We gather wisdom from experience of others, we must keep up with the procession. In this nervous, progressive, active age we must ever be on the alert to grasp our opportunities. When a valuable new invention is put forth and its efficiency has been proven we must adopt it, and if we do adopt the best methods of carrying on our business, we can not help but have a fair measure of success. Gentlemen, I thank you for your attention.

MR. JACOB MERIWETHER, of Louisville, Ky., being introduced by the toast-master, addressed the assembly as follows:

#### MR. JACOB MERIWETHER'S ADDRESS.

When I was a boy I worked in a brickyard, and thought I was not making money enough, so I started away from it and went to laying brick—helped the men. I learned that trade and I followed the business of contractor and builder for twenty years. I thought the brickmakers were all getting rich a few years ago, and concluded I would make some of that money myself. I got interested in the brickyards, and found that it is something that has got to be watched, not only during the day but at night. That is where we lost the most money—by not watching it a night. I could not attend to two lines of business—I could not attend to the contracting and brickmaking, so I had to give up one or the other; but I had my contracting established, so I dropped the brickmaking. But I liked the business of brickmaking; it is a nice business and it is a healthy business, one that requires a strong mind and a healthy body.

I was at the Convention this afternoon, and was not a little surprised at the element of modesty there being developed. Brickmakers are generally men of many virtues, I admit, but I never suspected that modesty played so large a part in their organization. As one of the organizers of the Louisville Brickmakers' Association, I want to say, and I can say it with good grace, being, as I have told you, no longer a brickmaker, that the action of the local Association, as voiced by Mr. McDonald, was in no sense an admission or intimation that there is not among the Louisville Association suitable material for the high office the National Association stood ready to bestow upon any chosen leader. On the contrary, I think that almost any one of the twenty members of the Louisville Association could, like my friend McDonald, fill the office in an acceptable manner. That they decline the honor is due entirely to native modesty. [Laughter and applause.]

MR. JAMES DINGEE, of Philadelphia, being introduced by the toast-master, spoke as follows:

#### MR. JAMES DINGEE'S ADDRESS.

I have been looking forward for a year to meeting the brethren of the National Brick Manufacturers' Association, and I assure you that there is nothing in my life that gives me greater pleasure. Though suffering from physical ailment that would keep most men in bed I have traveled from Philadelphia to Louisville to meet and greet the gentlemen of this Association to-day. As I stand before you and look over this large audience and then think of what the Association was four or five years ago, it certainly does me good to be with you here to-night. I am very glad to see that our Association is growing larger each year. It, like the brick manufacturing business, is on the increase. This is a meeting of friends. We cast aside our business and come together once a year and talk together—hundreds from the north, south, east and west—where the warm hand clasp of friendship binds us closer. It is more pleasure than anything I know of to-day. It is well. The man who wrote that sweet song, "Our Old Kentucky Home," was no doubt far away from those he loved and in his idle moments sat

down and wrote, "Our Old Kentucky Home Far Away." As we sit around the festive board to-night we can sing that sweet old song with peace and contentment in our hearts, and after we say good-bye and return to our homes we will many times recall our visit here with keen delight and sing anew, "Our Old Kentucky Home Far Away."

Gentlemen, I have nothing more to say to you than to give you my hearty thanks.

MR. W. A. EUDALY, of Cincinnati, being introduced by the toast-master, spoke as follows:

#### MR. W. A. EUDALY'S ADDRESS.

GENTLEMEN: I am in the same category with my friend Purington—having a kind of grudge against the man who says he is from the Keystone State, but who is not. Keystone is sailing under an assumed name, and I am one of the victims he has selected as having said too much—that is, made too much noise and said too little.

I feel, gentlemen, that this Association is traveling on a broader gauge road than that indicated by those of the Keystone persuasion. You know in this country we have the narrow-gauge and the standard roads, commonly designated as the broad-gauge. In this country we have many organizations of one kind or another with a variety of purposes and objects in view. Many of these organizations are adapted to travel only on a narrow-gauge track. I believe the National Brickmakers' Association was built to travel on a broad-gauge road—we want to be broad-gauged; this has been the idea of this Association from the beginning.

Generally speaking, the members of this Association meet in convention on a broad platform; free to discuss any subject pertaining to the clay industry, barring the question of prices. Occasionally, however, some are admitted to our ranks who have not fully abandoned the narrow-gauge system, hence do not take readily to long trunk lines equipped with heavy rolling stock built upon the most improved plans, but after being coupled on to the old stages from the north, south, east and west for a short time they find the running more smooth than anticipated, consequently they lose some of their anxiety about the air brakes suggested by Keystone.

We are here for good—to get good for ourselves and to do good to others, and it is nonsense to talk anything else. This being the case we must do all the good we can to advance the interests of this Association. We should, and no doubt will, work together with harmony, having one mutual idea in view—to advance the interests of all, no matter what particular line of that great industry we each represent; and let us depart from the narrow channels which we are sometimes inclined to fall into.

No doubt we have all attended many banquets of one kind or another, but I question if any of the gentlemen present this evening have ever attended a gathering of this size where better order and attention has been observed throughout the entire evening.

We are here for good fellowship, and I trust we are here to learn more of our art. A great deal has been said about Louisville hospitality, and southern hospitality. When Louis started out to found a city he began his meanderings down the banks of the Ohio river, which he continued for a considerable distance before finding the ideal site in view, but here he stopped, and Louisville was founded upon her beds of good brick clay, beds of sand all covered with a soil sown thick with seeds of hospitality, the like of which is found nowhere else.

At Cincinnati, my own city, where our first convention was held, every man was permitted to eat and drink what he pleased, provided he paid for it.

At Chicago we ate and drank free (or freely) standing (at first).

At Memphis, southern hospitality found for us comfortable seats round the festal board. But at Philadelphia, Indianapolis and Washington we again in turn took to our heels, which latter we fairly well maintained. We were well received at all these several places, but I believe we have never yet met around the festal board with so much quiet modesty as we have to-night. Never have we realized my idea of a banquet so fully as we have this evening, and this certainly argues to me that this convention is run on a broad-gauged platform, upon a broad-gauged road, with a full head of steam.

MR. T. A. RANDALL, of Indianapolis—Mr. Toast-master, with your permission, I would like to refer to an incident in the convention this afternoon that seemed to escape the attention of nearly every one. You will all remember that when Mr. McDonald declined to be a candidate an effort was made to force the nomination upon him as though his declination was not final. When it seemed that a ballot was about to be taken a clear, manly voice was heard from the far end of the room saying: "I object, Mr. President. Mr. McDonald's withdrawal is final, and I move the election of Mr. Ittner by acclamation." It was Mr. McDonald's brother who uttered these words, and the manner in which he spoke, his positive, manly manner impressed me very pleasantly. I should like to hear from that brother, Donald McDonald. [Applause.]

MR. DONALD McDONALD, of Louisville, spoke as follows:



## MR. DONALD McDONALD'S ADDRESS.

*Mr. Chairman and Gentlemen:*

I am not an orator, and I am not much of a brickmaker, and I have only three reasons for consuming your time. One is that "it is on the bills and has to be did." Another is that I want to make a suggestion, and the third is that I want to ask a question. I will ask the question first, with the distinct understanding that it is not to be answered until I get through with my suggestion. I do this because I am quite sure that if any one interrupts me I will be reduced to the congressional extremity of asking, "Mr. Speaker, where was I at?" Applause, gentlemen, is not considered an interruption.

My question is: How can I prevent a dry press shale brick, containing potash, soda and magnesia from efflorescing or white-washing after it is laid in the wall? Of course you all know, and while you are getting your answers ready I will proceed with my suggestion. I have heard a great deal about getting in clay, making brick, drying brick, water-smoking and burning brick, but I have not heard much about the still more important operation of selling brick.

Now I believe that brickmakers everywhere would find it easier to sell their brick and prices better if they were not exposed to competition from yards which are started up by persons who are almost ignorant of the business and who have large ideas of the profits to be made therein. At the bottom of such an enterprise there is almost always either a man with some land for sale, or a man with a brick machine to sell. Prospective investors are told all of the bright things about the business while the dark pages are kept carefully sealed. The result is that a new yard is established with sufficient capital and still less experience, and in due course of time the sheriff sells it out. But once established it must run, as it can not move, and the result is that another competitor has entered the field, which probably had not in it at first a living for the yards already established. I stopped not long ago at a small town in southern Ohio. I found that it had two hand brickyards which had been barely existing for a good many years and that a new yard to make brick by machinery had been recently established. I found one kiln of brick which was hardly better than dried clods, and another which was stuck together so tight that the proprietor was seriously considering the advisability of blasting it apart with dynamite. The proprietor was at the time wrestling with a patent down-draft kiln from which he expected great things. He showed me some that had come out of it from a previous burn. They had the clear, sonorous ring of cracked gourds, and he confided to me that where he had attempted to fire them harder they would stick together. He was, however, very proud of his clay, and I went with him to the shed to examine it. It was about the best soil on which to raise water-melons that I ever saw. He said he knew that it was good clay because the men who sold him the machine had tested it for him. He showed me the samples—hard as flint, solid as granite. He was very proud of them, and was just getting over the idea that he could make 30,000 every day exactly like them and burn them in common open kilns.

I called his attention to the fact that the brick had evidently been set so that they had no weight on them, had been heated exactly to the point of fusion, and that it would be impossible to get a similar result with a kiln full of brick. The man was "in it," however, and although I could see that he was sick at heart, there was nothing for him to do but make the best of it.

Now, my suggestion is, that we let it be known that we are ready, through our officers, to give the fullest information to parties, who, with a machine man for a guide, are about to enter this supposed Eldorado. Let us request our officers to say to all such that a brick-yard is not a gold mine; that the machinery represents less than one-tenth the capital required; that the so-called "sample brick," with which his eye has been dazzled, can not be equalled in actual practice even with the most expensive kilns and the greatest care. Let us warn them that there are soft brick and broken brick, and bad debts, and a thousand other losses to be met before one dollar can be counted as profit. Let us tell them, in short, that the business of brickmaking does not yield an average of four per cent. interest on the capital invested, and that very few yards ever return one dollar to those who originally pay for them.

I make these suggestions, gentlemen, on the idea that this is an Association of brickmakers, and that it is a duty to ourselves as well as to lambs which are being daily shorn, to do what we can to stop the organization of new companies by the methods to which I have alluded.

Gentlemen, I have finished. [Applause.]

MR. J. A. SNELL, of Rhode Island, being introduced by the toast-master, spoke as follows:

## MR. J. A. SNELL'S ADDRESS.

*Mr. Toast-master and Gentlemen:*

I feel kind of solemn to-night. I think there is going to be a by and by—a hereafter—when we will all come together; and when we get over there, we are going to find out whether we are good brick or not; and if we are not, we have got to be burned over again. I have come to another conclusion, and that conclusion is that I am a brickmaker. I was not so sure of that before; but I have heard gentlemen say to-night that brickmakers make mistakes. I made a mistake when I came here. If I had any sense at all, I would have brought my wife along, and she would have kept me out of this assembly. I am determined, so far as I can, to make less mistakes, so as to make a good brickmaker. There are two things I want to excel in—to avoid making mistakes on the other fellow's experience; and, on the other hand, I want to be systematic in it; and I want to say right here that I love systematic business, and I want to say further that I

don't think a man can be a good, outright successful brickmaker unless he has system. I do not mean to say that any man can follow a railroad to success; but I do say that he must follow a system to be successful. He does not want to try to do everything himself. He must have good men; and when these men do good work, let them alone. I am in favor of system, even if some things don't come out right—and some things don't always fit just right. It happened once that a Jew went up two flights of stairs to sell a merchant some goods, and the merchant did not want to be bothered with the man, but the fellow still persisted, and finally the merchant got angry and hit the drummer a kick, and he fell on the landing below, and as he was picking himself up, the merchant's partner came along and kicked him down the other flight, and he fell at the door, and from there the porter kicked him into the street. He got up, pulled himself together, and said, "Mine gracious! what a system." [Laughter.] I believe in being systematic. Gentlemen, I thank you.

MR. B. W. BLAIR, of Cincinnati, Ohio, being introduced by the toast-master, spoke as follows:

## MR. B. W. BLAIR'S ADDRESS.

My Brethren: It is somewhat sudden and unexpected to be called on this evening after this young gentleman of the press who sits next to me, has, with true journalistic instinct, pumped all the ideas out of me and you will see your personalities in the paper in the morning. I assumed the vice-presidency of this Association because I thought I would add "weight" to it—that is two-hun-



CHAS. P. MERWIN, RECORDING SECRETARY, BERLIN, CONN.

dred and fifty pounds—and I come here as a "Mascot," wishing it good luck, even if its proportions have grown too large for the "Bosom of Abraham." All levity aside, we all love the National Association of Brick Manufacturers and look ahead to its annual meetings. We are pleased with the kind hospitality of our friends in Louisville. You have heard excellent speeches to-night, witty and eloquent, and I do not wish to mar the entertainment by talking on brick, and so will choose another subject. I am reminded we are all pilgrims, wanderers from afar, and have journeyed to this Mecca of hospitality and good cheer. Our wives in Maine, in Ohio, in distant Louisiana and other places, miss us while we are having a good time here, and this reminds me of James Whitcombe Riley's poem entitled "An Old Played Out Song," which I will endeavor to recite.

It's the curiosest thing in creation,  
Whenever I hear the old song,  
Do they miss me at home? I'm so bothered  
My life seems as short as it's long.  
For everything 'pears like adzackly  
It 'ppeared in the years past and gone  
When I started out sparkin' at twenty,  
An' had my first neckercher on.

Though I'm wrinkleder, older and grayer,  
Right now than my parents was then,  
You strike up that song, "Do they miss me,"  
And I'm jest a youngster again!



I'm a-standin' back there in the furrys,  
A-wishin' for evening to come.  
And a-whisperin' over and over  
Them words, Do they miss me at home?

You see, Marthy Ellen, she sung it  
The first time I heerd it, and so,  
As she was my very first sweetheart,  
It reminds me of her, don't you know.  
How her face ust to look in the twilight,  
As I tuck her to spellin', and she  
Kep a-hummin' that song tel I ast her  
Pint blank, "Ef she ever missed me?"

I can shet my eyes now, as you sing it,  
And hear her low answerin' words,  
And then the glad chirp of the crickets,  
As clear as the twitter of birds.  
And the dust in the road is like velvet,  
And the ragweed, and fennel and grass  
Is as sweet as the scent of the lilies  
Of Eden of old, as we pass.

Do they miss me at home? sing it lower  
And softer—and sweet as the breeze  
That powdered our path with the snowy  
White bloom of the old locus' trees,  
Let the whipperwills help you to sing it,  
And the echoes 'way over the hill,  
Tel the moon boogles out in a chorus  
Of stars, and our voices is still.

But, oh! "They's chorus in the music  
That's missed when her voice is away!"  
Though I listen from midnight tel morning,  
And down tel the dusk of the day!  
And I grope in the dark, lookin' up'ards  
And on through the heavenly dome,  
With my longin' soul singin' and sobbin'  
The words, "Do they miss me at home?"

MR. S. P. CRAFTS, of Connecticut, being introduced by the toast-master, spoke as follows:

#### CAPT. S. P. CRAFTS' ADDRESS.

I suppose I could tell you something about brickmaking twenty years ago, when I first went into it; but I don't know that I could tell you anything about it now that would interest you. I am reminded by my own experience of a Maryland pilot, years ago. A ship, going down the river, wanted a pilot, and the captain asked him: "Do you know the channel?" "Yes." "Did you ever hit on a rock?" He said: "Yes; I have hit every one of them." "You are the man I'm after," said the captain.

Now, gentlemen, I think it is safer to take the man who hits an occasional rock rather than the man who never makes any mistakes. The man who has made no mistakes ought to go straight home to heaven. Now, who should win the victory? A man may know how to do one thing well and may be another better. I am reminded of what the girl said of her sister, just married, who had been keeping house just one week: "There is my sister Rhody, who knows all about heaven, and don't know how to make bread."

REV. S. S. WALTZ, being introduced by the toast-master, spoke as follows:

#### REV. S. S. WALTZ'S ADDRESS.

I have been struck with many pleasant things about this Association, and one thing is its wonderful modesty. I think outside of your craft you may be more willing to talk; but I see you do not want to say anything about yourselves. I have many times attended the preachers' meetings, which were mutual admiration societies. Now, I will tell you gentlemen, I shall go out as a sort of missionary, and I shall tell them about the brickmakers; and I do not want you to understand this as flattering you gentlemen—I do not do that; but for manliness and intelligence, and for a fine looking body of men, either in the church or out of the church, among ecclesiastics, or anywhere, never have I attended a meeting that surpasses this. May you go home to make the best bricks in the world, to have the best homes in the world, and do not forget to come to Louisville again, when, possibly, all our streets will be paved with the best brick. And now let us unite in the benediction.

After the benediction by Rev. Mr. Waltz, the gentlemen dispersed. Many, though, lingered in the corridors long after, chatting over old times and planning for the future.

## SECOND SESSION.

The meeting was called to order Wednesday morning at 9:30, with President Ittner in the chair.

PRESIDENT ITTNER—We will take up the order of business where we left off yesterday. The first number on the programme is an essay on "Enameling Brick," by Mr. Isaac Hardy, Aberdare, Eng. He not being here, I will ask the secretary to read the paper for him.

SECRETARY RANDALL—I would like to say before commencing the paper that the samples referred to in the paper are here on the desk and any one can examine them who so desires.

Secretary Randall then read Mr. Hardy's paper, as follows:

### ENAMELING BRICK.

ISAAC HARDY, ABERDARE, ENGLAND.

*To the President of the National Brick Manufacturers' Association:*

GENTLEMEN—In presenting this paper on the manufacture of enameled brick to you, I can not help thinking that it is a new departure in the history of your Association. It may be that many thoughts will pass through your minds while this paper is being read, some of them, perhaps, rather hostile to myself. Be that as it may, I will not take up your time by making any apology or by giving any explanation as to the reason I have sent this paper to be read at your convention. If this be needed, your esteemed secretary, Mr. Randall, will put me right, I have no doubt.

The subject that I have chosen is one that has never been brought prominently before your Association, but it is one that is, undoubtedly, occupying a place in your minds, and there is no doubt but that in the future it will take front rank as a branch of the clay industries of your country. Enameled brick will, for beauty of ornament combined with their sanitary efficiency, take the place of honor with paving brick, sanitary pipes and roofing tiles. Scores of your brickmakers have already tried to make them, but only one or two have hitherto succeeded. But it is not my intention to take up time by stating the causes of failure. Suffice it to say, that enameled brick manufacture is one whole and indivisible process, carried on by an enlightened and intelligent understanding of the materials to be used, the constituents of the clay, and a very definite knowledge of the burning of the ware.

I do not say that a man need be a chemist, or that there is any necessity of sending your clay to any laboratory for analysis, but you must have a definitely prescribed formula and minutely follow it.

It is my purpose to make this paper as practical and concise as possible, and to this end I shall divide the subject under several heads; namely, the preparation of the clay, making and handling the brick, setting and burning, etc., and give a list of all the materials in use for making the enamel and glaze. First:

#### THE CLAY AND ITS PREPARATION.

The best clay for the purpose is a buff fire clay that will vitrify at a fairly high temperature, as the highest quality of enameled brick should resist all moisture and stand the test of all climatic changes; but any clay will do that will stand fire necessary to flux the glaze, and I know that there are red clays in your country that meet all the requirements in the highest degree. Whatever kind of clay it may be, it must be very finely ground and well and evenly tempered. It may be made into brick either by hand molding or by a stiff plastic machine, wire cut. The latter is to be preferred. As all brick made on a stiff plastic machine gather heat by friction in passing through, they should be made the day before they are wanted, put in a cool place and covered over to keep them from getting an uneven stiffness.

#### WORKING THE BRICK.

The brick now being ready, pressing may begin; but before we do this we must say a word about the press. This should be a screw press and be the very best to be had. The box and forcer should be fitted so that every edge will be clean cut, without a particle of fringe on them. Barrows will be wanted on which to wheel the brick from the press to the dipper, and these should hold twenty brick, ten on each side of the barrow. Racks will be needed on which to put the brick after they are dipped, and these should be made out of boards 11 inches by 1 inch, any length to suit the room in which the operation is to be carried on. They may be put eight boards high, and should be seven inches apart, and be filled from top downward.

The brick must now be brought to the press and placed on a table. The face to be enameled must be quite clean and free from all bits of clay. The person preparing them for the press must have a dresser and give the face a tap to level it, and then make the face quite smooth and even with a knife. The presser must then take hold of the brick and place it on the press with the prepared face toward him, being careful to push it far enough back so that the prepared face will not touch the side of the box as it goes down. Now set the press in motion and see that every corner and edge is perfect.



## THE NEXT OPERATION IS TO PUT ON THE ENAMEL.

The first part of this operation is to make a slip composed of two parts fire clay and one part blue ball clay, which when ready for use should weigh twenty-eight ounces to the pint. Dip the brick in this and let them stand ten to twelve hours to give it time to set to the brick. The use of this first dip is a reconciling medium between the brick and the enamel, taking a firm grip of the brick on the one side and the enamel on the other.

The second part of the process is to dip them into the enamel.

## ENAMEL.

This is a very important matter and should be well understood. Potters' clay is, as a rule, used for the enamel, but this will not give satisfactory results, for the following reasons: Some potters stain their clay, and if this is used the brick will be a bluish color; others put no stain in their clay and if this be used, the brick will be a yellowish color. Then, too, no two potters mix their clay the same, and, therefore, the shrinkage can not be the same, and you will see, gentlemen, that much trouble may, and often does, arise from this cause. The proper and safe thing to do is to make the enamel from the materials, a list of which I have given.

This can be done, and it can be altered so as to suit any clay, no matter what its shrinkage may be, always bearing in mind that it must be a clay that will stand a sufficiently high temperature to flux the glaze. The enamel after being mixed should stand at least a fortnight before it is used, in order to get rid of all fermentation. There should be a place to keep and mix all materials, with the vessels, sieves, sponges, etc. This place should be handy to the workshop, but separate and distinct from them. No spot of brick dust or any dirt, should be allowed to get into it. Every tool should be kept perfectly clean, and every precaution taken to insure the best results.

## DIPPING.

There is a point in this. You might think that the brick should be dipped straight down into the liquid, but this is not so. To do this, would entirely spoil the brick. In order to get a level face, entirely free from air bubbles, the brick must have a sweeping motion through the liquid, and it is done this way. You take a brick up in both hands, standing in front of the dipping tub. In this position, you have the face to be enameled upward, now bend a little forward, heel it over until the edge of the brick that was nearest to you in the first position strikes the liquid, then you see in turning the brick face up again, you simply sweep it through with a circular motion, bringing it up to its first position, holding it quite level until it is slid on to the board prepared for it. This applies to all dipping, both enamel and glaze.

The next thing to consider is the

## GLAZE.

What is a glaze? A glaze is a chemical compound made up of materials, the properties of which are well known, mixed in certain quantities to produce a given result. This definition is true of all glazes. These materials are as follows: Ground feldspar, ground flint, ground cornwall stone, ground quartz, ground whiting, sulphate of barytes, ground fluor spar, ground flint glass, china clay, potters white shavings, ground bone earth, ground pitcher and refined plaster of paris. These are dry bodies and from these all glazes and enamels can be made. Many fluxes have been, and are, used to make the glazes run at a lower temperature, but they are not necessary. Indeed, they are one and all detrimental, some in one way, some in another. I will give them here: Common soda, carbonate of soda, soda ash, borax, boracic acid, nitre, alum and white and red lead. These things are all used in glazes for various purposes, but should not be used in brick glazes or enamels. They will not stand fire and can only be used in frett glazes. It would not be a matter of surprise to learn that some among the number of gentlemen present have been trying to make enamel brick, acting on the advice that a frett glaze was the proper thing, and perhaps they may have parted with some of those shining dollars that our friend Gates said some time ago were so hard to get. If so, let me advise you not to go one step farther on that road. It can not be done that way. The glazes and enamels can be produced from the raw materials. I send you one small piece, only to show the color and the way the edges are brushed up. If you will break it, you can see the fracture and thickness of the enamel. Mr. Randall has small specimens of several colors all made from these raw glazes. These glazes should be ground in water until thorough amalgamation is effected.

## SETTING.

Setting is an important part of the brick manufacturing business, in any branch of the work, but more so in the matter of making enameled brick.

But, gentlemen, I find that the time allowed me for this paper is very nearly gone. Fifteen minutes is too short a time in which to set before you all the points of interest on this subject. Therefore, permit me to refer you to the last February number of your official organ, where you will find a full description with drawings illustrating the setting. I am informed that a great many headers are not wanted, and if that is so, the setting can be done quite as well with all stretchers.

## BURNING.

This, gentlemen, is the all important point in the manufacture of enameled brick. There are many points that need the vigilant watchfulness of a well balanced mind, but I can only name one. From the very first appearance of the fluxing of the glaze to the finish, the heat must be well and constantly maintained. If the glaze should be allowed to get chilled, it is all over, so far as first-class brick are concerned. But let me guard you against the other extreme. I do not mean that you are to hasten the process by putting on more blast. This would be more detrimental to the glaze than to starve it. The glaze must have its

proper time, and it is not difficult to find this happy medium, and if found will give the very best results. If you wish to pursue this matter further, see the last March number of the CLAY-WORKER.

In conclusion, permit me to say that you will hear more about this business shortly. I have a letter before me now that informs me that kilns and work shops are now being erected and will be ready for full operation by the time this paper is read before you. That orders have already been taken. There is ample evidence to my own mind that this branch of clayworking industry is destined to become one of very large proportions in your country.

In writing this paper, I have avoided what our old and valued friend, J. W. Cray, calls science and philosophy, and although I may not have treated the subject with that original common sense of which he speaks, yet I hope I may have contributed something that will help to stimulate thought and discussion and materially enlarge your views and ideas on enameled brick manufacture.

MR. HOWARD, St. Louis—Mr. President, I have listened to the reading of the paper with great interest. The enameling of brick is a subject I am very much interested in, and Mr. Hardy treats it in a practical manner. I move that a vote of thanks be tendered to Mr. Hardy for his valuable essay.

Motion seconded and carried.

PRESIDENT ITTNER—If there is no desire to discuss this paper,



T. A. RANDALL, CORRESPONDING SECRETARY, INDIANAPOLIS, IND.

we will take up the next subject on the programme, "The Year's Record." General discussion, led by W. D. Richardson, North Baltimore, Ohio.

## THE YEAR'S RECORD.

W. D. RICHARDSON, North Baltimore, Ohio—I think it best to omit this number of the programme as it should have come up yesterday. I had a paper prepared for that time, but I will not presume to read it now. However, a few words might be said on the subject.

Since our last meeting in Washington, another year has been added to our experience in the line of brickmaking, and it is important whether this experience has been a gain or a loss to us financially. We ought to at least be the wiser for it. The object of this Association is to disseminate knowledge, and I suppose in the discussion of "The Year's Record" it would be well and profitable to tell some of the lessons we have learned. We have learned lessons that we could not learn in any other way. Our materials



may differ widely in texture and color, yet they are composed substantially of the same elements, and though our process of making and burning and drying may be different, our aims and purposes are identical—to make good brick and make them so we can sell them at a profit. We all have very much the same difficulties to encounter and the same obstacles to overcome, and we get together in these meetings and talk these matters over and relate our successes and failures and help one another, thereby carrying out the great purposes of this grand organization.

The past year has been a most interesting and profitable one in my experience in brickmaking. I have made more and better brick than ever before. I am more than satisfied with the results. But too large a percentage of our brick come from the kiln defective. To be sure, a large per cent. of those brick that are defective are sold and laid up in the wall, yet the architects are getting more particular every year in this respect. Those that would have been gladly accepted a few years ago are to-day thrown out. This is especially true of the ornamental and fancy brick business. Of course, it is impossible to make all our brick perfect, yet a high standard of excellence can only be reached by aiming for it.

The company with which I am connected are advertised to make brick of all colors and sizes and we try to do what we advertise. We are obliged to make whatever the architects may desire. Now this is very interesting work, but if any of you value your peace of mind, I would advise you never to engage in it. To be obliged to make brick a special color, both plain and ornamental to match, and get them out in a specified time, will make a man envy his neighbor who is making common brick and selling them without regard to color. To do this constantly, to make it your business, is enough to make a man's hair turn gray. Just look at mine. (Laughter.) A catalogue of pressed and ornamental brick is an interesting thing to look at and study. The designs are pretty and handsome and the price-lists indicate such large profit for the maker that it seems as though there might be a fortune in the business. But go into the stock sheds of a company that have been making these brick for several years and see the piles of unmarketable brick, all of good color and shape, for which there may not occur a demand for several years. Just see the amount of money invested in those brick and, also, in the dies and moulds and you may see wherein the profit may not be so great. And here is one of the greatest drawbacks to the pressed brick business—and it is never helped along by beginners—and that is, the immense stock of brick you must keep on hand in order to carry on the business, and the stock will accumulate in spite of you. The manufacturer of common brick can at the close of the year figure up and know pretty well where he stands, he can calculate the cash value of what he has on hand, but the manufacturer of pressed brick may have two or three million of brick on hand which he finds it almost impossible to appraise at their real value. He does not know when he is going to sell them. We have something over forty different colors of brick and we are constantly making something new in that line. It is this growing demand for these different colors that makes the ornamental and pressed brick business so factious.

After you have made a few careful selections from different clays, you may have a pretty good stock of different styles, and you send samples of all these shades of stock and fancy brick to some architect, and you are pleased to receive an order for these brick, and along with your order there must be some round corner or some raised brick or some jamb brick that must match these exactly in color. Now comes the interesting part of the business. You go to work and make these brick, and you must do it in a hurry. You make them out of the same material, with the same mixtures and proportions as you did before, and perhaps they come out of the kiln the same shade you desire, but very often they do not, and then you have the pleasant task of trying to convince your customer that these brick look just as well when laid in the wall as if they were all the same shade—perhaps a little better. [Laughter.] Now eastern architects, many of them, are

advocates of a variety of shades in the brick, taking the brick just as they come from the kiln and putting them in the same front. Indeed they think the greatest objection to the pressed brick front is the uniformity of color in the front. They think that a wall laid in a variety of shades and tones is much more beautiful than one laid with all one shade, and prefer to take the brick just as they come from the kiln. Now, if this æsthetic idea becomes prevalent, it will be a great thing for the manufacturers of press brick, and will make a good showing in their profits.

Now, in regard to "The Records of the Year," we will not have time to go into the details. I am sure you have, all of you, been discussing with each other ever since you came to this city the records of the year, and will continue to do so until we part. We have, all of us, some great difficulty which we have to encounter, and I am sure we can find some one here who has succeeded in that certain line who can give us some suggestions that will help us out. That is the object of this Association. Relate your trials and troubles and see if you do not get some help, and I believe that you will get so much valuable help and benefit that you will never again miss a meeting of the National Brick Manufacturers' Association. [Applause.]

MR. D. V. PURINGTON—I did not intend to say anything, but it seems to me in discussing the "Year's Record," that one of the most interesting things to us is the destruction of brickyard property by fire. That is not a pleasant feature. I wondered when Mr. Richardson was talking whether it would be a good idea to discuss the aggressions made upon our hard earned savings by fire. The best and most effective remedy is to put ourselves in such shape that the risk by fire would be reduced, and this can be done by building fire-proof buildings, which are coming into use throughout the country. There may be some cheap and effective way of making preparation for putting out fire when started. We all understand that in brickyards using the old-fashioned kilns and sheds that we are never free from danger of fire. When we used the old kilns, we never, for years, burned a kiln without having the hose out. I speak on this subject because it is a very delicate subject with me and my neighbors, for the insurance companies came very near cutting us off by refusing to take the risk. I think that we should put ourselves in shape so that we can not burn out; that is, put ourselves in shape so that we can put the fire out.

MR. S. P. CRAFTS—Our sheds having caught fire, we took the hint and put in a force-pump and some hose.

PRESIDENT ITTNER—There being no further discussion, we will take up the next number, which is a paper on "Burned Clay," by L. J. Howard, of St. Louis, Mo.

As Mr. Howard is not present, we will take up the next subject, that of "Association Among Brickmakers," by Alexander Prussing, of Chicago, Ill. Mr. Prussing also being absent, we will pass on to "The Mistakes of Brickmakers;" general discussion led by Edwin McGraw, of Pittsburgh.

## MISTAKES OF BRICKMAKERS.

BY EDWIN MCGRAW, PITTSBURGH, PA.

*Mr. President and Members of the National Association:*

A harder or more difficult task was never placed upon a brickmaker's shoulders than has been placed upon mine. I am instructed, nay ordered, by the Western Pennsylvania Brick Exchange of Pittsburgh, Penn., a local organization of which I feel proud to announce myself a member, to write a paper on the "Mistakes of Brickmakers." In vain I argued that there were other members who were better posted on mistakes than I was. In vain I told them that it was down on the programme as a simple, little innocent discussion, and that no paper was necessary, yet the only answer I received was "McGraw, stop your fooling and get up that paper." I delayed until the very last moment, hoping that I would succeed in shirking the duty. That I did not is plainly evidenced by my appearance before you to-day. What I have here written was done with a view to great brevity, which I believe to be the spice of all papers.

The word "Mistake," according to Webster is a misconception, an error of judgment. Oh! friends how badly it made me feel when I read those words "a misconception, an error of judgment." I saw at a glance the apparently false position I had taken at our Washington Convention one year ago, when I stood before you and proudly said, "Here stands a man who has never made a mis-



take in the brickmaking business." I was dubbed a "four-year-old," "an infant." I was told to return to my "nursing bottle" and other remarks just as dignified and complimentary. But, Mr. President, I do not, I will not, accept Mr. Webster's definition of the word. That is the word as generally used when applied to the brickmaking industry. A misconception, an error of judgment, is not a mistake at all times. What I am inclined to regard as a mistake is where a man or a firm plunges headlong into some fool thing that any practical man, or any man that has an ounce of common sense, would shun. Yet, the brick business is full of just such men, just such firms.

Mr. President, we must all do more or less experimenting. If we don't we are behind the times. If we don't, we are not enterprising, go-a-head men, and any business under the sun is well rid of any man or any firm who sticks to old methods and will not budge an inch just because, I suppose, his father before him had done it that way. Such a man, such a firm are to be avoided. But upon the other hand, equally well must we avoid and shun the man or firm who allows experimenting to steal away his business, his mind and his bank account; such people are fit subjects for our compassion. But alas! there are a class of men in this world whose sole aim in life is to pluck and fleece them.

For a brickmaker to conceive that he has a better or cheaper way of making brick is natural. Again, if some traveling agent gets hold of and convinces him that he is behind the age with his present appliances, and that he should discard that system, replacing it with something newer, etc., all this is perfectly natural, it has happened and is happening every day. But, Mr. President, just here is the point, right here is where Mr. Webster, Daniel Webster, and I differ. I contend that if Mr. Brickmaker goes ahead slowly and tries his own or the other man's ideas on a small scale, I might more properly say, "in an experimental way," and the idea was wrong, the experiment was unsuccessful, I do not now and never can admit that it was a mistake to try it. It was simply an experiment that proved unsuccessful, although at the same time the idea was misconceived and the judgment was in error.

Let us glance at the other side. If this man was foolish enough to become blindly infatuated with his own or somebody else's ideas, and turned in and tore down nearly his entire plant for the purpose of carrying out these ideas upon a large plan, upon a grand scale, magnificent in its proportions, and he discovers that the whole outfit is a failure, then, Mr. President, I will agree with Mr. Webster, I'll agree with anybody, that it is a mistake, a grand mistake, and anybody guilty of a mistake of this kind should suffer for it and suffer without sympathy. He should pack up at once and be sent by fast train to the smoky old city of Pittsburgh, where I will meet him at the depot and present him with the complimentary remarks showered upon me at Washington, not forgetting the nursing bottle, which I guarantee to have well cleaned, and filled full of the milk of human kindness, which no doubt he will stand badly in need of. And permit me to add, Mr. President, that if some of the reports that I hear from the east are only half true, there will be some pretty old ducks badly in need of this self-same bottle before the season of 1893 is closed.

Although this paper may seem to sound to some a little like a sermon, I will assure you I am neither preacher or moralist. I tried hard to hunt up some mistakes, some particular mistakes that I could quote, but I found that what was a failure in one section was a glowing success in another. I looked about with a mechanic's eye to find some machine, some kiln, some dryer or some process that I could stand up here to-day and say this is a failure, this is a mistake, but I could not. I could not, because, as before remarked, what is a dismal, ruinous failure in one locality, is a bright, glittering success in another.

Again I looked about, this time with the view of picking out some mistakes from the business department of the business. Yet here again, with but the one exception, I was unable to cull any points that might be of interest to us. I found that each and every locality had its own little points, its own peculiar ways, that are all right in that locality, but all wrong in another. That same law which applies to the mechanical portion alike applies to the business department, the one exception noted being the lack of organization for protection against abuses and ruinous competition; the lack of this I consider a grand mistake. However, as this paper is not on organization—which is a hobby with me—if I am not careful I might fly the track.

In conclusion, Mr. President, permit me to lay down four rules which, if strictly adhered to, will place our fellow members in such a position that a mistake—as I define it—will be unknown.

1st.—Any method not in use in your own locality, however successful it may be elsewhere, is an experiment, be it in burning, drying or any of the various processes employed in our craft; it is an experiment and should be tested or tried in a small, careful, experimental way.

2d.—Experiments are not mistakes even if unsuccessful, if carried on or tested in a sensible, moderate manner, and in such a way that it does not interfere with the prosecution of your regular business.

3d.—Any experiment is a mistake even if successful, if it must be tried or tested in such a manner or on such a scale as to involve a large financial outlay, and also to cause a suspension of your regular business. Such conduct is foolhardy and must be classed as a mistake, even if—as before remarked—successful.

4th.—Conduct no experiment, however promising, unless you are fully prepared to meet disappointment. The chances are, generally speaking, five to one against you.

PRESIDENT ITTNER—The subject of the paper just read is now open for discussion.

W. A. RIEMAN, Vincennes, Ind.—Mr. President, the paper just read is one of very wide latitude, embracing very many important points. By a combination of circumstances I became identified

with the great clayworking industry, taking charge of a plant about a year ago. I found the same old methods in vogue there that had been in vogue for many years past. In looking over the situation, I made up my mind that things had to be conducted in a different manner; that the evolution of brickmaking was now going on and that we should inscribe upon our banners the motto, "Excelsior." With this in view, I made some changes by which we should be enabled to turn out a better product than had ever before been turned out. I wrote to one of the prominent members of this organization, one of the contributors to your official journal, telling him we wanted a first-class burner, a man who thoroughly understood the art of manufacturing brick. I did this with the hope that I could make a business success of the institution of which I had taken charge. I placed this man, or the man he recommended, in charge, thinking that I could show to the world that I could make brick. We turned out brick, but not with the great success that I had anticipated. We did not turn them out as satisfactorily as I desired, for they came from the kilns in some shapes



JNO. W. SIBLEY, TREASURER, BIRMINGHAM, ALA.

undesirable to architects, for the architect is demanding better and better brick all the time, and to meet this demand we have to manufacture better goods. And following up this idea I put in some machinery to prepare the clay in better shape, aiming to improve the output. We have in a measure accomplished this, and we propose to continue on this line if it takes the balance of our time.

I feel that I must say something in regard to the evolution of brickmaking. Our president spoke yesterday in regard to the great strides that had been made in brickmaking in the past ten years. Why have all these improvements taken place? Gentlemen of the convention, you must all admit that it is due to the enterprise of the machine men, and all honor is due to these men. The machine man is constantly on the alert to place on the market of this great industry something artistic. That is the reason this evolution is going on. That is the secret of the progress of our art, and this progress will continue until time is no more. Gentlemen, we must continue to improve our art, and when we do this and when we are



done our work on earth, our friends and associates will say, "Well done, good and faithful servant."

ALFRED MORGAN, Cloverport, Ky.—I am a stranger to the National Brick Manufacturers' Association, but I am not a stranger to the art of brickmaking. I am not prepared to make a speech. Possibly, if I were, my speech might be characteristic of a sermon once delivered by an eminent divine. It is said that that sermon was animated, consoling and satisfactory. It was so animated that it compelled a large proportion of the congregation to leave their seats and walk out of the church. It was so consoling that it put a lot of the members to sleep, and it was so satisfactory to those who had the patience and endurance to hear it to the close that they were perfectly satisfied, and never wished to hear that man again. In reference to the paper that has just been read on the subject of Mistakes of Brickmakers: They are like the Englishman, of whom it is said, "they are as full of conceit as an egg is of meat." I am here to confess that I am not the man who has never made a mistake. I met a man of this kind quite recently. He said, he came to this country when he was twenty-one years old, had been here fourteen years, and had never yet learned anything. He said he was prepared to make a Staffordshire or blue brick out of the material he was operating. I had a little experience with the material, and I thought I would take a little of the conceit out of him, and I said, "Look here, I have been in the business thirty years, I have handled the material you are going to handle, and I know you can not make Staffordshire brick out of this material." He said, "What do you know about Staffordshire brick?" I said, I made Staffordshire brick in England when you were running around in pinafores." He has been trying all summer to make Staffordshire brick, and he has never yet succeeded in making what Americans call good brick. I am prepared to say that I have made mistakes. When I landed in New York, I threw all my conceit with my straw-bed into the harbor. I think I am a wiser man, and I think I am a better man for coming to this country [applause] and learning something about brickmaking. I do not know that I would have spoken at all, but the paper furnished me a text upon which I could preach for twenty years. I think the man who makes mistakes, and then rectifies his mistakes and profits by them, will be the most successful. When I was a boy, I had a companion and we entered into a compact of this kind, and it has been of considerable advantage to me all through my life. It was this, we were to tell each other our faults, and watch and criticise each other's conduct, and do it in love. Now, when my employer comes to me and says, "Morgan, I think you have made a mistake," and points out his reason for thinking so and offers a suggestion, I accept his suggestion and act upon it. But when a man comes to me in an unkind spirit and pulls at my arm, and I know this man don't know a single thing that he is talking about, I do not accept his suggestions.

Now, gentlemen, if you have read the last issue of the CLAY-WORKER, you will find there a very beautiful picture of a man who has made a great many mistakes, and expects to continue in that line. My boy picked up the CLAY-WORKER, and said: "Father, has Mr. Snell been having a fight with Ebenezer Jonathan? It looks as though he was trying to put Mr. Snell out." Gentlemen, don't follow Ebenezer's example. To New England brickmakers, I say, that you have the material in New England and you have the facilities in New England to manufacture brick for paving purposes, as well as building purposes, equal to any in the United States. I say investigate, and it is possible when you come to the next convention you will have something to say satisfactory to yourselves and instructive to the rest of us.

S. P. CRAFTS, North Haven, Conn.—Please accept the thanks of Yankee Doodle. And I wish to say to Mr. McGraw that the "truth is truth," and that the Webster he speaks of is not Daniel but Noah, who resided in my neighborhood. [Laughter.] When you come to talking of mistakes of brickmakers, I could talk all day, and not tell the mistakes I have made. I never expect to make brick without making mistakes. I will leave that to some younger man. We brickmakers are all like the girl who wanted to

see the folly of getting married, so she tried it. You are all bound to do it. You all know the story of the doctor who treated the blacksmith with pork and cabbage, and afterwards wrote: "Pork and cabbage will cure a blacksmith, but it would kill a tailor." The clay which my friend Snell works makes a good brick, but it would not make a good brick were it not for Snell. They made a good brick in Syracuse, but they would be better brick if they were not non-absorbent. I am one of the men who does not believe that a non-absorbent brick is good for a pavement. If I live long enough, I may come back and say I told you so. North Haven has laid down some brick pavements. We took part from Barrington, from Snell's yard, and part from Syracuse. We took some of the brick that were non-absorbent. So far there is no difference, but we will wait a few years, and I say the non-absorbent brick will not stand the wear, and I know. Several years ago we broke up our common brick, which will absorb eight ounces of water, and put them down in part of the road, and the rest broken stone, and you can see tracks of the wheels on the stone, but you can not on the brick.

W. H. ALSIP—The brickmaking business is one which should be entered into only by those who are wealthy. If we went into any other business, which should be such a new departure, we would expect little else than failure. The trouble is, a great many people who got into the business have come into the possession of some clay land or have foreclosed a chattel mortgage and got some brick machinery, and don't know what else to do but to make brick. They had better make scrap iron out of the machine. That is one of the mistakes of brickmaking—owning a piece of land in the wrong place, a place inaccessible to the market. I think as many failures have been made by men who have had to go too far to reach the market as by any other cause. Another mistake, and one which you have all made and we have made ourselves, is in not putting in enough power to run the plant. The machinery men are, of course, interested in making you believe you can run it with a little power. While Mr. Chambers is an honorable gentleman and would not intentionally mislead any one, yet he will tell you that you can run his machines with a number of horse power that is really only about one-quarter of what they ought to have, and the last engine that the Alsip Company bought to run a Chambers machine is about 400 horse power, and I do not think it too much. Get enough power, I say, to run your machine. That is important. Get enough power so you can increase the capacity of your machine. No mistake, in my judgment, is more serious than the sanguine feature in brickmaking. I believe that much could be saved to brick manufacturers if they were not so confident, if they were a little less sanguine in the beginning and commenced on a small scale. Perfect your process of manufacture and then launch into a big enterprise. Don't put your last dollar into a big plant at the start. If you do, you are apt to lose all you have. If you put half your money in and keep the rest in reserve until you have perfected your process, then it is all right to risk everything. Another mistake we make is in the matter of building. We made a great mistake, put up a colossal building, and we paid for that mistake to the amount of twenty-five to thirty-five thousand dollars; but we profited by that mistake. Our original mistake was in not putting up a fire-proof building. We put in an apparatus to put out the fire, and the fire began in that very place and burned up the apparatus. We have put up a new fire-proof building, the floors and walls are of brick and the roof of iron, and now we feel entirely independent of the element of fire. The insurance companies now give us everything we ask for at one-half less than we paid before.

W. D. GATES—There is one thing I want to call attention to in relating these mistakes of brickmakers. These mistakes are entirely in the past. I just want to say to you that it is just after the first of the year and you have been looking over your accounts, been studying the assets and liabilities, and the results of circumstances you have passed through, and you should remember the knowledge and experience you have gained from these mistakes you have made in the past. I want to say to you don't get dis-



couraged about these mistakes. I think every one of us in thinking these mistakes over by ourselves are apt to get discouraged, but it ought not to be so. I remember at one convention, I was sitting in the hotel lobby talking to a friend—it was his first convention, and he made the remark that the convention was very pleasant, but that he was not getting anything out of it that would reimburse him for his expenses. Just at that time several men came up and it happened to turn into an experience meeting, every one telling of his experience, and I think, in less than fifteen minutes, that man turned and said, "I want to take back what I said, that I was not getting anything from the convention; I have had enough just now to pay me over and again for coming to this convention." I am going back to my home encouraged to find that you are all making your share of mistakes. [Applause.]

J. A. SNELL—Gentlemen, we are all full of mistakes. I guess I am going to make one now in trying to speak to the convention. It may be like my singing. I can sing like a Missouri nightingale. Did you ever hear one? For fear some of you don't know what they are I will tell you. A Missouri nightingale is a jack mule. His voice is not very sweet, but you can hear him a long way off. [Laughter.] I have not much to say, but you can hear me. It is a very easy matter to listen to the mistakes of others, but there is one thing I have noticed, there has no one risen so far to tell us how to avoid mistakes. That is something I would like to learn. I would like to live on the experiences of others, instead of my own, as far as possible. There are just one or two things I want to speak on and tell you of some things I think will help you to avoid making mistakes. In the first place, I want to tell you, you can avoid a great many mistakes by getting away from your yard and by sending your head man around to visit other yards and learn something. If they stay right at home all the time they will have to learn by their own experience or by your experience. If you have an intelligent man working for you, you can have him earn money no faster for you than by sending him to see what others are doing.

Another way to avoid mistakes, is in not keeping a man who does not do his work as he should. I am a great believer in selecting a good man for that position, giving him absolute authority in that position and holding him responsible, and I have found that in doing this, I can sleep a great deal better at night. If I have a man I can trust, I leave matters almost entirely in his hands as long as he does well. If I find that that man does not do his work, I will not keep him an hour. It is a great mistake to keep him from sympathy. It is a great mistake to say, well I will keep him until I can get some one else to take his place. It is my opinion that the quicker you get rid of him the better it will be for you both. You had better blow your whistles and shut down your works than to keep that man. The same thing applies to keeping a machine that does not accomplish the work for you that it should. If your business has been good one year and you have made any money, and the next year your machine is badly worn so that it will only run part of the time and not make very good brick during that time, I want to tell you there is no power under Heaven that will enable you to make money another year and keep that poor machine. If it does not do its work, if it does not produce a good brick in the proper form, throw it out and get one that will, or get out of the business yourself. Then there is another way, and that is in making sales. There are too many of us that just as soon as we get a few brick in the kiln and begin to fire, we go out and force sales at a price below what it is possible to produce the brick, and what is worse, we sell to a contractor who, we doubt very much deep down in our hearts, is responsible. Now, I know of nothing that will make our pile come down faster than that will. You may be able to do business for a little while in this way, but you can not do it long. I think contractors are about as hard a set of men to get along with as any that I know of. There are, of course, some who are fair and square. They ask for common brick and when you bring them, say they wanted better brick. My opinion is that the right way to deal with them is to do it as if

you had a little back-bone of your own. Furnish just what you agreed to furnish, and then make them stand up to their part of the agreement.

GEO. B. ENGLER, Chicago, Ill.—I have attended, I believe, three conventions of this Association. While I am not a brickmaker, for the past eight years I have been interested in brick, especially in pressed brick. The gentleman who has just taken his seat made a remark that will furnish me with a text. That is, in reference to the bringing down the price of brick. During my experience in selling brick for other people, I have always found in the market a class of brick which had a tendency every time they were there to reduce the price of other brick. I refer to the brick of an inferior quality. I am now selling brick for five or six different manufacturers and they are all different grades of brick, some of one color and some of another. They are nearly all made by the dry process, and very frequently I have taken occasion to remark to the brick manufacturers, "Why can you not have both edges of the face of your brick alike?" I find one edge of nearly all brick not quite up



J. P. MCCOLLUM, MASTER OF CEREMONIES, LOUISVILLE, KY.

to the standard, not as perfect as the other side. The manufacturers say, "Why, our brick are just as good as Mr. Blank's brick, and his brick sell on the market." I tell you there is just where the manufacturers of pressed brick make a mistake. A good red brick with two good edges and both ends of the brick good is bound to sell. The other day I went to get the results of a conference of the board of directors of a large building in Chicago. I sat outside of the little room where their meeting was held, and during their conversation, a part of which I heard, they were comparing the qualities of brick and they decided in that meeting that one brick was worth five dollars more than another, and the difference in the selling price of the brick was only about three dollars. The good brick was a brick made nearly perfect, of good shape, clear in its color, although not made of any better clay than the other. I do not know that it was any harder, but I do know that one brick was decided to be at least worth five dollars more than the other, and the difference was in the edge of the brick. I know that in the city of Chicago the prices have been forced down from forty-



six dollars to twenty-seven dollars, and on down to sixteen and eighteen dollars, and twenty dollars for the best. And the good brickmakers had to come down or not make any sales.

I do not believe there is any city in the United States that uses as many face brick as the city of Chicago, and we are selling for at least \$1.00 per thousand less than they do in the city of New York. Is it because they make in Chicago a class of inferior brick? Probably it is because they do not know anything about them. They do not see the imperfections in them and they see that the brick look all right and say, "I can not see \$5.00 difference," and the man who makes a good brick has to sell them cheap because he can not get a good price for them. I mainly told this because I believe that the object of this Association is to advance the art of making good brick. If the manufacturers of pressed brick will make their brick perfect, the manufacturers of poor and cheap brick will have to stand back.

R. B. MORRISON, Rome, Ga.—You will remember, that is, the older members, that I missed the meeting last year at Washington, and if I talk more than five minutes, you might give me ten, so I can get caught up. This subject of "Mistakes of Brickmakers" is so important that I do not think I can get through in five minutes. There are certain elements necessary to success in brickmaking. In the first place, you must have capital; in the next place, there must be a bank of clay suitable to produce the material that you wish to manufacture. That is one essential. Another essential is a market for the product. These three things we must have, or we can not have success. It is not impossible to secure the first. It does not seem to be much trouble to raise from one to two hundred thousand or even more capital to perform this work, and it is not impossible to secure a bank of clay of the right kind. That can be done and is done. The market you can also have. So there seems to be nothing in the way of getting these three essential things. Up to this time there has not been much trouble of this kind in this country. But the next essential thing is a proper man to build and manage your works. That makes four things. It is true there must be a man to manage the financial part, and this makes five. All these things are necessary and the great trouble in this country is to secure the fourth; that is, a proper man to build and manage the works. This is the rock upon which we strike nine times out of ten. It is a lamentable truth. Is it necessary that we start to build our works and plan them wrong and make failures in burning for two or three years? Is it necessary, I say? If so, why is it necessary?

That is what I can not understand. We have to build our works and operate them two or three years, and then you take a man that don't know anything about the business and teach him. It may take \$25,000 or \$30,000 to educate that man. There is a remedy for all this. This can be avoided. The business of brickmaking has advanced so rapidly, its strides have been so enormous, that we have become confused and we can not keep up. Twenty years ago it was simply a pug mill and a blind horse, and the brick were made in one certain way. And then came the brick machine and the dryer, and then we had the stiff mud and the dry press, and each yard that used to make 5,000 a year must now make 5,000 a day, or not keep up in the business. I had a man from Philadelphia who professed to be a brickmaker, and he made a complete failure; and another man who did not know anything about brickmaking, but had simply traveled around and got points, went to work and made good brick. I am not saying anything about Philadelphia brickmakers; the best brick in the world comes from Philadelphia; I simply give this as an example. These conventions are for the purpose of giving our views, and I claim that the time is come when the manager of a brick plant must not only be a practical clayworker, but he must be a scientific brickmaker, understand chemistry sufficiently to take clay and analyze it and say what it will produce before he burns it, and understand the art of brick-making and burning so well that he can take clay from any part of the country and know about what method is the best for manufacturing it, and in what kiln to burn it. This can only be done by

a training school for brickmakers where they have machines and kilns and dryers of different kinds, where clays are sent from all parts of the United States and made on different machines and tested, and the young man who graduates from that school will be fully equipped to go to any part of the United States and make brick. There are brickmakers who scoff at the idea of science in brickmaking, but we have got to come to it. We have got to shake the sand and dust out of our eyes and ears. We have got to learn this thing and learn it right. [Applause.]

JOHN KLINE, Cleveland, Ohio—This is a very interesting subject, and especially the last few speeches we have listened to. It seems to me we are coming, gentlemen, to a very practical line. I think when we speak of mistakes we should name them so definitely that the hearers can understand. If we are not able to give a remedy for our mistakes, may be some one in the convention can. I think the mistake I have noticed most among brickmakers, and it is one that is almost criminal in its nature. I have a relative and a very dear friend who is the subject of one of these mistakes to the extent of about \$25,000. It is simply this: When he was induced to give his attention to brickmaking, the parties who wished to invest his money told him it was a wonderful thing, that there was a mint of money in it, a sort of a Col. Sellers process—millions in it. When he had looked well into the work and got his plant started, he wanted a competent superintendent and a good burner. And right here is that serious mistake I wish to mention. The letters of recommendation came to this man from old brickmakers who seemed to understand the party that they recommended—I trust that this is not the case, but it looked as though they had been paid to write these recommendations. It is just such recommendations as these that cause brickmakers of America to-day to employ superintendents and burners who know nothing at all about the subject. I say the man who writes a letter recommending a man for a situation should be held responsible. Gentlemen, if you have been in the habit of giving recommendations to every man that asks for them, I would say to you be very careful in the future, for it may be cause of ruining some plant. I will just give you a little circumstance. The company with which I am connected wanted a superintendent, had been looking about for a good man for fifteen months. After writing to various parties with reference to getting a man, a certain party wrote a letter recommending a man, and from the tone of the letter we were induced to give the man a position. After that man had been working for about nine months, it became very evident that something was lacking, that he was a failure. We began to investigate and finally sent right back to the man who had written the letter of recommendation. He said: "It seems to me I did write a letter of recommendation, but it was so worded that you can not lay the blame on me." Now, let us be plain, let us use language that there may be no misunderstanding. When we are asked to write a letter of recommendation, let us know that the man is all that we recommend him to be. There has too much of this work been done. Since I have been here in Louisville I have met two or three gentlemen who have had the same experience. Let us not do like the man who said, "I had a blister, so I recommended it to my neighbor so he would have a blister too." This is a very great mistake.

D. P. GUISE, Williamsport, Pa.—Gentlemen of the Convention, I concur heartily with what the gentleman has said in regard to recommendations. I believe there are too many of these men who are traveling around the country on recommendations, and they are a very dangerous element to come in contact with. They have what is called the big head, and take entire possession of the plant, and will not listen to any advice, and I think the best thing to do is to rid the works of such men. I think the best way is to take a man from your plant and show him how you want things done. Travel around yourself, and come back and tell him how you wish things done, and then he can not say, "I am running this yard." Take the matter in your own hands and keep them. As this seems to be an experience meeting, I might say a word in regard to what my ex-



perience has been in the past year. I have changed from the hand-yard to a machine-yard, and though I run both of the plants part of the time during the past season, I have become convinced that the machine plant is the better plant. I abandoned the old yard, and in the selection of machinery I traveled over the country, and gained a great deal of information that I could not have gained in any other way. I put in machinery, and of course made some mistakes. I have been in the business some twenty odd years, and I have always made mistakes, a great many of them. I made a mistake last year in this way. I had taken the pledge of a party to do thus and so with their machinery and so with other machines that they said would do just as much as they recommended. I was lacking in knowledge of machinery. I grant this. You must learn by sad experience. I gained this experience. If I were to equip another new plant, I would let one firm furnish the entire plant, and bind them to put that plant in complete and make them guarantee it, and then if it did not come up to the standard they guaranteed, hold them to a strict account. It is a very unpleasant experience to start a new yard and buy one machine from one party, and another machine from another party, and the engine and boiler from another party. The machinery will require more power than is represented to run it. I simply make this statement in order to warn others who may be starting new yards. I want to say, I think the machine I am using is as good a machine as there is on the market. I find the best thing to do is to bind the parties furnishing the machine to stand by what they say.

MR. CRAFTS—I would like to ask a question. The gentleman said he changed from an old system to a new. Did he find any material difference in cost of making the brick?

MR. GUISE—I can produce a much better brick with machinery at less cost than I could by hand.

MR. CHARLES PEARSON—Gentlemen of the Convention, the idea of getting up in this large body of intelligent men was foreign to my thought when I entered the hall, but I have listened to the various addresses from the different members upon this important subject, and I have been prompted to make the greatest mistake of my life in gaining the recognition of the president that I may say a word or two. The mistakes of my life have been many, and most of these mistakes have been caused by my being in the brick business. The largest mistake was made last November, when, as treasurer and manager of our company, I failed to declare a dividend. [Laughter.] During the past year, two or three new institutions have been put into operation in our territory, and there is now being turned out something like 300,000,000 brick where there are consumed on an average of 250,000,000 of brick, so you will see that the output or sales of brick is much less than the production, and I am reminded of the old woman who explained why she made so much money by buying eggs at twelve cents a dozen and selling them for ten cents a dozen; she said it was because she sold so many. [Laughter.] I think one of the mistakes of brick manufacturers, especially new institutions, is in not counting the cost of production.

They make brick and put them on the market and sell way below the cost of production, and think they are making money because they are selling brick, but when they come to sum up at the close of the year they find that they have made a mistake, and instead of making money have lost it. Another mistake which I recognize is that of employing an incompetent man to manage your works. Another mistake is that while we may be doing a good business and seem to be making money hand over fist, we get indifferent as to the receipts, until, at the end of the year, we go over our books and find that instead of profiting we have been losing, and this on account of our indifference to look after the interests. One of the mistakes which causes losses, in my experience, is the mixing up of the brick and other business. [Applause.]

J. F. ELSON, New Albany, Ind.—Brother Morrison mentioned the idea of a school where you could educate men to analyze clay. I would not recognize as a chemist a man who was educated that way. I have made a specialty of clay and its analysis for twenty

years, and if I know all the important constituents of clay to-day I know more than I think I do. What I would like to see this Association adopt is a standard such as other professions adopt, that brick shall be sold upon their standard of excellence, from the standpoint of a chemist. We put all our material at a unit value. Now, brick should have a unit value. If you had a certain standard, the brick would be 25 per cent. better than they are now made. I think brick should be sold upon their actual value.

PRESIDENT ITTNER—As there seems to be no further inclination to discuss this subject, we will pass on, or rather go back and take up No. 3 on the programme, "Burned Clay," by L. J. Howard, St. Louis, Mo.

### BURNED CLAY.

BY L. J. HOWARD, ST. LOUIS, MO.

*Mr. President and Gentlemen of the National Brick Manufacturers' Association:*

When I began to consider this subject practically I was really amazed at the vastness of the task I had set myself.



W. D. RICHARDSON, NORTH BALTIMORE, O.

"Burned Clay," why that is a simple subject," the layman might say; "a discussion of brickmaking covers the ground."

Yet he would be as lacking in understanding of the immensity of the words as was the Scotch lassie, immortalized by Sir Walter Scott, ignorant of the greatness of city life. It was in the days when Edinboro was surrounded by a wall with great gates; she had a sister in service in the city, and plodded her way there on foot, arriving after night-fall, when the gates were closed. She knocked, and the sentinel came.

"What will you have?" he asked.

"Is this Edinboro?" she inquired.

"It is," he said.

"Well, will you be so kind as to tell me if Peggy is in."

Burned clay is intimately connected with the development of civilization in the world. What would be our cities without burned clay, for their dwellings and business edifices, or our country land without burned clay, for the draining tiles, that reclaim whole counties from the marsh, and make the state richer. How could our great centers of population now do without burned clay, for conduits of all sorts, water pipe, sewer pipe, gas pipe, and the pipes for the electrical wires?

How plain and bare and ugly and uncomfortable would be the houses when they were built, without the burned clay that makes the ornamental terra cotta, the beautiful tiles, the useful fire brick, and the thousand varieties of earthenware that now seem absolutely indispensable to the housekeeper. One gets up



In the morning and thanks burned clay for the utensils that give him his breakfast, for the vessels from which he takes it, and for the heat that diffuses itself through his house as he eats. He goes out and burned clay prevents him from sinking into the mud. He enters his office, and goes through his day's work, burned clay contributing in a hundred different ways to his comfort during the day. Whether he sleeps, works or amuses himself at the club, he would find, if his attention were directed to that point, that he owes much to burned clay, which has played a great part in the history of the world. Suppose the Egyptians had known nothing of the art, and Pharaoh's daughter and her hand-maidens had not had their burned clay water vessels; they would not have to come down to the Nile to fill them; they would not have found Moses in the bullrushes, and saved his life; the Israelites would have been without a deliverer, and would never have been released from their bondage, where they toiled laborously, making bricks without straw, for the tyrant who held them in slavery.

In this Bible story of Moses is our first detailed information about the business of making brick, although in history, both sacred and profane, there are many allusions to it. The Egyptian tradition is that Num, who was the first being created by God, drew clay from the Nile, and molded the human race in his potter's wheel. That tradition may be traced back over four thousand years, further than literature even. The earliest history of brickmaking confuses the burned bricks and sun-dried bricks, so it is impossible to tell which sort was used for various purposes. The Egyptians in the days of Moses were building their houses and walls of sun-dried brick, but there is plenty of evidence that they knew the advantage of burning the brick, and used them to some extent. The Tower of Babel which was begun in 2247 before Christ, was started with sun-dried bricks. The tasks of the Israelites under Pharaoh were the making of sun-dried bricks. That was in 1706 before Christ. At this time the Babylonian monarchs were not only using burned, glazed bricks for their palaces, but were making it into colored tiling, as relics in the British Museum and the Louvre now show. The Pyramids of Abee Roa Roash, Dashour, Howara, Iaahoon, Glzeh and Saquara are built of sun-dried bricks, made with and without straw, the bricks being about sixteen inches long, three inches wide and four and three-quarters inches thick. The Assyrians, four thousand years before Christ, knew how to make burned brick, and used them for their finer dwellings, as well as for the tombs of the royal family. As the races mingled on friendly terms and through wars, the way to make burned brick became generally known, yet some of the nations deliberately ignored the material. Probably the methods in use then were slow, and required the labor of many men. When the Emperor of China, Shee Hoang Ti, built the great Chinese wall, he used burned brick principally. It took over a million men ten years to build it. It was finished in the year 211 before Christ, was one thousand two hundred and fifty miles long, twenty-two feet high, and broad enough for six horsemen to ride abreast on its top. A writer in a current magazine this month, two thousand years after the building of this wall, describes a visit to it. A great part of it still stands, and the brick of that part is quite hard.

Neither in Greece nor in Rome did they fancy burned brick in the old days. Greece resorted to its stone quarries and Rome to its forests. It was not till Rome conquered Egypt, and brought some of that country's brickmakers to the Eternal City, seeing the importance of brickmaking to the prosperity of a city, that burned brick was used at all there. The Egyptian brickmakers in Rome were the first to burn brick in kilns. The brick were used principally in facing walls of concrete, and ruins show that they were placed about four to a foot on the face, which is about as we lay them now. For the first three centuries of the Christian era, the kilns in Rome were busy. One thousand years later, all that part of Europe seems to have forgotten how to make brick. The Romans conquered Great Britain, and taught the Britons how to make brick, but as soon as the conquerors left the country the Anglo-Saxons pulled down the kilns, and went back to wood, so great was their hatred of the invader. Years after, the Briton began to use stone, and in 1260 A. D., the first sign that brickmaking had begun again in the country was seen in a Suffolk building, Little Wenham Hall. From that time on, burned brick became more generally introduced in the country, which was but following the example of other nations. About the seventeenth century, the manufacture of burned clay into bricks and ornamental articles had become universal in the world. The art had grown from the hands of a crude people, within the previous five centuries. Italy led in the beauty of its burned clay. Its palaces depended largely on burned brick, and inside them and outside were the most elaborate designs of colored, decorated brick work, and ornaments of terra cotta and tiling. Holland was then using brick for all of its solid building, but few other purposes. When the great fire burned London down in 1666, the city was re-built almost entirely of brick, and many of the houses of the wealthy were decorated with ornaments in brickwork. The first brick brought to our own country was used by Wouter Von Twiller, of Amsterdam, who came to Manhattan Island in 1633, and built a large house for himself, as well as several smaller ones for the officers of his colony. All these brick were made and burned in Amsterdam. The first brick actually burned in this country, were made in New Haven in 1650, by the little colony planted there. Virginia had good clay, but the colonists did not use it, preferring wood. In Pennsylvania, from the earliest times, brickmaking was pushed vigorously. In 1705, the Philadelphia court house was built, the first pretentious brick edifice put up in this country. It cost 616 pounds, about \$3,080.00; its brick cost over \$7.00 a thousand, and the brick laying \$3.50 a thousand. Boston did not use brick, but wood, like Virginia. Its first great brick building was a warehouse, erected by London merchants in 1700. About this time English vessels began to bring over brick for ballast, to the colony, and the use of brick became common. Little was made in this country. Inventors tried to construct devices, but none of the brick was so good as that which came from England and Holland. All

the bricks were being made by hand, up to 1835, when Nathaniel Adams invented a machine in Philadelphia. It was simply a hand molder, but it was quite successful. A model of it is now in the patent office. In 1840, Adams undertook to start a brickyard in Philadelphia, but the hand brickmakers broke the machine, and drove Adams from the city. At that time, hardly a million brick were used yearly. Compare that with the following table, for which I am indebted to Mr. Charles Thomas Davis, a very trustworthy collector of statistics on the brick-making industry.

BRICK USED ANNUALLY IN THE PRINCIPAL CITIES OF THE UNITED STATES FOR 1888.

|                   |               |
|-------------------|---------------|
| New York.....     | 1,010,000,000 |
| Chicago.....      | 440,000,000   |
| Philadelphia..... | 390,000,000   |
| St. Louis.....    | 225,000,000   |
| Boston.....       | 150,000,000   |
| Cincinnati.....   | 100,000,000   |
| Washington.....   | 125,000,000   |
| Cleveland.....    | 84,000,000    |
| Pittsburgh.....   | 80,000,000    |
| Omaha.....        | 80,000,000    |
| New Orleans.....  | 36,000,000    |
| Indianapolis..... | 35,000,000    |
| Total.....        | 2,755,000,000 |

I shall not consume the time of this body, by entering on any tedious description of the different kind of clay or machines which I prefer, or which I think ought to be used. There is too much diversity of opinion on both these points for me to attempt to decide the questions. Generally speaking, the clay that is most accessible to a city will be used for its buildings, with exceptions depending on fancy or business opportunity. We are fortunate in this country as to our supply of clay. There is plenty of it, and it is generally good. Near enough to all the great cities, are beds of clay great enough for our needs for a longer time ahead than we can see. There is no country that has finer clay, or more of it. Russia has good clay, but makes little use of it. The product there for 1890, was a little over 1,000,000,000 brick, not half the product of this country. We have as good kaolin, or china clay, in this country as the Chinese ever saw, and these clay banks furnish from one thousand to four thousand tons a year to each of the about 75 potteries. The independence of the United States in the matter of clays of all sorts is shown by the small quantity we import. The last figures which I have been able to obtain showed an annual import to the United States of 46,551 tons of clay, valued at \$319,202.00; of this 16,113 tons were kaolin, valued at \$132,663.00, and the same year the kaolin produced in the United States amounted to 23,277 tons, worth \$200,457.00, much more than we imported.

We are equally fortunate as to terra cotta and fire clay. We have all we want at our doors.

With these clays, the modern brickmaker can undertake with confidence the manufacture of any material on which depends soundness or finish. The improvements in machinery, of which I am glad to see by the programme we shall hear at length, have strengthened the hands of the brickmaker, so that he need not distrust his machines after he has got his clay. The improvement in the method of burning has kept pace with the machinery. Wood, of course, has been nearly entirely abandoned. It would take over 3,000,000 cords of wood to burn our output of brick of all kinds now. Coal has become our chief dependence; and experiments are being made with oil and with artificial gas, generated at the kiln. Inventors are now concentrating their attention on the burning and there is no reason why we should not have great improvements within the next few years.

We need principally greater economy of fuel in burning, and a more perfect combustion.

Had I time I should like to say a word about the progress of the art of burning clay as it is shown through some of its most modern products. The pressed and ornamental brick are the most familiar illustrations. What would the Philadelphians have thought looking on the crude results of their first attempt at building a house, if they could have seen a modern house with a front of our lustrous, velvety pressed and ornamental brick?

Of our fire brick we can well be proud. On this branch of the brick burning art depend many other manufactures of great industrial importance, which could not be carried on at all without the assistance of fire brick.

We could have no good furnaces without fire brick; no crucibles for metallurgy, no retorts for gas works and zinc works. Pots for the use of glassmakers are also made of fire clay, and I am glad to say that the manufacturers of glass are coming to the conclusion that our own fire clays are just as good for this purpose as those of Germany. Our fire clay is also used for sewer pipe and terra cotta wares, and enormous quantities of it are consumed in this way.

The drain tiles we make have led to valuable scientific discoveries. Capt. Walter Blythe, an Englishman, in 1862 called the attention of the public to the damage to the land caused by water standing on it. England then introduced the drain tile, and our tilemakers took the idea and went far ahead of the original suggestion. In one part of this country, I think it was in Indiana, the draining of a valley discovered an immense and valuable bed of clay. Ten years ago 700,000 miles of drain tiles were laid in Illinois alone, and the consumption has grown enormously since then. There is now a great and increasing demand for draining tiles from every agricultural state.

Roofing tiles are made of the most beautiful developments of the art of burning clay. They made these tiles in the time of the prophet Ezekiel, but the Israelites had no notion of coloring them; in fact, they were used something as we now use slates.



"Thou also, son of man," said the prophet, "take thee a tile and lay it before thee, and portray upon it the city, even Jerusalem."

The Assyrians, fond of ornament, colored their tiles, and the Romans used them about the third century. The Greeks preferred marble to burned clay. In Rome, both flat and round tiles were used, and sometimes the roofs had both kinds, alternating. In times of war, tiles were used as weapons, women and children mounting the roofs and throwing tiles down on the heads of the enemies in the streets. The Garden of the Louvre in Paris is called the Tuilleries, because tiles were made there in ancient times. The tile has become more popular as civilization advanced. Modern roofs, covered with tiles, make houses look picturesque, and add greatly to their appearance, relieving the monotony. Besides this, the great advantage of the tile roof is that, being a non-conductor, it is cooler in summer than any other kind of roof, and is a protection against lightning. In fact, pottery is now coming into general use for insulators on electric lines.

The use of ornamental tiling indicates that a nation has both leisure, wealth and a proper appreciation of the beautiful. Burned clay did its utmost when it produced the exquisitely colored pavement tiles of Xerxes, or Ahasuerus, the husband of Esther of the Bible. The Bible describes the floor of his palace as a pavement of red and blue and white and black marble, yet it was only tiling, the tiling which any plain American citizen can get now to make his house beautiful. The walls of Babylon were partly glazed tiles, like ours, and it is probable that about this time, 521 B. C., all the arts of the tiler were unknown.

We learned how to glaze and fix the colors on the tiles through the Arabians, who got the knowledge from the Chinese. In medieval times the tiles were called Norman tiles, because the Norman crusaders found painted tiles in Palestine, and began to make them when they got back to England. After that the beauty of the art caused people everywhere to adopt it. Palissy and Majolica, variations of the tile, were invented, and artists spent their lives in discovering new methods of glazing and enameling. The Vatican is paved with colored glazed tiles, put there by Leo IX. The Mosaic tile came to us from Greece, but the clay dust tile, with relief figures, is an invention of England.

Terra cotta is another form in which the burned clay recommends itself to the eye of the beauty lover in architecture. The pure buff color is now seen ornamenting the facade of many important buildings erected in our large cities.

Among the most remarkable modern uses of burned clay is the ballasting of railways on our western prairies, where it is hard to find as satisfactory materials for this purpose. This clay costs fifty cents a ton. Artificial teeth, for which dentists' charges vary, are made of burned clay, and the consumer pays thus many thousand dollars a ton for burned clay in this form. A peachblow vase is another form in which the burned clay is immensely valuable. Not long ago \$12,000 was paid by Mrs. Morgau, of New York, for one of these vases. Clay in the form of this peachblow vase brought about a quarter of a million dollars a ton. Gold and silver, or any other precious metal, will hide its diminished head before burned clay, when the art of man has been lent to its service, when its value can be indefinitely increased.

If I went into the subject of porcelain, or Sevres, or Dresden, or Satsuma, or Royal Worcester, or any of those dainty and costly products of burned clay, I might interest the ladies, but I should overrun my time. I may conclude, as I said at the beginning, that burned clay is much more to the life of the ordinary man than he believes, until he begins to think about it. And we are just commencing to find out what possibilities lie in it.

PRESIDENT ITTNER—This brings us to the close of this morning's programme with the exception of Mr. Prussing's paper, and he is not here and has requested that his paper be deferred until this afternoon.

#### LETTERS FROM ABSENT MEMBERS.

MR. ADAMS—If there is no immediate or pressing business before the convention, I have a letter here I desire to read. When I first arrived in Louisville, I made inquiry for a familiar and beloved face and figure, and in lieu of his presence was handed a letter from our venerable friend Isaac L. Stiles. He has been with us in all our meetings, he has braved the storms of winter, and left his home in the far away East to attend this convention. He is one of the connecting links between the brickmakers of the past and present. Beginning life by driving his father's oxen, he is now one of the largest brickmakers in New England. He is a man whom all delight to honor. I would like to ask Secretary Randall to read his letter to the convention.

SECRETARY RANDALL then read Mr. Stiles' letter as follows:

New Haven, Conn., Jan. 23, 1893.

To the President and Members of the National Brick Manufacturers' Association:

GENTLEMEN—I much regret being unable to be present with you at this time and grasp your warm hands and hear your hearty welcomes so freely given, and which I should so much enjoy. It would have given me much pleasure to have met you all, but as that was not to be, the next best thing I can do is to assure you that you have my best wishes, and although I am so far from you in person, yet I am near you in feeling.

As you meet from year to year, more and more of the original members will

be missing, and as one after another falls out by the way, their places will be filled by new men coming along and the work will go on just the same. That you will all have a good time generally, that your sessions will be well attended, that all matters that may come up before you may be fairly and candidly discussed, and that all information concerning the manufacture and burning of brick that may be asked for, may be given in so free and courteous a manner as to lead the questioner to think that it is good for him to be there, is my wish.

When your convention adjourns, may it do so, feeling that it has been the most beneficial and instructive of any ever held, and that order and harmony and good fellowship has prevailed throughout its entire session.

Wishing you all a "Happy New Year" and a prosperous year in the business, I remain,

Your Brother Brickmaker,

ISAAC L. STILES.

SECRETARY RANDALL—Mr. President, I have a letter here from another charter member of this Association. He, like Mr. Stiles, is beloved by all the members who know him. He is detained at home in his far away city. I think he has traveled farther and gone to more trouble to attend these meetings than any other member of this Association, and he is detained at home this year by the illness of his wife. She, too, has always attended the con-



ALEX. PRUSSING, CHICAGO, ILL.

ventions. It is from Mr. John McCain, and I will ask our president to read it.

PRESIDENT ITTNER then read Mr. McCain's letter, as follows:

DENVER, COL., January 20, 1893.

Members of the National Brick Manufacturers' Association, Louisville, Ky.:

GENTLEMEN—I regret very much my inability to be with you at your seventh annual convention, but my wife is so dangerously ill, I dare not be absent from the house over two hours at a time.

I hope you may have a pleasant time. So far as the convention being a profitable one, I have not the least doubt.

As I am the only brickmaker in the city of Denver who wore the blue to preserve our flag and glorious country, I would enjoy to take Brother Blaffer, and all others who may be at the convention who wore the gray, by the hand, and there cement a friendship with each other that would be as lasting as Brother Purington's vitrified brick.

Remember myself and wife to all "Keystone's" friends and enemies.

Yours fraternally, JOHN MCCAIN.

SECRETARY RANDALL—I also have a letter here from D. G. Hariman, of New York, which I would like to read.



NEW YORK, N. Y., January 23, 1893.

MY DEAR RANDALL—I regret more than I can tell, the fact that other engagements will prevent me from meeting with the brethren at Louisville this week. I consider the week spent at our conventions, the most profitable of the year. The members are bright, intelligent and enterprising, not only full of good and desirable information, but glad to share it with the brethren.

Say to them, that my absence is not from indifference, and say further, that I have not abandoned the idea of having the convention meet here. But, with the exception of Bro. Taylor, it is almost impossible to incite the brickmakers of this region to take any interest in our annual convention. "It may be for years, but it will not be forever" that things will be so here.

Hoping that this will be the best convention yet held, I am

Truly yours, D. G. HARRIMAN.

W. H. ALSIP—I move that the secretary be instructed to send suitable answers to these gentlemen for their kind expressions as a token of our esteem.

W. A. EUDALY—Second the motion.

Motion carried.

MR. ALSIP—I hold in my hand an invitation from the brick manufacturers of Chicago to the members of this Association to hold their next annual convention in our city.

*To the National Brick Manufacturers' Association:*

We respectfully extend to your honorable body a most cordial invitation to hold your next Convention in the city of Chicago.

We offer this invitation at this time, with the end in view of giving this assembly an opportunity of voicing its preference as to place of holding next convention, and would recommend that the time of meeting be left to the decision of the Executive Committee. Respectfully,

CHICAGO BRICK MANUFACTURERS.

I wish to say we word the invitation as we do, in order that the Executive Committee after due consideration and advice and counsel may decide in the future, whether the convention shall be held during the period of the World's Fair, or whether it shall be held next winter. Chicago has been honored by this body once and we do not feel that we would be in it in making a struggle against any other city. We are prepared for anything and we want you to come, and if you do we will do the best we can for you.

W. A. EUDALY—I move the invitation be accepted.

Motion seconded and carried.

SECRETARY RANDALL—I have at this time a resolution to offer.

*Resolved*, That a Committee on Resolutions consisting of seven members be appointed by the chair, and that all resolutions shall be referred to this committee. (Signed) D. V. PURINGTON.

E. M. PIKE—I move its adoption.

L. J. HOWARD—Second the motion.

Motion carried.

MR. PEARSON—I rise to ask a question in regard to what has been the custom heretofore in regard to such letters of sympathy, love and affection that have been read. Are they spread on the minutes, or is a motion to that effect in order?

PRESIDENT ITTNER—A motion is in order.

MR. PEARSON—Then, I move that the letters just read from our absent brethren, be spread upon the minutes.

D. McDONALD—Second the motion.

Motion carried.

MR. ALSIP—At a previous convention there was a certain mode of ethics adopted by this Association, and for the information of those who are ignorant of this code or law and have broken it, I desire that it be read.

SECRETARY RANDALL—I will state for the benefit of the gentleman, that I know what he has reference to and will say it is an unwritten law of this Association and does not appear in our regular rules and regulations. But if it is the desire of the convention I will state what it is.

MR. EUDALY—I do not think this matter ought to be referred to. I know what the matter is, and I think the gentleman was drawn into breaking it without knowing or having any idea as to the seriousness of the matter. I think he has no idea of the matter in hand. He has done this thing without any desire to transgress and if the matter is brought forward and insisted upon by Brother Alsip, I think the gentleman will be excused. And unless Brother Alsip insists upon making this matter plain, I think we had better

drop it without further discussion. I know it is a serious matter, a very serious matter, indeed, and if it must come up, let us handle it as easily as possible.

MR. ALSIP—"With malice toward none and charity for all," I simply wanted to put the matter before the convention, not to punish the offender, but to set a man out of the error of his way.

PRESIDENT ITTNER—Brother Alsip, will you be more specific?

MR. ALSIP—I refer the whole matter to Mr. Randall.

SECRETARY RANDALL—We will take up the matter the first thing after dinner.

MR. ITTNER—This brings us to the "question box." The secretary will please read the questions.

SECRETARY RANDALL—The only question here is: Are oil burners more liable to clog with cold air than with steam, and does the clogging depend in any way on the pressure? Would heating the air prevent the trouble?

A MEMBER—No.

PRESIDENT ITTNER—This completes the business of the morning session. I declare the convention adjourned until 2:30 o'clock this afternoon.

### THIRD SESSION.

The convention was called to order by President Ittner, Wednesday afternoon at 2:30.

PRESIDENT ITTNER—Gentleman, you will please come to order. The first number we have on the programme this afternoon is a paper by Alexander Prussing, Chicago, Ill., on "Association among Brickmakers."

MR. PRUSSING—When I started from home for Louisville, I considered it necessary to bring a few blank checks with me, but since my arrival, I have found that I do not need them. If there is any one here who has any particular choice as what part of this city he would like, I would just refer him to Mr. McDonald. But now to my paper.

#### ASSOCIATION AMONG BRICK MANUFACTURERS.

BY ALEX. PRUSSING, CHICAGO.

The influence of the family on mankind is world wide; with the family came the first idea of association among the relatives, who formed themselves into tribes. These tribes were the forerunners of the nation, a community of blood relations held together by sacred ties, strengthened by the pride of the individual as an integral part of the whole. When the survival of the fittest was uppermost in the mind of man, the golden rule was not thought of. With civilization and enlightenment came a revulsion of the old feeling that to live, another must die; the humane side of men became more strongly developed, and instead of warfare the fraternity of man swayed the thoughts of those who kept pace with the world's progress.

From the barbarian, whose only endeavor was directed towards self-preservation, sprang a race possessing their every trait tempered by time and education. The man of to-day is measured from a moral and commercial standpoint, might is no longer right, and although the barbarian oftentimes asserts himself, his inherent savagery is outweighed by the predominance of the better nature acquired through ages.

Existence becomes from day to day a matter of individual industry, rather than the hard and unceasing struggle of former times.

What has brought about this change?

With social intercourse came the desire to assist the less fortunate brother, who, though he may have lacked the ability to place himself on an equal footing with us, was still entitled, from a humanitarian view, to our consideration. Modern progress brought the keen competition so necessary to stimulate the mind of man in endeavors to better his condition and increase the sum total of human happiness. Inventive genius was incited to increased effort that the life of man might be benefited and his condition improved. The individual who uses his superior intellect and ability for his selfish advancement without benefit to the world at large, is a detriment to the community. While such people exist it becomes the duty of others to show their disapproval by remaining in close communion with one another, to counteract by association the self-aggrandizement of the individual. Associations have so often been used as combinations to influence prices that the failure of such organizations was a foregone conclusion. No compact to enforce arbitrary measures to the detriment of the public has succeeded for any length of time—the daily record of



failures of trade combinations based on lines which are laid down to artificially influence the laws of supply and demand, and, as a consequence, create unnaturally inflated or depreciated prices, substantiate the truth of my former statement. Associations to promote social intercourse and discuss matters of mutual interest with the desire to prevent trade demoralization, can not be other than beneficial to the participants. Acquaintance ripening into friendship and brotherhood has a tendency to foster honorable competition and prevent the adoption of questionable methods. This is not a theory, but admits of practicable demonstration by the only existing organization in this country, which has successfully carried out this principle—I refer to the Chicago Brick Manufacturers' Club. One year ago no less appropriate place than Chicago could have been selected for the inception of such an organization. At the time our industry was on so low a plane that it appeared to those interested that there was no hope of raising it to its present status. Prices that were ruinous, competition that was dishonorable, business methods that were questionable, deceit and treachery were the order of the day. Competitors who were strangers to one another sought by every means in their power to ruin their rivals without considering the cost to themselves. The survival of the fittest was the watchword—the barbarian prevailed.

Fortunately for the trade, five gentlemen chanced to meet and discuss the situation and suggest remedies. As a sequel to the discussion, the trade met and organized a club, which, in spite of its enemies and almost insurmountable obstacles, became an assured success. The results accomplished on the actual application of business principles, without resorting to compulsory measures or imposition of penalties, brought the trade together on a platform of honor supplemented by the friendship resulting from association. Interchange of ideas in the management of our offices, and adoption of one another's methods and improvements in manufacture, cheapened the cost of production and legitimized competition, the natural sequence being uniformity of quality as well as price.

To successfully carry out the idea as conceived by the club, an office was established for the purpose of periodically reporting the state of the market, the stock on hand, the prospects of the trade, and by means of a thorough credit system affording protection against irresponsible purchasers.

So successful has this institution become, that the lime and cement manufacturers, building stone quarry men, pressed brick manufacturers, lumber men, mill men, and allied industries supplying building material to the consumer have availed themselves of the brickmaker's handiwork. So powerful a factor has this office become that it is now looked upon as a necessary adjunct to the trade, and prominent men in the trade prophecy that it will be known from New York to San Francisco.

What has been done in Chicago under the most adverse circumstances can be done in any locality. It is not necessary in order to assure success that the entire trade should be represented in an initial organization. Based on lines of equity and fair dealing, and capably managed, it becomes only a question of time when the benefits to be derived will be plainly seen and appreciated by all. What may be profitable to the individual is not necessarily so to all. The profit to the individual without benefit to others means generally his gain and their loss. The advantage of association is as great to the man of brains and capital, in the same ratio as to him who is less fortunately blessed. This carries out the well known idea that the greatest good to the greatest number should be the main consideration in the formation of an association. Success depends very much upon frequent intercourse—daily, if possible; the closer the association the greater the guarantee of success. Nearly all the misunderstandings and differences arising between individuals are due to the fact that their acquaintance is limited, therefore the work of the association is to reduce to a minimum these differences and place the individuals upon such friendly terms as to preclude the possibility of friction.

Arbitration is successfully used with most gratifying results. In all cases the parties to the arbitration have signified their willingness to abide by the decision because they desired only what was just and right, showing conclusively that there was only a difference of opinion to settle, and that the idea of justice was paramount with each party. But the lack of acquaintance was the serious drawback which prevented the friendly settlement, which, had it not been for association would perhaps have led to expensive and unsatisfactory litigation. Just decisions by arbitrators have been the means of bringing the disputants into friendly relations, and instead of enmity resulting therefrom, a friendship was cultivated ending in amicable business relations between the parties.

The good qualities we perceive in the friend are not observed in the distant acquaintance, hence the necessity of acquiring friendships, leading ultimately to profitable business relations and substantial results. That this is so is ocularly demonstrated by the present delegation from Chicago. A year ago these gentlemen were strangers, if not enemies—their business methods were such as to preclude the desire of a nearer acquaintance; to-day they meet with the cordial grasp of friendship, coupled with a smile of approval, and, with some, perhaps, a twinge of regret at their past actions.

This change has been wrought by the wholesome influence of association, and every one of them is an exponent of good will and good fellowship so successfully exemplified in their organization.

PRESIDENT ITTNER—The paper just read is now open for discussion.

Mr. McGRAW—I am pleased, both as an individual and as a representative of the Western Pennsylvania Brick Exchange, to indorse, to heartily indorse, everything that the gentleman has just read. I do not know just exactly how long the Chicago Brick

Manufacturers have been organized, but we have been organized four years. We meet every Tuesday afternoon, and we are all pleased to greet each other and it is the happiest afternoon of the week. We are all friends. And as I said before, I am glad to heartily indorse everything the gentleman has said, but I must take exception to one thing in particular, and that is the inability of such organizations to control prices. We have done so, and continue to control prices, and we are getting eight dollars a thousand for our hard brick to-day; we could just as well get ten dollars, but it is very wrong for an organization to take advantage of its strength. We know we are powerful, we know we are strong, but we know if we used this strength to an extreme measure, we would in the end lose by it. When I say eight dollars for hard brick, you must understand that labor is very high in Pittsburgh. I suppose three-fourths of the members present can split our pay roll right in half, so that we consider eight dollars not an arbitrary price. We are pleased that we are getting that, and we are getting it in a pleas-



EDWIN MCGRAW, PITTSBURGH, PA.

ant manner. The brick buyers know that our brick are a uniform price.

Mr. CRAFTS—I want to say that in New Haven, we have been getting along in a brotherly manner, but we thought we would save ourselves trouble if we would organize. We did it and are doing nicely. We are only nine days old, and we have not got our eyes open yet. When we do we will report.

Mr. PRUSSING—I wish to make acknowledgement of a debt of gratitude which is owing from the Chicago Brick Manufacturers' Club to a gentleman who is prominent throughout the United States as one of the largest manufacturers in the country. I wish to make public our gratitude to that gentleman, for having suggested the lines on which our club was organized. I refer to Mr. D. V. Purington. [Applause.]

PRESIDENT ITTNER—If there are no further discussions on the paper of Mr. Prussing, we will take up the next number on the programme. An essay, "The Professional Brickmaker," by Joseph Fairhall, Grape Creek, Ill.



## THE PROFESSIONAL BRICKMAKER.

BY JOSEPH FAIRHALL, GRAPE CREEK, ILL.

*Mr. President and Gentlemen:*

When the subject was first mentioned to me, I felt that it would be a very easy task to write an essay on "The Professional Brickmaker." But as soon as I settled down to the work, I felt myself in the position of the youthful "would-be poet," who, after writing the first line, gave up because he could find nothing to rhyme with it. I was in a quandry, for this reason; I could not persuade myself that I knew of any one, or had I ever met one, who would compare with the standard I had set up and which, in my mind, comprised the necessary qualifications of "A Professional Brickmaker." I recognized the fact that, although the National Brick Manufacturers' Association is a strong and powerful body, yet it has no standard of competency for its members, nor has it any college, school or other place of tuition, where a youth can be trained so as to become a competent brickmaker.

It may be said, and I have heard it put forward, that, owing to the vast difference in clays, and different methods of manufacture, a man can not be so trained practically as to enable him to be considered a professional man. Never was a greater mistake made, for I maintain that, unless we as brickmakers have this particular training, which shall enable us to understand these particular clays and different methods of handling them, we can never be said to understand brickmaking outside the yard we happen to be engaged upon. Let us look for instance at the "Professional Farmer." One might say that there are so many different soils that it is impossible to teach *him* the peculiarities of them all; but we know that the agricultural colleges would upset this theory. The curriculum at one of these institutions includes the chemistry of the soil, and not only one but many varieties; and the agricultural college graduate must know the particular dressing or fertilizing necessary to produce the best conditions, what to plant or sow on a particular soil in order that the best crop may be obtained, and lastly, what are the best implements for these individual soils, and how to use them. These things are taught scientifically by duly qualified instructors, and the graduate from one of these colleges goes forth to enter upon his profession fully prepared, having hand and brain alike trained for his life work, the fact of his having graduated giving him a precedence over others of his class.

Now, if this training is necessary and beneficial (and it is admitted that it is) to qualify a farmer, is it not equally, nay more so, for the brick manufacturer? "But," some will say, "we have professors in the brick business." This may be so, but will their diplomas bear the light of investigation? Who comprised the examining board that gave to the brickmaking world these professors of clay, or clay doctors, as I have heard one of this class style himself; and certainly no medicine man of the original tribes—no Indian doctor—could practice more Hoodooism than is resorted to by many of them. The *modus operandi* of one of these clay doctors is first to find the farmer, or coal operator or something else (anything but a brickmaker), who has a bed of clay which some one tells him is valuable. The clay expert visits the bed. If it be a shale, he produces his pocket-knife and, putting on a very grave and wise look, goes through the scraping and paring process, finishing by putting a small portion into the mouth, giving off meanwhile, to the owner of the clay a very learned (?) discourse on silica, iron, aluminium, the absence of lime, magnesia and every deleterious substance. If the bed under examination be one of the ordinary soft clays then the process is somewhat altered. The clay is broken, rolled between the finger and thumb, a small portion put into the mouth, and the same discourse given with the component parts slightly altered, aluminium coming first in this instance, then silica and iron. Lime, magnesia, etc., etc., well a mere trace; in fact, in either case, it is the most valuable bed of clay he has ever examined; generally finishing by recommending that a sample be sent to such and such an assayist for correct analysis, and leaving the owner in doubt whether it will pay him best to erect a brick plant or a works for extracting aluminium.

Bro. Wm. Gates, in a short letter to the CLAY-WORKER, under date of October 27, 1892, gave this self-styled expert a blow straight from the shoulder when he said: "The real expert; that is the man who has learned from long, practical experience, at the working end of the business, is very slow to give an opinion regarding a clay for the sole reason that he knows absolutely that he can only give information regarding it after long experiment. The experts who furnish such information (referring to an off-hand opinion such as I have described), are usually the ones whose shoes show no samples of clay from the pit, nor does their clothing bear traces of dust from the factory." And Brother Gates might have further added that there is scarcely an instance where this class of gentlemen have ever owned a brick plant of their own or successfully run one for other people, and their effrontery is only outdone by the gullibility of their dupes.

As well as clay professors, we also have experts of brick machinery, gentlemen who, by taking a swift glance at your clay, profess to be able to say exactly which machine, out of the multitude now in the market, is the particular one suited for your work. We have also professors of "plants," men who, in connection with their other avocations, consider themselves pre-eminent in the laying out of new works, setting up the machinery and personally superintending the start up. I have in mind one case, where a professor of this class in laying out a new works, set the engine reversed, and for a considerable time it ran with a backward motion. Then there are the kiln professors, who can build a kiln that will burn any clay at least 90 per cent. of whatever you want, from very soft salmon to vitrified pavers, the whole kiln being alike all through. I could mention more than one instance where professors of this class got their work in, and, after thousands of dollars had been spent to erect the kiln, utter failure had to be written after the cost account, while the kiln itself stands as a

useless building, except as a monument to man's credulity on the one hand and incapacity on the other.

Then there is a long line of professional setters and burners; and, in fact, a glance at the advertising columns will show professors or experts in every branch of the business.

Now, I do not mean to infer that there are not very many who are justly entitled to our respect for their abilities in each and every of the branches of our business that I have enumerated; nay, I feel sure that all will agree with me when I say that we have very many able men who are not only well known, but who, from the thorough knowledge of their profession, stand out in bold relief from the vast army of us who have so much to learn; and we also know that if certificates of efficiency were granted, there are many of our rank and file who would be entitled to them.

"But," some will say, "where can these certificated men be found?" I will tell you. Go to some one of the very many *successful* works scattered all over the country, and there you will find them. Ask the operator if his manager, his superintendent, his foreman, setters, burners, etc., have a certificate of efficiency, and if he were to answer conscientiously he would say: "Yes, they each have a *first-class certificate* which I hold;" and, taking you into his office, he would show you the bank account, with the balance on the right side of the ledger, and say: "There is the certificate of each and every one of them, for, to their successful handling of my business in all its branches, is this balance due." These men are readers and thinkers as well as workers, and by putting their brains into their work make themselves valuable to their employers, who find it to their interest to pay them what they are worth, realizing full well that the longer they are retained the more valuable they become.

That the National Brick Manufacturers' Association has grown to be an influential body no one can deny, and I believe I am correct when I say that it has outstripped the utmost limit which its most enthusiastic supporters put upon it in the start. It will continue to grow, not only in numbers, but in influence, and ere long the annual convention of the National Brickmakers' Association will become almost of national importance. And why? Because the brickmaking industry is growing and will continue to grow. The era of brick using (comparatively speaking) has scarcely dawned, and yet already the demand is for the best and better, and this is why we should have some means of knowing the capabilities of a man when we hire him for a responsible position. As it is at present, suppose a man about to launch out into the brick business, having no previous knowledge, as very many have done and are doing daily. The first thing he has to do is to engage a manager to superintend things for him, for a time at least, until he has gained sufficient experience to enable him to run things for himself. He has to trust entirely to the professional man, who may or may not turn out all that is expected, he has to trust his capital (and, in many instances, it is his all), and how many times failure and complete ruin is the result is registered in the "For Sale" columns of the brick journals. How different might the result have been, could this same man procure a competent manager from a recognized institution of our own, where every graduate launched into the brickmaking world would bear the stamp of the National Brickmakers' Association upon his certificate as a guarantee of his efficiency.

That the time for some technical school or college giving this education has arrived is evidenced by the frequent correspondence on this subject in our journals. Brother Morrison has a valuable letter on this point in the November number of the CLAY-WORKER for 1892, and that able writer, J. W. Cray, Sr., has over and over again spoken of this same thing. In the September number of the CLAY-WORKER for 1892, he forcibly calls attention, not only to the need of expert brickmakers, but puts forward the means to be adopted to produce them. He says on page 237 of the number referred to, "In about every small town or city there is a want of first rate brick, for the reason that there is a scarcity of *real skilled experts in the business*." I have seen it stated that there are employed in the various clay industries of the United States about eighty thousand men, each and every one of whom would, no doubt, tell you that he understood the work upon which he was engaged, but if a test were made as to the real experts among this number the eighty thousand would melt away like mist before the sun.

As an illustration, I would say that a law was passed in 1891 compelling all coal operators in the state of Illinois to employ only certificated managers in their mines. An examination was held at Springfield, at which certificates of competency were granted. At this first examination over one hundred men went from different coal districts in the state, and, although the examination was only such as any competent man should have been able to pass, yet there were scarcely fifty of the whole number who took certificates for efficiency, although the majority had for years previously held this very position in the mines. I believe that we should find this same state of things in the brickmaking world to day if the same kind of test were applied. But mark the effect this examination had in the mining districts. No sooner had the order gone forth that all managers must hold a certificate of competency, than schools, public and private, for training miners, started up in different parts of the state, and as a result there will no doubt be a larger number pass the next examination.

I do not, however, wish it understood that I am in any way advocating either national or state enforcement of this education for brickmakers. Far from it. I believe the National Brick Manufacturers' Association is entirely capable of handling the subject, and I also feel sure that the time is not far distant when it will be taken up and dealt with. The various journals devoted to the clay-working industries are doing very much in an educational way, and no one seeking information in the departments treated on can fail in obtaining valuable information; while Brother Waplington (who evidently has gotten right down to the needs of a thoroughly equipped brickmaker) strikes right in at the funda-



mental principle of the profession, and is giving us through the columns of the CLAY-WORKER a series of valuable papers on "Chemistry for Clay Workers," which, for lucidity and simplicity, stand unequaled. Mr. Waplington evidently not only understands the subject of which he is treating, but has an easy style of writing, which, while not detracting from the science, puts it in such a clear and concise manner that those who run may read. I hope that at some future date these papers will be collected and issued in book form. Such a volume would be a valuable addition to the brickmaker's library.

As to what should comprise the qualifications of a professional brickmaker, my idea would be something on these lines:

Supposing a technical training college established; its doors should be open to men of all ages, the only qualification necessary, being a graded school education and the recommendation or endorsement of at least two members of the N. B. M. A. A regular "college course" should occupy at least two years, during which time the student should be taught geology as applied generally, with special attention to the formation of clays. By this course he would become familiar with first principles, and, on visiting a bed of clay, he would first examine carefully its formation from a geological point, and determine in what manner, from what source, and, to some extent, at what period of the world's history it was deposited. He should study elementary chemistry generally, with special attention to analysis and assaying. Mechanical engineering, theoretical and practical, should form no small part of the education, and especially as it is applied to brick machinery. Facilities should be offered to enable the student to devote a certain portion of time per day to practical work in the machine shop, by which means he would acquire that knowledge which is most essential when, in after life, he is called upon to superintend the setting up of new machinery, and, what is almost as important, the repairing of the old. Above all, a considerable portion of the time should be devoted to actual practical work in the brick factory, in which every branch of the manufacture should be gone through, from taking the raw clay from the bank to the superintending generally. This should be done in order that, "he who would command, must first have learned to obey," and unless a man understands, by actual experience, the minor details, he can never manage or superintend a works. The student should also keep up his general education, so that when he shall have clerks and book-keepers under him, he may understand that the office routine is properly attended to as well as the machinery running effectively. A thorough and searching examination should be gone through before the college certificate or diploma is granted, and by this means, and this only, should we ever be certain of obtaining proficient men.

This course which I have briefly outlined, while not intended to cover all the points, should apply only to the regular college course. Apart from this, facilities should be afforded to enable any person to take a course of one or two terms, of so many weeks each, in any particular branch. I have confined my remarks specially to brick manufacturers, but a technical college should offer facilities for every clay manufacture to be studied, from the common building brick to the most delicate and artistic terra cotta.

With regard to producing practical professional brickmakers, and how it is to be effected, older and wiser heads than mine have already offered the solution. In fact, since my invitation to read this paper, various and valuable suggestions have been put forward in the leading clayworking journals which have thrown considerable light on it and provided food for thought. Those of our members who have not thoroughly read their CLAY-WORKER, I would specially refer them to the issue of last September and invite them to read the last two or three paragraphs of Bro. Crary's letter, which will be found on page 237; also, the November number of the same journal, where, on page 447, Bro. Morrison has an excellent letter treating on the same subject. Both writers join with me in looking to the National Brick Manufacturers' Association as the proper body to deal with this vast problem.

I feel, and I believe every member of this honorable Association feels, that it is equal to the task, and I hope that the present convention assembled will not dissolve without some steps having been taken towards setting the proper machinery in motion which shall have the desired effect, and that before our next annual meeting convenes we may have a Clay-Worker's Training and Technical College erected in some desirable locality, offering every facility for those desirous to become thoroughly versed in their profession.

PRESIDENT ITTNER—The paper is now open for discussion.

MR. DONALD McDONALD—I desire to offer the following resolution and would suggest that space be reserved in our official organ and that this resolution be kept standing.

MR. McDONALD then read the following resolution:

*Resolved*, That the official organ of this Association be requested to keep a standing notice, calling attention to the method of establishing new brickyards by the exhibition of samples and the promise of profits which it is impossible to realize in actual work. And that the corresponding secretary of this Association is willing at all times to give the fullest information to parties who are contemplating the starting of new yards.

*Resolved*, That the secretary of this Association be instructed to answer all such inquiries fully, and to point out the difficulties as well as the advantages of such undertakings.

*Resolved*, That the secretary be instructed to keep copies of all such answers, and that a committee of the Association shall inspect these copies annually.

SECRETARY RANDALL—I want to say that if this measure is adopted the secretary will strike for an increased salary.

MR. D. McDONALD—I think we could well afford to increase his salary.

MR. DAVIS—I want to say in connection with this resolution, I have the highest respect for Mr. McDonald, but I must say, that this resolution is the most damn-fool resolution I ever heard introduced into this convention.

PRESIDENT ITTNER—I would request, Mr. Davis, that you refrain from using such language.

MR. DAVIS—I would like to disclaim any feeling in the matter. I apologize to Mr. McDonald, but it is the resolution I object to.

MR. CRAFTS—I have not the slightest objection to the resolution, except the gist of it. People ask me about establishing a yard, I tell them the facts as plain as I can, and yet they go right on and invest their money just the same.

MR. ADAMS—While the gentleman introduced the resolution in good faith, yet the scope of the resolution is such as to make it impracticable to consider. Men who want to go into the brick business see other brick manufacturers making money and think they can make money too. They say, there is Jess Adams making brick



JOSEPH FAIRHALL, GRAPE CREEK, ILL.

and making money, why can't I make money by making brick? and so he goes into it, and we are not responsible for them. If we are going to establish a kindergarten for the purpose of taking care of these infant brickmakers, I think we will have our hands full. And I move, Mr. President, that this resolution be referred to the committee on resolutions.

MR. PRUSSING—I think that Mr. McDonald offered this resolution in good spirit, and I think it should be the sense of this convention here assembled, we as members of the National Association, pay the express charges on all samples of clay sent us by those contemplating the manufacture of brick and that we make the brick free of charge and return to the gentleman making the inquiries.

MR. MCGRAW—This is a question of importance. I do not believe that we can get up anything that will influence new beginners. It is the new beginners that ruin your business and tend to keep the prices down. If we can do anything to keep these moneyed men out of the business we ought to do it.



MR. EUDALY—I believe that Mr. McDonald introduced this resolution in all sincerity, and believed that it was the right and proper thing to do. He expressed some views along this line last evening. There is one thing I want to call your attention to. Now this whole resolution is for the benefit of the man who is preparing to go into the business. I am not quite ready to believe that we are so much in love with the man not yet in the business as we are in love with the idea of keeping that man out of the business. This is a point that may be construed. It may be construed to be a selfish motive, for the purpose of preventing competition. I would respectfully call your attention to one other thing in reference to the resolution, and I say it with all courtesy to Mr. McDonald, that this resolution contains in it an element of discourtesy to somebody somewhere, somehow.

MR. McDONALD—I want to say the resolution was not intended as a discourtesy to any one. If we all had such friends as Messrs. Adams and Purington, we would not need such protection as this resolution calls for.

MR. ALSIP—I desire to second Mr. Adams' motion to refer the resolution to the Committee on Resolutions.

Motion carried.

PRESIDENT ITTNER—I think it will be well at this time to announce the

#### COMMITTEE ON RESOLUTIONS.

D. V. Purington, Chicago, Ill.  
H. W. Bohman, Louisville, Ky.  
F. L. Stiles, New Haven, Conn.  
James Dingee, Philadelphia, Pa.  
F. L. Herbert, Nashville, Tenn.  
J. P. Norton, York Corner, Me.  
C. J. Holman, Sergeant Bluffs, Iowa.

We will now listen to an address on "Paving Brick, their Manufacture and Use," by W. S. Williams, of Canton, Ohio.

CAPT. W. S. WILLIAMS—After the programme was printed, I found that I had not taken the subject laid down, but my paper covers all the ground intended by that one, as well as some others. The subject that I have taken up is "Vitrified Brick, their Manufacture and Use." Now, I want to say before proceeding with this paper that the term "vitrified" has been a conundrum to me ever since entering the brick business. Vitrified really means to make like glass. Now, we do not conform to that when we make brick. What we want to make is a tough, hard, cohesive substance and non-absorbent, and I know of no word in the English language that will cover that meaning. As I have stated, we do not propose to make glass when we make brick, we want to avoid that very thing. I have been trying very hard lately to accomplish it, and I am doing very well.

MR. WILLIAMS then read his paper as follows:

#### VITRIFIED BRICK, THEIR MANUFACTURE AND USE.

BY W. S. WILLIAMS, CANTON, OHIO.

The clay should contain the proper amount of silica, aluminum and iron, with the necessary amount of alkalies to thoroughly flux it. The silica, aluminum and iron are practically non-volatile, and will receive a high degree of heat without injury.

The clay must be tempered or pugged not with so much water as to produce a hydraulic resistance in compressing it, but with just a little water, just enough to induce a molecular change in the clay. It should be compressed to its utmost density, so as to assist nature as much as possible in forming a compact mass. In drying, the clay will creep together and shrink until the particles touch each other, and then stop.

The rest of the water must be taken off at a red heat, when more shrinking takes place. The brick at this stage is ready to become a semi-molten mass, and if properly treated when done the product should be a dense homogeneous mass from center to exterior.

Vitrified so to speak throughout, not in structures or series of structures, but a dense compact mass, they should be so treated so as not to become crystalline, or of a vitreous nature, but tough, or annealed as it were, so as to have the greatest cohesive strength possible. This gives us a material with greater strength than any now known, in a crushing test as shown by our testing laboratories, the vitrified brick proves to be about one-third stronger than granite.

Trautwine, who is regarded as authority by all civil engineers, assumes the

weight of ordinary brick work as one hundred and twelve pounds per cubic foot, and that it would crush under thirty tons per square foot, then a vertical column of it, six hundred feet in height, would crush at its base under its own weight, and average granites that weigh one hundred and sixty-five pounds per cubic foot, would sustain a vertical column of eight thousand one hundred and forty-five feet before crushing on its own base. Hence, as vitrified brick stands over one-third more under a crushing strain than granite, the brick vertical column will be over ten thousand feet in height before crushing at its base under its own weight. Trautwine gives the average crushing strength of granite as six hundred tons per square foot, and from the best information we can get, our testing laboratories gives the average crushing strength of good vitrified brick as over nine hundred tons per square foot.

Vitrified brick are comparatively new to our architects, and their value are as yet almost unknown to them, but in the near future this brick must of necessity take a very important place with them when they once thoroughly understand take no dampness, and are stronger and more durable than granite.

In our larger cities where the air is tunneled with fifteen and twenty story buildings, the width and strength of walls is a very important matter. Space can be economized in thickness of the walls by reason of great strength of the brick. In case it is necessary, they may be buttressed either exterior or interior or both, and thus more room secured in the structure.

In a vitrified brick building, there should be a brick used in the interior of the building made of the proper proportions of clay and saw dust or its equivalent. This brick should be burned until it is thoroughly vitrified, the saw dust being consumed in burning, the brick left honey-combed, or full of air cells as it were. This brick should be carried up with the masonry as an inside lining of the walls in the interior of the structure, no furring, no lath required, plastering can be applied directly on the walls. The cellar should be paved with vitrified brick, and no brick allowed in the entire structure that is not vitrified. This would give us a structure, the walls of which would have great strength, fire proof, practically a non-conductor of heat and cold by reason of the air cells in the inside course of brick walls, perfectly dry, as they would not absorb a particle of moisture from turret to the bottom of the foundation, a fact which can not be said of any other known building material, and with this end view it is absolutely requisite, that we make the very best vitrified brick, that quality instead of quantity should be the end to accomplish. The people of this country are now investing their money in permanent improvements and they demand the very best material that can be produced.

The paving of streets, and roadways, have for a long time been a source of much anxiety to the engineer. Granite expensive, noisy and eventually slippery and becomes as rough as a cobble-stone pavement. Asphaltum costly, slippery, and does not wear well. Macadam grinds up and forms a paste, when wet, and is carried off by the wheels in the shape of mud, when dry, it blows away, and is lasting and wears well only when there is one or two feet of snow upon it. Wood is not lasting and is a great absorbent, consequently unhealthy. Vitrified brick however has taken a great load from the engineer's mind. It is durable, comparatively noiseless, inexpensive, and easily repaired.

In the vitrified brick treated as heretofore spoken of, we have the combined silica, aluminum, and iron, the resultant product gives us a material that is harder than steel, and of great cohesive strength, a material that will not be effected by the iron or steel tires of wagons.

Nor the calks and toes of the horseshoe, the twelve chisels on the shoes of each horse is undoubtedly the greatest enemy paved streets have to contend with. The ingenious blacksmith may change from iron shoes to steel and keep these chisels in excellent repair, yet this steel must give away to the vitrified brick. This is the first paving material yet found, that would resist the horse's shoe. When the brick are manufactured as heretofore described, there is no way of calculating the life of a brick pavement, as there seems to be nothing that can wear it. The brick are hard, and yet does not become slippery, the draft horse always securing a good foot hold.

In vitrified brick, the civil engineer will find just what he has been looking for, in permanent structures, such as arches, tunnels, sub-structures of all kinds, conduits, and especially in sewers. If he is constructing a sewer, where there is much grade, he will find a material that will withstand the rasping and filling of all the sand and gravel that will pass through it, being vitrified, it is non-absorbent. Acids and noxious gases will not effect them, and find no place there. In a sanitary point of view, this fact the engineer dares not overlook.

Vitrified brick has come to stay and have been staying on the face of the earth for a long time. By the rivers of Babylon and Nineveh we find there has been unearthed glazed brick, and brick enameled. In the great brick City of Babylon, Babylon the city of brick, occupying in extent five times more than the present site of London, surrounded by a wall of brick, three hundred feet in height and eighty-five feet in width, we find that the hanging gardens were sustained with brick arches, brick laid in bitumen the equivalent of our combined coal tar and asphalt; the bed of the river paved with brick, and in their temples brick, vitrified to an azure hue, after being placed in position in the structure. Stamped in the brick their first system of writing is given us, viz., the cuneiform. On what were once the banks of the Euphrates and Tigris Rivers we find handed down to us the history of thousands of years ago. It tells us of the deluge, when the face of the earth was covered with the waters. It informs us of the first great kingdom after the subsidence of the waters. We have stamped upon brick the name of one of their first great rulers, viz., Nimrod, the mighty hunter before the Lord. This history was not handed down to us written upon columns of stone, nor monuments of brass—such material seems to have succumbed to the action of the ages—but it is given us upon clay tablets—simply brick, and nothing more.



MR. DAVIS—I have had a great deal of correspondence in regard to this word vitrification. And I have adopted the rule in speaking of these brick to speak of them as annealed vitrified brick; annealing meaning tempering or toughening of the material. I think if all manufacturers of vitrified brick would adopt that term, "annealed vitrified brick," it would help the distinction, and the people who are not acquainted with brick to know what we are talking about.

## BRICK PAVEMENTS.

MR. ADAMS—Mr. President, I desire to say that I believe that Mr. Williams has given us a very comprehensive paper. The paving brick business is a revelation to many of us. We have seen it coming, we have been advised of the fact that brick when well made and properly dried and burned and laid, is the coming pavement for this country. And I want to impress this fact upon this convention: Nothing can stop the progress of brick for durable, lasting street pavements but the brickmakers themselves, by making an inferior article. It is with the brickmaker and him alone, and upon him alone, that depends the future of this great industry. In our city, we have several miles of brick pavements, and we have one street, I am glad to say it has only one square laid with brick, that the pavement is wearing out after one season of ordinary travel. We do the brick paving industry a great injury when we turn out anything but a good brick.

JOSEPH STAFFORD, Springfield, Ill.—This is an interesting question. I have left the past behind me and from now on am going to live in the future. In my judgment it is not a question of paving brick for street pavements, but how to get the proper clays and how to make them tough. I am here to say that I believe the clays that are right among the shales is the best for making paving brick. This may seem a little strange, but I believe in telling the truth as it appears to me. It is not a question of selling brick for street pavement, but a question of how to make them.

W. A. RIEMAN, Vincennes, Ind.—I can heartily agree with what Brother Adams says about the quality of paving brick made throughout the country. I know from personal observation that many who are claiming to make paving brick are not doing anything of the kind. I visited a yard some time ago where they are turning out a large number of these so-called paving brick; they are made in a very inferior manner and their product does not answer at all the description of a paving brick. I asked the manufacturer why he turned out that class of brick and he said: "Oh, they are all right, they look all right, and we can sell them." Gentlemen, a brick of that kind has a tendency to discourage the use of paving brick, and it is illustrated in the city of our honorable president as well as in several other cities. Just listen to this article which I clipped from a prominent St. Louis paper, and it has gone the rounds of the press the country over.

"The Board of Public Improvements held a special meeting at 10 A. M. yesterday, to hear the report of a special committee, consisting of President Burnet and Street Commissioner Murphy, on the examination of brick street paving now in use in other cities. The examination was made at the request of citizens who wished to have certain streets in the residence district paved with this material. The committee reported having examined the paving in Philadelphia, Pa.; Washington, D. C.; Wheeling, W. Va.; Chicago, Ill.; Cincinnati, Columbus and Newark, Ohio. The report showed that Philadelphia has 30.8 miles of brick paved streets that are generally in poor condition. Wheeling has twelve miles of brick paved streets, and the alleys are generally paved with brick. The street department there report that it has given a fair degree of satisfaction. For Newark the experiments in that line were not satisfactory. Columbus has thirteen miles of brick roadways, but the paving has not given satisfaction, chiefly on account of a lack of uniformity in burning the same. Washington, D. C., has experimented with paving brick to some extent, but with unsatisfactory results. The conclusion reached by the committee was that it was not advisable at present to recommend the use of brick as a paving

material for streets, but that it might safely be used in paving many of the alleys. The report was received and the secretary ordered to place it on record."

Gentlemen of the convention, we ought to get out a high standard of paving brick, and until we do we can never hope for that success which should be ours.

MR. D. V. PURINGTON—I want to say that brick paving has probably never received a more severe blow than from the article just read, and which was printed in the papers throughout the country. I have no doubt but that the report of the committee was to a great extent true, and while I do not want to get up a discussion as to the clays in the different parts of the country, I want to say that in every town mentioned in that report the paving brick were made of clay largely of a fire-clay nature and not of shale; that if the committee from St. Louis had desired to make a fair report as to the paving brick throughout the country, they should have visited some of the cities where shale clay brick were used



W. S. WILLIAMS, CANTON, O.

and not selected all where fire-clay brick were used. Mr. Adams struck the key-note of the situation. We should be more careful in the selection in the matter of paving brick than in building brick. If a brick is a little off color, in laying up a wall, you can lay it in the center and it will not appear in the face of the wall, and it will not hurt the wall, the man who puts up the building, or the one who makes the brick. But in paving a street every single individual brick is exposed, and if a half dozen soft brick are put down in a block, a half dozen brick not thoroughly burned will ruin the reputation of the brickmaker and the man who lays the street, and I want to impress it upon the minds of the men who make paving brick, that there is no part of their work so important as the sorting of their brick.

MR. DAVIS—I have been investigating this matter and find the major part of the statements set forth in the clipping is absolutely false. In the first place, Washington has not a single street paved its entire length of brick of any kind or character. I myself visited Washington to investigate the conditions, and I found that the Board of Commerce had ordered a brick pavement laid in front of



their building. And the man who laid the street laid brick for a length of about one hundred and fifty to two hundred and fifty feet on one side of the street, and on the opposite side of the street they had laid one hundred and fifty feet with asphalt, and one hundred feet with granite blocks and the other fifty feet with wooden blocks. That proves that part of the report in regard to Washington false. In regard to Columbus, the statement in regard to the number of miles is absolutely false. It looks as though these reports had been prepared in the interest of the asphalt companies.

MR. EUDALY—I want to say a word about Columbus. We have a state association in Ohio, and at one of our conventions a gentleman came in, and when the subject of brick pavements was being discussed, told us that there was a street in Columbus where they had paved part of the street, several blocks, I think, with brick, and the other half with stone, and had allowed the pavements to lay for a certain length of time, and had finally taken up the stone and laid down brick. This happened in the very city of Columbus named in the report. As has been said before, the brick pavement is the pavement of the future and there is no question about it. It is simply a question of making good brick. Let us look at it from a business standpoint. The man who has the best paving brick, the best building brick, or the best any kind of clay ware is the man who is going to sell it. There is no question but that brick is better than asphalt and stone, and the people are finding it out, and brick are going down in the streets and roadways of this country and there is no preventing it. Every good pavement that is put down makes it more sure, and the manufacturer who starts early to make brick that are good, is the man who is going to make the money.

D. P. GUISE—I read an article in the *Public Ledger*, of Philadelphia, very favorable to brick pavements, and about the same time there was an article published in the *Times* condemning brick pavements, and I said to myself, there is a nigger in the woodpile somewhere. Brick manufacturers are aware that the asphalt companies are doing all in their power to oppose the brick pavements. Last year, I do not remember just what time, a gentleman came to me and said, if you will make your paving brick three inches thick, five inches wide and twelve inches in length I will take your entire product. He said he wanted to meet a competition on the part of the asphalt companies, and gave as an argument that large size brick were more salable, consequently he wanted a large size brick. I speak of this thing to show what opposition we are working against.

E. R. HARPER, Akron, Ohio—I am in the business of making pressed brick, and as it seems to be the universal rule that a party interested in a certain line of brick work always talks on some other line, so it seems proper that I should speak on the paving brick subject as I am not making paving brick. About ten years ago the question of street paving came up in the city of Akron. For two or three years it was a fight between the asphalt people and the stone people and the brick people, but we finally succeeded in getting brick payments down in the streets, and I am proud to say that since then we have no pavement of any other description, and you will never see anything but brick laid in the streets of Akron. In the matter of brick pavements the manufacturers must always keep quality in mind. One mistake paving brick manufacturers make and have been making is, they say to property owners and members of council and parties about to bid for a pavement, I can furnish it to you so much cheaper than any other pavement, and then you are compelled to put your brick upon no foundation at all, comparatively. You go to the council and say I am going to put the brick in on a sand foundation, and you put your good brick upon a sand foundation and enter into competition with an asphalt company that has put their pavement down on a hard rock foundation, and I say you are making a mistake. No board of improvement should be lead to believe that it is going to cost much less to put down a brick pavement than any other pavement. Nine years ago, after the discussion that had followed my urging the use of brick pavements, a committee was appointed,

and they made a tour of cities that had brick pavements, Wheeling, Bellaire and several other cities, and they came back with a report that settled the brick question in Akron for that time, because those people had laid the brick down on a sand foundation, and the result was the committee found worn-out pavements; the brick were not injured, but they did not stop to consider that; they simply said the brick pavements are not good. You ought to educate your engineers up to the idea that brick ought to have a good foundation upon which they can rest and rest all the time. So far as the brick are concerned, they are all right, but you must have a good solid foundation. [Applause.]

FRANK B. McAVOY—I want to say a few word in regard to street pavements in Philadelphia. We have thirty-five miles of streets paved with brick, and with a few exceptions where the brick put down were not put down right, the streets are in first-class condition, and the majority of the members of the city council are of the opinion that it is a good pavement and would like to see more put down. The teamsters like it; they say it is easier on the horses, and prefer it to any other pavement. So far as our council is concerned, you can have anything you want in our city, if you are willing to pay for it. Last year there was put down in Philadelphia 10,000 brick, and in the future brick will be laid in Philadelphia. We are slow in some things, but we are doing the fair thing in the way of pavements of brick.

MR. ADAMS—I would like to say to my friend from Akron, that the brick street to which I referred in the city of Indianapolis, and which is now practically worthless, was laid on a concrete stone foundation of the very best character.

G. S. ETTLA, Clearfield, Pa.—I would suggest, that a committee of five competent members of this Association be appointed to fix a standard of annealed vitrified brick at this meeting. Have that standard with good sharp edges and well burned, and have the production of the manufacture an annealed vitrified brick. At Philadelphia in 1889, the National Association fixed a standard for building brick, and I think it behooves us here in the city of Louisville in 1893 to fix a standard for vitrified brick. Brick for street pavements have been used for twenty years in this country, and in Holland a much longer time. For such manufacturers as Mr. Purington, we can fix a standard quality. I move the appointment of such a committee by the chair.

MR. EUDALY—Second the motion.

MR. STAFFORD—My experience is that foundations should not be too solid. I think that two courses of brick on sand is the best. It should be elastic, so it will give when the horses' feet strike it; it is much better, I think, for the horses and teams to travel over. Thorough drainage is necessary for a good pavement. I do not think it is necessary to have a concrete foundation.

MR. A. MORGAN—I want to say a word to my friend from Pennsylvania and ask him what he means by a standard for vitrified paving brick, whether he means as to quality, strength and absorption, or whether he means as to size. If he means the latter, that is desirable, but if he refers to quality and absorption, that is a question that can not be handled. It is impractical. I may have something to say to-morrow, but just now I have to leave for Cloverport to get things in good shape for you folks to see when you come. [Laughter.]

MR. HOWARD—As I understand the matter I would move that the word vitrified be stricken out of the motion, and the word annealed, or tempered, be inserted. Vitrification means similar to glass. I really believe the word vitrification is a misnomer. A brick may be partly vitrified but not thoroughly. If thoroughly vitrified they would not be tough, but sharp and brittle like glass, and I think the word annealed, or thoroughly tempered, would be better.

MR. EUDALY—I think it would be impossible for us to determine on a standard quality of brick, and it seems to me we would get rid of this motion by moving a substitute, and as that substitute I move that we adopt a standard size of brick, and that that size be the standard size of building brick. [Applause.]



## A STANDARD SIZE OF PAVING BRICK.

PRESIDENT ITTNER—Mr. Ettla has made a motion which has been seconded and then an amendment has been moved by Mr. Howard, and now Mr. Eudaly offers a substitute for the original motion. Mr. Eudaly's substitute is now open for discussion.

MR. PURINGTON—I do not believe there would be one dissenting voice among the paving brick manufacturers of this country on the adoption of the substitute offered by Mr. Eudaly. There would be some dissenting voice as to the appointing of a committee of five as originally moved and I do not believe there would be five men in this convention to agree at the present time on a standard as to quality. I have been engaged in the manufacture of paving brick a long time, and I must confess I am in doubt as to just what the proper standard should be and I do not believe any one could be able to give the proper standard of brick until after these brick had been laid in a pavement and been in use long enough to satisfy the people who put in the pavement and paid for it, and that time will not come for some little time yet.

MR. LANT—While some say that vitrified means glass, I think it means that the clays flux and run together, and when the brick is broken it presents a glassy like fracture. I have some samples in the sample room, and I will show anybody who wishes to see what I call a vitrified brick. I sent one to Philadelphia to be tested and a half brick stood 123,000 pounds pressure. A whole brick stood 120,000 pounds.

MR. ETTLA—In view of what has been said by older heads than mine I am perfectly willing to withdraw my original motion as to the standard of brick and substitute the standard size of brick for paving purposes to be the same as a standard size building brick, that is  $8\frac{1}{4} \times 4 \times 2\frac{1}{4}$ .

The motion was then put before the house by the president and carried unanimously.

MR. ADAMS—I offered a resolution yesterday and it was out of order and withdrawn. Now, I am admonished that life is short and time is fleeting, and for the protection of this convention from such men as your humble servant, I offer the following resolution.

*Resolved*, That no member shall speak twice on the same question until all who desire to speak shall have spoken, and that all speeches and remarks be limited to five minutes, except with the unanimous consent of the convention.

The motion was seconded by Mr. Maine, of New York, and carried.

MR. MCGRAW—I wish to call the attention of the convention to a matter that has been neglected. I have been asked by several what this serious and mysterious matter was that occurred in the meeting this morning. I think we ought to know. It seems as though some member has broken a very serious rule, and we would like to know what it is.

SECRETARY RANDALL—Mr. President, in regard to this matter, it is not so serious as some of the members have been led to think. There is an unwritten law in this Association that any member who shall in his talks or papers refer to the Children of Israel, to Pharaoh or the making of brick with straw shall be fined \$5 for each and every offense. [Laughter.]

MR. HOWARD—Well, I am willing to pay the fine. [Laughter and applause.]

MR. ADAMS—As our brother gave us a very interesting paper and was not advised of this unwritten law, and so was in the same condition that Moses was in when the light went out, I suggest that he be excused and the fine remitted. [Laughter.] I will make it as a motion.

MR. ALSIP—Second the motion.

Motion put and carried amid great laughter and applause.

PRESIDENT ITTNER—As it is growing late, we will dispense with the remainder of the programme and take it up in the morning.

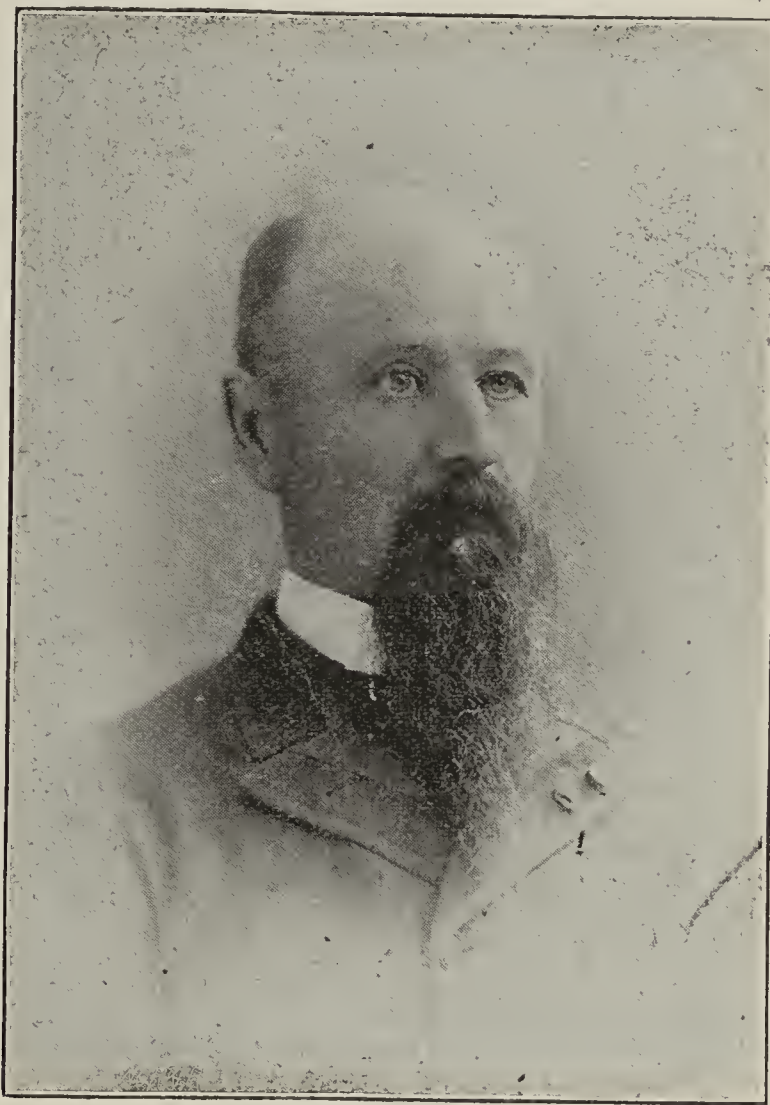
On motion of Mr. Purington, seconded by Mr. Howard, the convention adjourned.

## FOURTH SESSION.

PRESIDENT ITTNER called the convention to order at 9 o'clock, Thursday morning.

PRESIDENT ITTNER—I do not think it would be wise to defer the opening of our session longer, as we have the unfinished programme of yesterday to take up this morning. The first subject we have is "How Best to Dry Brick;" general discussion, led by Mr. D. G. Rhoads, Omaha, Neb. As Mr. Rhoads is not here, we will have to ask Mr. Randall to read his paper for him.

SECRETARY RANDALL—I very much regret that Mr. Rhoads is not present, because it is from his personal experience that he could help us most. He has made an innovation in the method of drying, using the escaping heat from the cooling kilns. He is an old soldier and is suffering from his war experience, and does not deem it wise to go far away from home during the cold weather. He has written a short paper and sent it to me to read for him.



D. G. RHOADS, OMAHA, NEB.

It does not cover the ground as thoroughly as we had hoped he would in conducting the discussion in person.

SECRETARY RANDALL then read Mr. Rhoads' paper, as follows:

## HOW BEST TO DRY BRICK.

BY D. G. RHOADS, OMAHA, NEB.

*Gentlemen of the Convention:*

This subject is, and has been for ages, a theme of contention with those engaged in the manufacture of constructive materials, made from clay products. The assignment of the subject to me for elucidation has been unfortunately placed. I shall, however, endeavor to treat the question from my standpoint of observation and experience. Making the honest confession now, that the "book larnin'" I have acquired from the multitude of papers written and published on the ever interesting and perplexing "How Best to Dry Brick," leaves me, with the babes in the woods, "innocent and differently informed." I admire the frankness and honesty of purpose of many of the writers on this subject who have expressed themselves, and I admit that nature, with the guiding hand of



an overruling Providence has provided means for the advancement of man's handiwork, whether in the manufacture of clay or other products.

My observation, however, has been, during the past twenty-five years, that the methods of producing clay products have undergone phenomenal improvements. The practices in vogue a short half century ago were then in keeping with the times and the demands of the trade and other branches of industries. During the lives of the majority of the honored members of this convention, inventions have been conceived, ingenuity developed, surpassing in magnitude and indispensable worth all previous mechanical inventions. The art of molding clay has likewise shared in the innovations of man's progressive ideas. The primitive pugging wheel, propelled by the faithful old ox, has been displaced by the modern substantial invaluable iron mill and electric dynamo. The formerly required acres of level grounds for drying brick are now used for other more profitable purposes. Drying sheds, of sufficient capacity to meet the output of the modern ingenious brick molding machines, are provided with heretofore unthought of appliance for drying brick successfully, by simply controlling and making use of the elements heretofore extravagantly wasted. Numerous thoughts are suggestive in the discussion of "how best to dry brick." First and all important is economy; next, character of clay. We believe that what is worth doing at all is worth doing well; that is, after providing your plant with the now apparent necessary modern machinery to insure a given paying daily quantity of molded brick, adequate facilities for the caring and preservation of the product should be provided, and not subject the entire expenditure in wages, and interest on investment to destruction by unexpected storms and frosts. We also believe all clays are capable of being speedily dried by artificial means.

It is true clays differ in character. Some clays can be immediately exposed to a hot sun without cracking or checking. Others would crack and crumble before being half dried. Refractory clays necessarily require patience and judicious methods of artificial drying processes. Practice and judgment are valuable adjuncts, and are constantly called upon in the working of any part of the brickyard. Your humble co-worker, with fixed confirmation, advocates artificial methods in drying molded products of clay, and when brick or tile plants, equipped with close or continuous kilns, means are at hand to utilize the cooling off heat. It can be controlled and conducted to drying sheds and used in drying advantageously and economically. A system of conducting cooling off heat from a continuous kiln, to a drying shed subdivided into closed common drying racks six feet wide by six feet high, has recently been invented. On the ground bottom of the rack heat distributing pipes are laid, from which the heat from the kiln is allowed to escape at regular intervals and pressure. Diffused to all parts of the closed racks, a strong current of heated air is produced by an overhead system of piping connected with an exhaust fan of requisite capacity, eliminating the vapor from the drying brick as rapidly as engendered. Plants being thus provided with heat saving kilns and drying apparatus are freed from the constant harassing anxieties of the open or sun drying brickmaker. Brick when racked in drying shed are destined for the kiln, labor expended promising sure valuable returns. Production of plant largely increased and quality of brick vastly improved. Brick plants not provided with track and car driers. We find the practice of setting green brick from stiff mud machines, set on edge and spaced on pallets made of two strips or pieces of light pine wood, three inches wide,  $\frac{5}{8}$  inches thick, cleated together near ends, leaving a space of two inches between the strips, and pallets set on racks with spaces of four inches between pallets, affords a current of warm air to pass through the pallets and tiers hastily drying from the bottom to top of racks uniformly without check or crack. To insure good burned brick, with the minimum percentage of clinkers or so called vitrified bats, the undoubted experience of the most practical brickmakers is the same in all kinds and qualities of clays. Too much care and attention can not be given the green or unburned brick before delivery to the kiln for setting; for unless brick are thoroughly dried they can not be well burned. Herein lies the essential feature to obtain a perfect brick.

I trust the ideas expressed "How best to dry brick," may smoothly pave the way of my co-workers, and bring them compensating returns.

PRESIDENT ITTNER—I would like to say, for the benefit of those not present last evening, that we adopted a resolution limiting speakers to five minutes, further providing that no member should speak twice on the same subject without the consent of the convention. Discussions on the paper just read are now in order.

JOHN MCKAY, Louisville, Ky.—I have a short paper I have prepared on the best way to dry brick, that I would like to read. Mr. McKay then read his paper, as follows:

#### HOW BEST TO DRY BRICK.

BY JOHN MCKAY, LOUISVILLE, KY.

The subject now under discussion—"How Best to Dry Brick"—is one which I have been brought into intimate contact with during the past few years, and it occurred to me that possibly I might (if your indulgence would permit) add a thought or suggestion to what has already been said which would be of some little value to you at least.

Fortunately for you I read the "timely hints" to long-winded orators, which were thrown out in the last issue of Brother Randall's paper, and conclude that it would be acting wisely to boil these remarks down to the lowest possible limit.

Therefore, what I have to say to you will be brief indeed, and I venture to say can be digested without any very disagreeable after-taste.

To return to our text—"How Best to Dry Brick"—is a query which no doubt many of you have propounded, and probably but few have solved to your entire satisfaction.

That it has been a perplexing question, one over which the midnight oil has often been burned, is a truth which no one familiar with the subject will deny.

A member of this Association remarked to me in a recent conversation that the manufacturers of brickmaking machinery had reached that point of mechanical skill that was well-nigh perfection; that, owing to this advanced stage, it was possible not only to produce a perfect brick quickly and cheaply, but also to determine its cost to the fraction of a cent.

Not so, however, with the drier—in his opinion. His prediction was that a fortune awaited the inventive genius who would devise a drier that would fully and completely meet the requirements of the various clay products.

It is but fair to add, however, that this gentleman's remarks were based on his own rather limited experience, and that, too, with a drier that was a number of years old.

He frankly admitted that he was not familiar with the very recent improvements and developments which had been made, therefore you will agree with me he was hardly competent to pass judgment in regard to the best that is offered in the line of driers to-day.

For fear of being considered egotistic, I will not maintain that the drier has reached that degree of perfection which is accredited the brick machine. Still, in justice to the various modern driers which are now bidding for your patronage, among them the "Standard," which I represent, I do affirm, *most emphatically*, and it must be apparent to all who have watched the "march of progress," that great strides have been made of late in the development and perfection of the drier, particularly the steam drier.

It may be true that the acme of perfection has not yet been reached, but my judgment, based upon actual results lately produced, is, that the day is not far distant, at any rate, when it will be, and even the most skeptical will be convinced that a truly practical, efficient and economical drier is within reach.

It is almost universally conceded, I think, that the idea of depending upon natural means (the sun and wind) for drying has been relegated to the past; the many advantages which an artificial drier possesses is also so well understood that it would be a waste of your time to discuss them.

Assuming, therefore, that we agree on these points, and that every brick manufacturer is alive to the importance of having their plants equipped with the most approved appliances in order to keep pace with his more progressive neighbor, which is absolutely essential in this age of progress and fierce competition, the only question to be determined is, *which one* of the various systems, now brought to your notice, through the medium of the trade papers, and the visits of the irrepressible traveling representative, will "*best dry your brick*."

Naturally, opinions differ greatly on this point; some lean toward the direct or furnace heat drier, some to the natural draft steam drier, others to the forced draft system, and still others to a combination of the latter two.

As to which is now, or will be in the future, the popular drier, depends, of course, upon which is proven to be best adapted to the drying of, not *any one* particular kind of brick, but *to all*.

A mistaken idea has existed that all clay products could be treated alike, and to this error, and to the fact that no adequate provision has ever been made to change conditions to suit the varied requirements can many of the failures that have occurred be ascribed.

Another difficulty encountered in the past has been the inability to so control the air currents, that the product *on all parts* of the car would be subjected to heat of the same absorbing power.

The natural tendency of heated air to rise to the top of the tunnel and expand almost its entire force upon the upper portion of the car to the detriment of the center and lower portion seems to have been lost sight of, as not until quite recently has there been that distribution of the heating surface made that would overcome this defect and insure that uniformity of heat so essential to a satisfactory drying process.

A drier, to be successful, practical and economical, must, in my judgment, possess the following qualifications:

In the first place, the drying elements (heat and circulation) must be susceptible of perfect regulation.

It must be within the province of the operator to secure that combination of conditions, which experience teaches is required for the kind of clay to be dried—whether it be high heat and rapid circulation, moderate heat and like circulation, dry or moist heat, as circumstances demand.

From an economical standpoint, all the heat should be applied that the nature of the material will stand without injury, as by referring to authoritative tables, giving the quantity of vapor or water which air is capable of absorbing at various temperatures, it will be found that an increase of twenty-five degrees renders the air capable of absorbing just about double the quantity of moisture, thus emphasizing the economy of using high temperatures.

Circulation of the heated air, which is an important factor in any drying process, must be *positive, uniform and entirely independent of outside influences*. This can best be accomplished by mechanical means.

The heating surface must be distributed in such a manner that the temperature at any vertical plane of the drier will be alike; this qualification is of the *utmost importance* and absolutely essential to secure that thoroughness and uniformity in the drying process that is demanded.

The ventilation of the drier must be so governed that the water smoke can be gotten rid of at any point in the drier that may be desired, in order to hasten



the drying of tough clays, or retained as is necessary when tender clays are dried to prevent cracking.

I think that you will agree with me in saying that a drier possessing the above mentioned characteristics will come pretty near filling that "long felt want."

That such a drier is now within your reach is a fact which my associates and myself are prepared to convince you of at a more opportune time and place.

Gentlemen, I thank you for your considerate attention, and hope (as I remarked in the beginning) that what I have said on this subject will prove of some little value to you at least.

#### WHITEWASHED BRICK.

MR. GUISE—I would like to ask a question. Will hot air have a tendency to whitewash brick? I heard it stated this morning, and if any member here has had such an experience I would like to know it. To make the matter more plain, I will state that I am using a dryer, a combination of hot air and steam, and I heard stated this morning that brick have been whitewashed in that way, and I would like to know if brick are whitewashed before they are burned.

PRESIDENT ITTNER—I would like to ask Mr. Taylor's opinion on this subject.

JAMES TAYLOR, Long Island City, N. Y.—I do not know whether I can be heard, as I am a little hoarse this morning. I believe that the cause of whitewash brick is an element contained in the crude clay. I have experimented a great deal in my business to try and find out what caused whitewashed brick. Up to a few years ago that was the greatest trouble the terra cotta men had to deal with. I had taken samples of clay that had been wrapped up in rubber cloths, and I have taken other samples that had been exposed and put brick made from the samples of clay in the kiln, some in the best places and some in the worst, and I have taken these samples out and wrapped them in water-proof paper immediately, allowing no air to touch them, and I find that these brick whitewash as badly as those I put in worse places.

MR. EUDALY—Mr. Guise wants to know whether his system of drying will produce whitewash more than any other method of drying.

MR. TAYLOR—My experience is that all things gained in brick during the process of drying is burned off. There are a good many theories. We have found out how to destroy whitewash. About nine years ago we found out that carbonate of barytes, a very small proportion will neutralize the salts which produce the whitewash on red brick. I am not prepared to state how small a proportion, but I know it will do it. Having found a remedy, we got very nearly rid of the disease. It is a queer thing that chemists do not help us to find out the disease, but give us a remedy and then find the disease. The cause of whitewash is the sulphur and lime contained in the clay. It appears during the process of drying, and here is where you get the impression that the drying is defective. The moisture from one brick is condensed on the other. Beyond doubt, the whitewash is due to an element in the clays themselves and the remedy is the use of carbonate of barytes, which makes the whitewash soluble.

MR. LANT—Has Mr. Guise any way of taking the salts out of his clay? In some cases, where you have not, it comes on the outside of the brick in burning and is burned there. In a good many cases, I have found that so. If you do not get it out in the dry house, it will burn on your clay.

MR. CRAFTS—I do not know that I can give any theories, but our experience is that brick are too moist when put in the kiln. Unless we dry them slowly and drive off all that moisture, we are almost sure to have whitewashed brick, either in burning with wood or with coal. Now, my neighbor was troubled with whitewash, and he was using sand that came from his bank, and his brick were as white as could be, and continued to be that way until he changed his sand and then the whitewash disappeared. We do not have any trouble in whitewash when we carefully dry our brick, not drying them too rapidly.

MR. EUDALY—I know that a number of prominent brickmakers would not agree that the whitewash is produced in the drying, but

I hold that it is. Of course, we observe it after the brick are dried. I, like Mr. Taylor, think that this element which causes the whitewash is in the clay, but I believe that certain conditions in the drying produce the whitewash on the surface of the brick, and the burning brings it out. I think that Mr. Taylor threw out a valuable hint to us in reference to the solubility of this stuff that produces the whitewash. All of you have noticed that the brick that are streaked with whitewash are not well burned brick. You do not see that on brick burned very hard, unless the whitewash was produced in drying and burned on. You take a green brick that is free from whitewash and burn it thoroughly, and I say it will not whitewash. If the whitewash is produced in the drying and is burned on the surface of the brick before the brick becomes hard, it is there and will show. Many of you who make repress brick in the old way and stack them up close will not have whitewashed brick. If the brick are hacked up openly they will show streaks of whitewash.

MR. TAYLOR—I want to set Friend Eudaly right, because in doing so I will set the convention right.



CYRUS CHAMBERS, JR., PHILADELPHIA, PA.

MR. EUDALY—If you succeed—

MR. TAYLOR—I will succeed, you bet. [Laughter.] Friend Eudaly has spoken of a whitewash that is as different as two things can be different. Friend Craft has spoken of a whitewash that developed on his brick and is there for all time, and it is the whitewash that comes on a brick after burning. If you will take an ounce of muriatic acid in a pail of water you can wash it off with a sponge. You try that with whitewash that is burned on the brick and you can not do anything with it. Brother Eudaly confirms my statement when he says that the brick, if hacked openly, will have streaks of whitewash, but will not if they are hacked close. The whitewash is contained in the clay. It rises during the process of burning as vapor. If the vapor is carried off your brick will come out a good color, but if your brick are put in the drier and dried faster than the vapor can be carried off, they will be whitewashed. Capt. Craft is just falling in with the idea I want the convention to study—that whitewash is the result of vapors not carried off; wherever it is deposited most, where the most water smoke goes, you will find the most whitewash.



MR. DONALD McDONALD—My experience is that brick may come out of the kiln a good color, and when set in the wall will whitewash, and you can wash it off and it will come back. Mr. Taylor suggests that carbonate of barytes will remove it. I would like to know if any one has tried the process. With terra cotta, cost is a secondary consideration. I would like to know how much it will cost on a brick wall.

MR. GATES—This is a question I have wrestled with a great deal. I want to say there are two kinds of whitewash. The kind that appears in the drying, and is fixed in the burning, and the other appears in the wall after the brick are set. I am going to say a word about the last. I am perfectly satisfied that carbonate of lime is soluble. The more you observe the drying of the clay the closer you get to a solution of this question. The whitewash is brought out simply because it is soluble, and it is deposited and left there and water will not affect it. I have tried in an experimental way so as to leave it insoluble, so that in the burning it would fuse on the surface and wash off. You can see it on the body of the ware where it is thick, and it would look as though it would be perfectly white, yet in fusing it would disappear. The Chicago brick are all white. We are making some coping for a firm in Chicago. We sent them some a good clear red, and we received a letter from the gentleman saying our coping was no good. I went back to the bank, took some clays, changed it a little in the drying and water smoking, using the same clay exactly, and shipped a car load to them and asked for results, and he said the coping was all right. It was burned with the same heat and out of the same clay but was dried a little differently and was coated all over. In treating on this subject we were using the water from a little pond, and later in the season we had a lack of rain and we came to a point where we were being supplied entirely by spring water, and I found that we were putting the lime into our clay with our water. I demonstrated the matter by mixing a sample with rain water and some with spring water, and I found we were putting it in the clay with our water. We must look at this question very closely. We may be putting something into our clay with our water that we do not know of. Mr. Taylor has given some very valuable points.

MR. GUISE—My experience is that where water smoke hangs longest in the clay you get whitewash. That comes from the fact that the brick are burned more thoroughly on the surface than on the inside. I burned two kilns of brick that were dried by the steam process, and they were all right; but it seems since I have introduced hot air that the brick are whitewashed, and I think that comes from drying with the hot air, which contains the sulphur that comes from the coal. I can not explain it in any other way. If any one can explain it I would like to hear it.

MR. PURINGTON—I am as little interested in the subject of whitewash as any one in the convention, but I want to take exception to the remarks of friend Eudaly. It is not often that I take exception to Bro. Eudaly, but I must this time. This may make Mr. Eudaly feel badly, but I can not help it. He says that the harder you burn a brick the less whitewash you will have. I take the position that the harder you burn brick the more whitewash exudes from them. I can prove it.

MR. EUDALY—Mr. Guise has explained to you the very way to account for the whitewash. If Mr. Purington refers to the whitewash that appears in the burning of the brick, he is entirely correct. If he refers to the kind of whitewash Mr. Guise speaks of, he is not.

MR. TAYLOR—I want to set Bro. McDonald right in this matter. I said that carbonate of barytes would fix whitewash which had developed in the process of manufacture, but carbonate of barytes has no connection whatever with whitewash developed in the brick after they are laid in the building. Mr. Purington is right; the whitewash that comes on the brick after they are laid in the wall develops more on hard brick than on soft. I want to help brick-makers fortify themselves against false attacks, and I want to tell you that that whitewash that comes on the brick after they are

laid in the wall is nothing whatever to be charged against the brickmaker. It is sometimes put on the brick. I will guarantee you that when a brickmaker receives word from an architect or builder that his brick are whitewashed in the building; if he will take a trowel he will find that he can scrape this whitewash off. He will find it on the gables or cornices of the building more than any other place. If he will take his jack knife and go over the building he will find that there is no mortar between the brick. The cause of the whitewash is the water going through and percolating down through the inside, and you will find this on pressed or any kind of brick. It can be avoided if you perfect your drainage so your walls keep dry on top. You can wash it off every summer. You mix water and lime and put it in a bottle and you will find the lime deposited in the bottom. If it were not in the bottle you could not see it. So you can not see the whitewash on the white brick, but it is there.

MR. McDONALD—Why are the brick whitewashed in the pile before they are put in the building, and have no mortar between them?

MR. TAYLOR—I can not tell you that, unless there is some lime in the water that goes into the brick.

MR. McDONALD—But if there is no lime in the water? If it is rain water?

MR. TAYLOR—Rain water will contain lime if it comes through a limestone region.

MR. SNELL—I am not going to explode any theories. On our yard we have to burn vitrified pavers, and we find that the vitrified pavers in the top of the kiln have no whitewash on them and the first three course of salmon brick will be as white as paper, and there is no lime in it either. Is there not a third kind of whitewash? It is really not a whitewash but a sulphur. That sulphur is not in the drying, but certainly in the burning; I have found that by experiment. I was called to a certain yard where they claimed they could not burn a single brick that was not whitewashed. I examined the brick carefully and found in the bottom the so-called whitewash was as hard as a rock, on the top it was softer. I found in the bottom of the kiln it was green, and I came to the conclusion that it was not whitewash at all. We burned some brick with wood and no whitewash appeared on them, and we burned some with coal and they were whitewashed. I said we must get some coal without any sulphur. I went and got some coal that I know did not have any sulphur in it, and I burned a kiln with it and those brick were as red as any you ever saw. Of course, the man said, "You can not do it again."

MR. ENGLS—Before this question of drying is put aside, I want to say a word. Last year at Washington when the question of steam driers was discussed, Mr. McCain, of Denver, told of a mistake that had been made in putting up his drier. He said he thought no brickmaker should put in a drier without a guarantee, and that he ought not pay for it until that guarantee was fulfilled. As a drier man, I have reason to know that a great many have put in steam driers in the past year, and I think that the confidence in steam driers must have been revived. I merely wished to call attention to this.

MR. PEARSON—I am but a small body, as far as making and drying brick are concerned. We do not use any patent drier, we dry by nature, and with our machine-made brick, we do not have any trouble with this whitewash. Our hand-made brick whitewash even in the shed. They show the white feather in the pile, before they come in contact with the mortar. I do not think the water or weather has anything to do with it.

MR. MORGAN—I would just like to ask a question to see if I am right as to my conclusion on a certain point that Brother Snell has brought up. Is not this green scum that Brother Snell designates as sulphur, is it not a vegetable matter? If I am wrong I would be exceedingly glad to be corrected. There are others interested in this matter beside myself who have some views on the question. This green scum comes on the brick in England as well as in



America, and I have always been lead to believe it was vegetable matter.

MR. SNELL—I do not see how any vegetable matter could stand a white heat. I think this green scum that I call sulphur must have been brought out by heating the sulphur and has turned it green and made the whitewash green. I think it is nothing but sulphur.

MR. STAFFORD—This is a question that I am interested in. I am troubled with this whitewash a great deal. I came here expecting to learn something from these men in regard to it, but I fear I must go home without finding out what I wanted to know.

FRANK STILES—This is a matter that our people are interested in as well as some others. I came in a little late, and the question I want to ask may have been answered. I want to know in regard to brick whitewashing in the building in different parts of the country where water does not come in contact with them. We are troubled with this whitewash the same as others. We furnished two jobs from the same kiln of brick, one went in one direction and one in another, and they are laid up in two different buildings, and while one building will show no whitewash, the other will at times be as white as chalk. These same brick when piled out where the water can reach them will show no whitewash, but when laid up in the building will show whitewash, and I would like to have some gentleman tell me the cause.

MR. DINGEE, Philadelphia, Pa.—I came in too late to hear the discussion on drying brick, but I want to say, in reply to Mr. Stiles' question about whitewash on the brick in the wall: I have had a great experience and I have made it a study. I find it on a house facing the east, on the second and third stories of the house, and on a house facing the north, and that they always turn white after a storm. The only reason I can give is that the atmosphere is charged with moisture and sulphur and the brick become damp, and the sun rising from the east in the morning draws the sulphur and dampness from the brick, and it is retained on the surface. On the west and south sides of the street you never see any whitewash, and it is on account of their being dried out before the sun has a chance to throw its heat on them. I tested the matter. I took a brick and dampened it and put it on a chimney top, and I took it away after it had been there a while, and put it where the sun could reach it and I saw where the sulphur came from. If the gentlemen will take notice he will always find where the rays of the sun strike the brick early in the morning is where he will find his whitewashed brick. I do not think the mortar has anything to do with it. I find that with the black mortar they are using now the brick will turn white just the same.

MR. PENFIELD—I would like to ask if Professor Elsom is in the room. He is a professor of chemistry, and ought to be able to give us some information on this subject.

PROF. ELSOM—Well, I do not know where to begin. If you will ask me some questions, I will endeavor to answer them.

MR. PENFIELD—I have heard so many reasons, and some of them seem reasonable, and I thought Prof. Elsom could give us his idea as to the cause from a chemist's standpoint.

MR. ELSOM—There are a variety of causes for whitewash. I just heard as I came in a gentleman asking why brick that would not whitewash when in the shed would whitewash when laying in a building. In answer to that question, I will say that the analysis of whitewash that I have made, that comes from the outside of buildings, show that it is composed of phosphate of magnesia. The whitewash does not appear in the sheds, because the brick are not exposed to the chemical influence of the atmosphere impregnated with the elements which renders the water of crystallization and the phosphate of magnesia soluble. Hence it does not appear.

MR. STAFFORD—Then you think it is due to the atmosphere?

MR. ELSOM—In part.

MR. EUDALY—Do I understand you to make any distinction between the atmosphere that should happen to get in the shed and the atmosphere just outside of the shed?

MR. ELSOM—The brick under the shed are not exposed to the

same atmosphere that the brick just outside the shed are. The atmosphere on the outside of the shed is coming down.

MR. SNELL—I want to ask Mr. Elsom whether there are not two kinds of whitewash, a green and a white? In piling brick on the ground, we find that the first three brick on top were as white as snow, while the brick on the bottom were green. I would like to know where it comes from.

MR. STILES—I would like to ask the gentleman if he can give a reason why the brick in our particular locality, where piled outside of the shed and being rained upon and setting there for two years, or any length of time, was never known to show whitewash, or this magnesia, that you speak of, until laid in the wall and mixed with mortar and cement. It is the lime in the cement. Can you give any reason why, when piled outside of the shed, they never show whitewash until laid in the wall?

MR. ELSOM—I do not think I have the analysis of any clays from your state. The kind of whitewash may be different from that about here.



J. W. CARSON, BRUSSELS, ILL.

PRESIDENT ITTNER—I would like to ask Mr. Stiles if he is sure his brick do not show this discoloration in the pile.

MR. STILES—They do not.

PROF. ELSOM—I tell you, friend Stiles, what I will do. It may be that the cause of your whitewash is not phosphate of magnesia. Now, if you will send me about eight ounces of that whitewash, I will examine it free of charge. You can send it to me at different times, and I will reply to it as it comes in, and I will guarantee you that it will not cost you anything. I would like to know for my own satisfaction the cause of this whitewash.

MR. MORRISON—Two buildings in Louisville were built side by side, one with brick from St. Louis and the other with brick from Philadelphia; were laid up with the same mortar and at the same time. Would be possible for this whitewash to show on one and not on the other?

MR. ELSOM—Yes, sir.

MR. STILES—I was in New London about a year ago, and I noticed a building laid up with common brick and pressed brick,



and it had pilasters of pressed brick with stone trimmings, and I noticed that the whitewash commenced at the common brick and went through the stone down through the press brick all alike.

MR. DINGEE—My theory exactly. The brick were on the wrong side of the street. If you put St. Louis brick on the side of the street facing the east and Philadelphia brick on the side facing the west, the St. Louis brick will whitewash and those on the other side of the street will not. But if you change the brick and put the Philadelphia brick on the other side of the street, and the St. Louis brick on the side where the Philadelphia brick had been, the Philadelphia brick will whitewash and the St. Louis brick will not. The whitest building that I ever saw was the Old Independence Hall on the side of the street facing the north, and on the other side of the street stands the American Hotel with not a white brick. These brick were made in New England and burned with wood hundred of years ago.

MR. STILES—Will you please tell me why the same brick from the same kiln laid on the same side of the street, or the same side exposed to the weather—why one building put up to-day and another right along side of it, why the one building will whitewash and the other will not?

PROF. ELSOM—If you will tell me that the brick were the same then I say it is caused by the mortar.

MR. PIKE—Mr. Dingee tells me that sulphur from coal and fuel causes whitewash some times. I would like to ask how it is that a brick building several miles in the country away from these causes can become whitewashed.

MR. DINGEE—I will tell you. If the brick were made from a clay that had been taken from a field that had been used for a pasture, you would get ammonia in the clay and that would turn your brick white. I had a drier where we used hot air and steam from the boilers, and I never got a brick out of that kiln that was not whitewashed. When that drier burned down and I used steam, I did not have that trouble. I had a fine kiln of pressed brick and there were only two arches in the whole kiln that were white.

MR. HAEGER—I simply wish to state what a German chemist told me. He said if the clay contained minerals, such as sulphur, carbonate of lime or magnesia, that the brick would show this whitewash.

PRESIDENT ITTNER—While this discussion is very interesting and will appear upon the record, and will, no doubt, prove a source of information to all of us, yet we are a little out of order, for we have drifted from the question of drying into that of efflorescence. We will now take up the next order of business, which is the first number on the regular programme for to-day. An address, "Manufacture of Brick from Shale by the Dry Process," by J. R. Figh, Dallas, Texas. Mr. Figh not being present, we will call upon Mr. Randall to read his paper for him.

On motion of Mr. Crafts the reading of the paper was deferred.

PRESIDENT ITTNER—The next number on the programme is "Old Fogy Brickmaking," by E. O. Glidden, Boston, Mass.

SECRETARY RANDALL—Mr. Glidden has given me his paper to read for him, as his voice is not in good condition.

MR. RANDALL then read Mr. Glidden's paper, as follows:

#### OLD FOGY BRICKMAKING.

BY E. O. GLIDDEN, BOSTON, MASS.

*Mr. Chairman and Gentlemen of the Convention:*

I desire to thank you for the honor which I have, as one of the newer members of the Association, in addressing you. The literary side of my life-work which this convention represents is to me, as I suppose it is to a majority of its members, an entirely new one. But while novel, it is none the less interesting, and I most heartily and cordially approve the objects which this convention represents.

I must confess that the call to this duty has meant a great embarrassment to me. Perhaps it ought not to be so, but I venture to say that my experience is not uncommon to our members who are called to speak, if they would be frank

about it. I should not be surprised if some of our other members, who have given and are yet to give such excellent articles to this convention, have had their sleep as disturbed and their dreams as troubled as mine have been, in preparation. The calling we follow does not make orators of many of us, nor specially adapt us to public speech. But to my mind it is not less honorable or less important for that reason. Indeed, in my opinion, there is no calling nobler. There are others pleasanter, perhaps; others more admired, others more desired and esteemed by those whose ambition is to be much seen and heard of men. But ours is at the foundation of civilization and progress. No calling or pursuit of men can boast a prouder record of antiquity, or is grander in the simple dignity of its simplicity. We touch every vein of commercial and industrial activity. We create the home, the shop, the mart of commerce. No massive structure that adorns our land but has been reared upon our foundation. The brickmaker attended the birth of civilization. He has led her every advance. Our art to-day is the most essential factor in life. The orator, the philosopher, the clergyman, the physician, the statesman, the merchant—all these are the convenience, the ornaments of life and society. The brickmaker is the necessity. Our ancient craftsmen made civilization possible.

But you will pardon me if I have diverged from my assigned subject. Some one has said that there is an "eternal fitness" of things, so I suppose there is some "eternal fitness" in calling upon me, a New England man, born upon the bleak coast of our most northeasterly state, and working out the simpler problems of life in the old Bay State, to respond for the "Old Fogyism" of our craft. I suppose you assume that from birth and education I naturally know more about the subject of "Old Fogyism" than some of you gentlemen from the South or West. I trust I may not be regarded disloyal to the state of my birth or my adoption, when I state frankly that in many respects we of the East must concede superiority to you of the South and West. It is useless for us to deny the fact; it is simple justice to you to concede it. In the brief moment of your time that I am to occupy, I do not propose to discuss the reasons of this—even if I know what they are. The large necessities of the most wonderful and rapid commercial and industrial development the world has ever witnessed have demanded of you, especially, your best endeavors, and nobly have you responded. In the westward march of progress your brickmakers have led the way. You have furnished the materials for the homes and the buildings of trade and industry. For all this honor is due you; for the splendid part you have played in this development you have deserved the admiration and gratitude of the people throughout our land, and these are to you cheerfully given.

When I think of the primitive methods still in vogue with us; when I picture the farmer brickmaker with his clay bank, his ancient weather-beaten grinding mill; his equally ancient horse treading the endless circle of his weary task, the same to-day as in my boyhood and my father's boyhood and my grandfather's boyhood, and compare these with your magnificent yards, your improved machinery and appliances, and wonderful output of product, I feel a certain regret and a little bit of shame; and yet I feel a certain pride as well, for if some of us make brick still as our fathers and grandfathers did, we make them well. They were the pioneers. It is upon the knowledge and the experience of our forefathers that you have founded your progress, and to them we are indebted for the advance which we ourselves have made. Our fathers did well their part. We have now in our city buildings in which there are brick older by decades than the cities which you have built. Their product has stood the test of years, yes, of centuries now. Well have they protected our sturdy people from stern blasts and trying rigor of our New England climate, and they remain now the lasting monuments of caretaking, faithful industry and honest craft. You have outstripped us, indeed, in some ways, especially in your immense facility and cheapness of production. I trust that in character and stability your product may no less well than ours stand the test of centuries.

But while the early and conservative methods of brickmaking which you may characterize as "old fogyism" still prevail among us in some localities, and especially about the large centers of trade and population, our eastern brickmakers are abreast with the times. From what personal observation I have been able to make, I judge that some of them in some respects are leading the western brickmakers, and to the eastern man, if I am correctly informed, you are indebted for many of the contrivances and inventions which have contributed to the character and amount of your product, and I believe, from my practical experience in dealing with brick coming from all parts of the country, that the New England brick of our better and more careful manufacture are still the equal, if not superior, to any brick produced in your locality. There is, to be sure, a conservatism among us that is always found in a country of old and established methods and habits, but our proud old commonwealth is not accustomed to follow. Her history has been one of leadership in every branch of our nation's progress—in industries as well as statesmanship. You must now look well to your laurels. The spirit of progress is abroad among us. But if New England must follow and be defeated in the generous rivalry, to whom can she more gracefully or proudly give the honor of leadership than to her own sons. For you brickmakers of the West and South, many, if not all, are New Englanders, I believe, exercising in a broader field the talent, the ingenuity and the industry that you brought from the land of your birth. We have pride, therefore, in your success as well as our own, and we rejoice heartily and severally in your splendid achievements.

PRESIDENT ITTNER—If there is no desire to discuss this paper, we will pass on to the next number on the programme.



## THE EVOLUTION OF THE BRICK MACHINE.

BY CYRUS CHAMBERS, JR., PHILADELPHIA, PA.

Perhaps "The Evolution of the Brickmaker," would have been a more appropriate title for this paper, but as our honorable secretary selected this as a subject to be treated at the convention, it may be enlarged to include both.

My earliest recollection of a brickyard was the abandoned one in my father's meadow, a *much burnt monument* in the shape of "stuck arches," the "stick" extending high above the "running courses."

All traces of a brickyard had vanished, except this monument to the skill of the "burner" and the clay pits, which made skating parks in winter, and most admirable fishing ground for "minnows" and "sun fish" in summer. I remember that these same fish were wonderfully skilled in "taking the worm" from "the bent pin," and avoiding being "landed" by the beautiful white cotton string secured from the wrappings of the last purchase of sugar, made by my mother. If my recollection be correct, some of the "sugar" went with the string, but not to the fish.

The next investigation into the art of brickmaking was to the yard of a neighboring farm, that afterwards became the country seat of our much beloved poet, Bayard Taylor, and where he built the beautiful "Cedar Croft" in after years.

At this enchanted ground the young investigator found one shed, probably one hundred feet in length, of low construction, made of rough, round, forked sticks set in the ground, with the crotch up, in which laid sapling poles, supporting boards of various thickness, widths and lengths, some sagging to a graceful curve and others endeavoring, by their straightness, to keep up the dignity of the structure, as a drying shed.

In the clay pit I found what proved to be a human being, with arms bared above the elbows, feet and legs without covering below the thighs, bespattered with mud from his eyes down, the coating increasing in thickness as it reached his heels.

This "artisan" (?) was tramping in an oven-shaped mound of soft mud up to his knees, and with all the diligence attributed to the beaver.

Out in the glaring heat of a midday summer's sun stood a man at a low table with a square (?) box made of wood, which he alternately dipped into water, then into sand, and finally filled it with a portion of the tramped clay from his partner's mound—the brick was thus finally "molded" and borne off by the diminutive "apprentice" and dumped in a misshapen mass upon the leveled ground. The "molder" had eyes, but they were only visible by their brightness through the two upper cracks in the dried coating of clay and sand covering his face.

In after years, when childhood had given way to boyhood, in teens, an older brother was casting about for a business (having grown tired of the "whirr" of the spinning jenny which he operated in our father's factory), visited a neighboring city to investigate and witness the trial of a *wonderful (?)* invention for the purpose of making brick by "the dry clay process."

This machine had the usual number of cog-wheels, cams, toggles, levers, abrupt movements of large masses, etc., all to go through their evolutions for each brick produced.

A boy that had grown up in a woolen mill, and ran a saw mill, needed no long investigation nor a second visit to determine the impracticability of such devices under the *abrading* process and influence of the clay.

Returning home disabused of the idea that he had found the long-sought for desideratum, he said to me, "Cy., I wish you would make me a brick machine."

"Cy." commenced.

After studying the then prevailing methods of making brick in vogue then in the vicinity of Philadelphia, and carefully noting the various processes, and visiting numerous locations where other processes had been tried, a systematic course of experiments was entered into to determine a practical, if not the best process, by which brick could be produced by machinery.

It was soon apparent that a "machine" which molded brick only was of little or no practical value, because the molding alone was but a small part of the labor and expense attending the production of brick. There was the preparation of the clay, by "winter digging," the mixing of the various quantities, the tempering, "off-bearing," "drying," "edging-up," and, finally, the taking in and the "hacking under cover," if the storms permitted them to reach a proper condition for the later processes; if not, then they were shovelled back into the pit to be "ground over," and all the subsequent operations repeated.

Next the "dry clay process" was examined into, with the hope that it offered a more encouraging outlook for the youthful mechanic and inventor.

Some samples of fine, *tenacious* clay were procured, *thoroughly (?) dried* and pulverized (a process costing far more than to make the wet material into brick at once). So dry and fine was this clay that by throwing a handful of it into the air it floated off, and you couldn't tell where it fell.

This material, thus prepared, was put into a *round mold* of great strength turned out true inside in a lathe and furnished with a plunger, snugly fitted. In turning out the mold the lathe man withdrew the turning tool without easing up the cut, thus producing a fine groove throughout the length of the mold.

This mold being filled with the finely pulverized and dry clay was put under a hydraulic press of great power and submitted to a pressure of six hundred tons (600) or over one hundred and twenty thousand (120,000) pounds to the square inch.

What was the result?

Notwithstanding this clay had been in a steam heated room for over three months, this enormous pressure caused the water to flow from it all around the plunger, and at the fine groove (made by the withdrawal of the turning tool) the

clay issued in a stream as fine as a human hair—curling in all directions like a thing of life.

This brick was burned, and upon examination after burning showed each granule of clay in its primitive shape with *fine fissures* between each, clearly demonstrating the want of thorough incorporation and adhesion of the various particles.

Upon submerging this round brick in water it absorbed five and fifty-five one hundredths (5.55) per cent. of its weight, notwithstanding it was "hard burnt," almost to vitrification.

This demonstrates four things:

First. To dry clay perfectly is impracticable, if not impossible.

Second. That no reasonable amount of pressure alone will cause the various particles of ordinary clay to adhere and form one solid homogeneous mass.

Third. That argillaceous and sandy material so put together and burned was a great absorber of moisture.

Fourth. That a brick so made, burned and soaked would not stand "freezing and thawing," but would crumble to dust, and each granule of sand and each particle of clay remain in its primitive disconnected condition, and could be distinguished in the blackened mass.

Discouraged by the investigations into the two proposed extreme plans for a process upon which to construct a machine, an intermediate process was conceived of and experimented upon with gratifying results.



JAS. TAYLOR, LONG ISLAND CITY, N. Y.

By working the clay as nature furnished it—with the natural moisture in it—all time and expense of drying the clay was avoided.

By mixing and tempering in a stiff consistency, the granular part of the material was thereby incorporated with that of the plastic, and a thoroughly homogeneous compound produced. When forced to shape, "molded" in this stiff condition, the bricks could be at once *handled*, wheeled to sheds, and "hacked up" out of the weather, thus avoiding the expense of floors, "edging up" and "taking in." Samples made by this process stood all the tests of strength, absorption, frost, etc., and it was determined to proceed to construct a working model upon this general principle; that is, what is now known as the stiff tempered clay process.

But the young mechanic had much to learn yet. The power required to temper and mold "stiff clay" was not in the books. Experiments had to be made to get the necessary data from which to construct even a working model upon this principle.

The power required to temper and mold this stiff clay was so far beyond that which any machinery then in existence for working clay would stand that the whole field had to be explored from the beginning to the end, and not withstanding all this the first model machine was continually breaking down or sticking fast.

When it broke down the parts breaking were strengthened and improved in design, and when it "stuck fast" the reason was examined into and finally a working model was produced which *tempered its own clay, molded the same*



into a continuous bar one-third the thickness and breadth of that of a Philadelphia brick. This bar was severed into "brick lengths" by an automatic *cut-off*, a knife on a wheel, whose speed was regulated by the flow of the clay from the die, and the brick so severed off borne on an endless apron ready to be hacked.

The miniature brick produced by this model were burned and examined by expert brickmakers, masons and scientists. Their strength was tested and all kinds of critical examinations made, particularly the incorporation of the various materials or various particles entering into their composition. I remember one old "Friend," a practical brickmaker, who scanned closely the texture from under his broad brim and examined closely a piece, not larger than a pea, said, "W-c-l-l! it is well tempered, but I don't understand why the 'skin' is so fine and so much richer in color than the rest of the brick."

Here was something that had escaped our notice entirely.

Upon examination of these toy bricks, under his guidance, we saw that the die surface of the brick was exceedingly *fine*, smooth and of a much richer cherry-red than the body of the brick.

No sand having been used in molding, it could not be attributed to the superior coloring of the sand, besides it was much *finer* and smoother than the "skin" produced by our finest Philadelphia sand.

Farther experience taught that this result was due to the action of the machine upon the clay by moving the particles through and between each other while under great pressure. The finer portions of the materials were forced into the interstices of the larger ones, and to the surface between the coarse particles and the die, thus thoroughly cementing together the granules of sand and producing a "skin" of the finer or loamy portions, which "color" in burning, and thus producing that effect so much prized by the manufactures of "red brick."

Knowing that to embark in the construction of a large machine for the manufacture of brick meant much labor, time, and the expenditure of much money, and that it wasn't to be entered into without due consideration, an invitation was sent to our father, then well advanced in years, to come to Philadelphia and see the model machine. This he did, for he was a great lover of machinery, a born mechanic of no mean order, and had the success of his "boys" at heart.

He was taken into the room where the model was and it was set running, he looking the machine over carefully without uttering a single word. No explanation was needed by him, he reading from the machine faster than we could describe it. Then he went to one side and took a seat on a tressle, watching the machine run for more than an hour. Not a question asked. Not a word uttered, but a silent examination from the beginning of the operation of feeding the crude clay into the machine until the finished brick reached the end of the off-bearing apron.

Presently he rose and said: "Well, boys," (we were men grown then) "I will risk all I am worth on that machine."

"THE DIE WAS CAST." When he approved there was no longer hesitancy, but to the construction of a large machine at once, notwithstanding dollars were scarce, and the mutterings of the coming "unpleasantness" were heard in the distance, for this was in 1860.

This machine was the *first complete* automatic machine ever produced, performing all of these operations in one continuous operation, by one complete embodied mechanism. A recent and thorough search into the *twenty-four thousand, two hundred and fifty-four* (24,254) patents issued by the United States Patent Offices, and those of foreign countries, for brickmaking machines, fails to show any complete automatic practical machine for producing brick or tile, upon this principle prior to the completion of this model machine. This machine (working model) was conceived and constructed in the latter part of 1860. Working drawings were made for a *large machine* (large indeed it was, a single piece weighing over five thousand pounds) calculations were made from the best data we had gathered from the numerous models we had broken down, for the strength and power required, and the machine constructed, erected and tested in the shop.

Our shop was then in the second story of a building at Seventh and Cherry streets, and the owner was afraid it would break his building down, the complete machine weighing over ten tons.

We stalled his one hundred horse power engine, smashed down spur wheels of enormous strength, twisted off heavy shafts, and parted bolt after bolt before we learned the properties required for the machine, and the power required to temper and mould stiff clay.

Finally the machine worked—producing *thirty* brick per minute.

An exhibition was given, to which our numerous friends and the brickmakers of Philadelphia were invited.

Our *friends* were delighted, but how about the other class, from whose pockets we hoped to extract the thousands of dollars we had expended in this enterprise.

Many objections were urged by the practical brickmaker, the "hand men," as they all were at that time. There is "no sand on them," "their ends are rough," "they are of unequal lengths," "the clay is stratified," "the clay is laminated," etc., and according to the general opinion the machine was "no good."

Discouraged by these opinions, but not disheartened, the objections were carefully studied and all were overcome except the "rough ends" and the lamination of the clay.

The cut-off was so improved as to meet practically the objection of varying length. A sanding device was invented, whereby a coating of sand was thrown over the freshly molded and moist brick; but all efforts to eliminate the "stratification" in the clay were unsuccessful, except in degree. These changes and experiments consumed another year. The excitement of a civil war was upon

us, labor was becoming scarce and rapidly increasing in cost. The brick consumer became less fastidious and we concluded then, that then was the time to make an actual test in the yard, and the only way to demonstrate the practicability or impracticability of manufacturing brick by this then novel means.

Knowing full well that to put the machine into an already established brickyard, where we would not have full and absolute control, would probably lead to failure, an abandoned yard at Pea Shore, N. J., was rented, the remains of an engine bought and exhumed from under the sand that had drifted over it for years, the machine erected and all was ready for a final start.

"Why! Chambers, you are not going to start your machine in that 'graveyard' of brick machines, are you? Every machine ever tried in that clay was a failure (and they were many), hence the name 'graveyard.'"

We started our machine in the early part of '62. It ran beautifully for about fifty seconds, producing nineteen bricks, when a crack was heard, the machine ceased to revolve, and all was silent except the engine; it, being relieved of its load, "*ran off*." My brother counted the bricks so made, in a mournful tone, "N-i-n-e-t-e-e-n b-r-i-c-k-s, and each one cost over one hundred dollars." While he was counting the cost of the bricks, I was getting out the broken parts of the machine and the next train bore me to the shop for a new and heavier spur gear. One was selected, guaranteed by the founder to drive any "MUD SQUIRT" that we might ever build. Yes, indeed, that would turn the "SAUSAGE STUFFER."

At this critical period, I would have rather given my left arm, than have had this accident to happen.

Soon the damage was repaired and the machine started, running for the balance of the season, the bricks drying and burning, notwithstanding the many prophecies that they would go "to pieces in the kilns."

Our first order for brick made by this process was from a friend for two small houses, the second for *two millions* (2,000,000), with the stipulation that, at the option of the owners, the walls were to be measured, if the count was not satisfactory, and settlement made accordingly. Measurement was ordered. Then a new development appeared relative to the quality of these brick. They overran, by measurement, the count about 10 per cent., owing to their superior strength and consequently little or no waste.

The "lamination" (which was so much feared, criticised, and condemned at first) proved to be of great merit, adding great strength to the brick, crosswise.

Clay, like many other materials, arranges its particles *lengthwise* while being rolled, drawn or forced through dies, hence brick so made were much stronger in cross section than those of homogeneous structure.

The first full-sized machine was replaced at the end of the season with one of improved construction, which has been in constant use ever since. Thirty years is no mean life for any machine, much less for one working in such abrading materials as clay and sand.

Now, our troubles were over (?) and we only had to build and sell machines; but, alas! the devices which worked so satisfactory in one bank of clay refused to operate in that from the other side of the fence.

The man who thinks the inventor has easy work and reaps all the profit, is much mistaken.

Every variety of clay presents a new problem. A process or a machine, entirely successful in one material, may prove an utter failure in another. To adapt the machine to the various qualities of clay throughout the civilized world has been the work of over thirty years, and the task is not yet completed. Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, the Carolinas, Florida and Louisiana, each have their peculiar qualities of clay, to say nothing of our long list of Western States. The clay of Duluth, Minn., was a "sticker." It is said of it that if a man goes into the bank to dig, his spade sticks fast, and in the effort to get it out he himself is entrapped, and another man is required to get the first one out. A machine, eminently successful in a hundred different clays, was an utter failure at Duluth.

Each failure, however, was but a spur to renewed effort. The nature of the new material was carefully studied, the machine modified to suit its requirements, and, strange to say, every change so made was for the betterment of the machine in all the clays it had previously worked.

The first complete automatic expressing brickmaking machine (producing about thirty thousand brick in ten hours) was a cumbersome, heavy affair, and of too great a capacity (?) for the many then would-be purchasers. A machine of less weight and cost was much sought after, and we set about to produce one small and inexpensive for the smaller towns and villages, and proposed to call it the "VILLAGE BRICK MACHINE."

In the designing and construction of this machine all the little points learned by experience were embodied, the exact proportions of each part with another, carefully studied and calculated, and a machine produced that instead of being of small capacity nearly trebled the output of its larger and older brother.

A working model of this machine was exhibited at the Centennial.

Not to be thus baffled, a third effort was made to produce a machine of small cost and capacity. Taking advantage of the still greater experience in clays from various parts of the world, a machine was produced still more complete in detail and reliable in operation, but in capacity still far beyond the requirements for the "VILLAGE."

A fourth effort resulted in the production of one sufficiently meager in its output, but so simple in construction and "kind" and efficient in operation that its novel features are accepted to-day for the production of the best quality and the greatest quantity of common brick.

Taking the best parts of these three later machines and embodying them into one *grand whole*, we have what is known as the "B-CD," each of its predecessors being styled in its turn The A, The B, The C, and The D. Thus you see how our most successful machine, The B-CD, was evolved.



During these years many other inventors and experimenters were engaged in efforts to improve the ceramic art. No better evidence of this can be adduced than of the twenty-four thousand, seven hundred and twenty-one (24,721) patents issued by the United States patent office alone for improvements in machinery and kilns, to say nothing of those of foreign countries. Three hundred and twenty-three (323) patents were granted in the United States for screw machines: four hundred and forty-two (442) for reciprocating; three hundred and five (305) for rotatory; three hundred and ninety-four (394) for tile machines, and four hundred and sixty-seven (467) for improvements in kilns.

It is no small task for the brickmaker to select the most efficient machines and kilns for manufacturing brick from the above list. Indeed, not one in a hundred of these machines are at all practical, and most likely *that one* is so poorly constructed as to be wholly worthless.

Certain processes are well adapted for one material, while wholly unfit for another. One clay—say the natural prepared "Malm" of the Mississippi and other rivers, is adapted to the dry clay press process; while another, the tenacious, argillaceous material requires an entirely different mode of working. One clay will require and stand much tempering and be improved thereby, while another will be ruined if over tempered. Beware of the man whose machine will work all clays.

The price of the machine has but little to do with its selection; the very best is poor enough. A machine that will save its cost in from three to six months is not dear at any price. To-day the best machines are fitted up with the greatest accuracy, of the very best materials, replete with all the little conveniences for their care and preservation; all parts made to interchange, and those in contact with the abrading materials easily and cheaply renewed.

One machine may look just like another to the brickmaker unskilled in mechanics. Yet one is complete in detail, working "day after day, week after week, and month after month" without interruption, while the other is constantly being stopped to fix this, that and the other, and at the end of the month not half the rated output is realized. The best evidence of the value of an invention is its piracy.

In the selection of machinery for the preparation of clay, making of brick, and burning, it is well to throw the risk of a trial upon the parties selling. Let them be at the expense of erection and testing an untried machine or kiln in a new material, and you make your decision after making and burning say half a million of brick by the new devices.

Probably nine-tenths of the brick consumed in the United States to-day are made by machinery, and what is the effect of this change upon the brickmaker? In the early part of this paper you had a "word picture" of the "old timer" besplattered with mud from head to heels, working like a beaver to produce during the warm months a few misshapen brick, which he disposed of as best he could and spent the remainder of the year at some other occupation, thereby eking out a living for the balance of the year.

The brickmaker of to-day is raised to the dignity of a manufacturer—carrying on his business all the year round—employing steam by the hundreds of horse power, digging his clay by steam or electricity, carrying it to the machine house by rail, dumping it into large hoppers and performing all the various manipulations of screening, mixing, tempering, molding, drying and burning without being exposed to weather, and never touching the clay with hands until it issues a completely molded brick. He has his "yard office" and his "city office" and clerks; and if he understands his business, a large balance in bank, a nice square brick of "bonds" and a few corner lots, a row or two of houses, and a nice one for himself and family to live in, and is respected amongst men. He is no longer the despised slave of the Egyptians.

PRESIDENT ITTNER—As the hour is far advanced, I would suggest that we take up the next number on the programme:

### THE FUEL QUESTION.

BY J. W. CARSON, BRUSSELS, ILL.

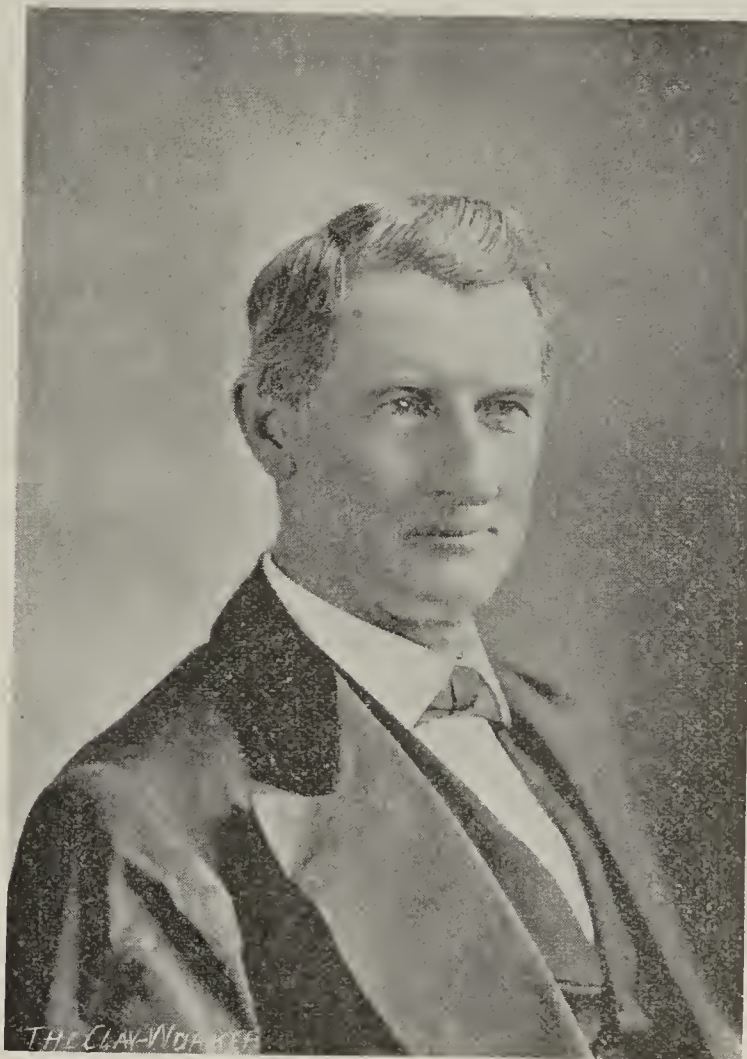
Mr. Chairman and Gentlemen of the Convention:

Having been honored by the executive of our Association with a place on the present programme, and assigned especially to the "fuel question," I have decided to present to you a few facts and data relating to producer gas, and its adaptability to burning brick and kindred ware. I make no pretensions, gentlemen, to scientific treatise, but will simply give you its practical side as demonstrated by actual work. After I have finished reading, should any of you wish to ask questions I will be glad to answer same as far as I am able.

In the August CLAY-WORKER of 1891 there appeared a copy of a letter written by Mr. Thad. Smith, of St. Louis, embodying three distinct questions relative to my subject, which I will endeavor to answer in the course of my few remarks. They are: 1. Can the gas from your producer be inflated without the aid of a regenerator? 2. Can you produce gas to be led through pipes that are again subdivided, so as to reach each arch in the kiln separately? 3. How much coal does your producer consume daily? While these questions were not addressed to me directly, I have taken the liberty of applying them as a base for my paper. So much for introduction. The gas producer or generator of my acquaintance is of the Siemens type and constructed as follows: The producer proper is a vertical iron shell, cylindrical in shape, and lined with fire-brick. This is fitted at the bottom of the periphery with doors for the purpose of kindling and drawing spent fuel as ashes and clinkers. On the top of the cylinder and in its center is a kind of dome arrangement which is the hopper for charging the producer

with fuel. The capacity of this hopper is  $2\frac{1}{2}$  bushels. It is fitted with a conical bottom suspended by a link to a lever which projects through the side of the hopper, and fitted with a weight to keep the bottom closed.

The top of the hopper is fitted with a sliding cover, which is opened when charging the hopper and closed before raising the lever. This lessens, but does not entirely prevent loss of gas when charging. There is also on the top of producer a series of four holes about four inches diameter, fitted with caps for the purpose of poking or leveling of fuel and examining the quality of the gas. From the side of producer and near the top there projects horizontally a square iron tube, lined and arched with fire-brick. This tube is ten feet long, but the length can be made to suit situation. This again connects with a vertical iron tube called the down-take, also lined with fire-brick, which is in turn bolted down to a bed-plate, forming an inlet in main flue, or as they are commonly called, gas sewer. The purpose of the horizontal tube just mentioned is to assist the draft through producer to point of delivery. The gas, in passing along through it to the down-take loses heat by radiation, thereby increasing its density which causes the down-take to act as a syphon, and so maintains a constant drain on producer. Arrangements are made in the bottom of the down-take for a damper used for breaking connection between producer and kiln, when cleaning out or changing producers. The top is also fitted with a loose cover which is kept open when starting the producer and until gas is being made fit for turning out to the kiln. This is then locked and closed and remains so during operation of producer. Natural draft is almost entirely dispensed



JOHN R. ELDER, INDIANAPOLIS, IND.

with in this system and is replaced by a jet of steam, which is directed on to and through the bed of burning fuel from the underside of grate bars. The method of applying the steam considered the best, so far as I have learned, is as follows: A pipe about three inches diameter, six feet long, with an elbow at the bottom end and a bell-mouth arrangement at the top, is connected vertically with the producer shell at a point below grate bars. The steam pipe, with its outlet reduced to about one-fourth inch, is suspended directly over the center of this pipe and supplied with a valve to regulate the force of steam, which being, as I said, directed through the body of burning coals is decomposed and forms hydro-carbon and carbonic-acid gases, thereby enriching to a great extent the quality of the fuel gases.

In addition to this the steam so acts on the clinkers as to keep them rotten and unformed, preventing, to a great extent, adhesion to the grate bars and making them easy to draw. The gas sewers are very simple in construction, and are best built of brick, about three feet high and two feet six inches wide, paved on the bottom and arched on top. The sides and arch ought to be built of fire-brick, as the heat caused by burning out the bar is often intense. Openings must also be left in the top of arch, one about every fifteen feet of sewer. These openings serve two purposes—first, for cleaning, and second, as safety valves. Should there from any cause be an undue pressure of gas in the sewer it would find relief by raising the covers off these holes, which, by the way, are laid on loose and covered with sand or loam. It is also a good plan to build into the end of sewer furthest from producer a door frame fitted with a door hinged



from the top and lying at an angle acute to the bottom of sewer. Its weight will then keep it closed against all needful pressure, and it can be locked to prevent leakage. The kiln should, if possible, be built at right angles to the sewer, or if that prove a question of getting the mountain to Mahomed, place your sewer at right angles to the line of kiln. This arrangement will bring the main sewer past the end of your kiln. Branch sewers must now be carried through between the kilns, one branch thus serving for two kilns. In like manner, by having a series of kilns on each side of main sewer, one of the latter will serve the whole range of kilns and make a very compact arrangement. Dampers must be provided for at the end of each branch sewer, close to main flue, to shut off when not in use. The method of introduction into the kiln does not materially differ, whether the kiln be up or down draft or a continuous principle, but I have chosen to describe its application to an ordinary furnace kiln. In construction the furnaces are the same as for coal with the exception of the grate bars. In place of these an arch must be turned over ash pit leaving suitable apertures for the emission of the gas, or fire-clay tiles laid across the furnace leaving space between each tile of say one and one-half inches to two inches wide for the same purpose. Air passages must also be built in the side of furnace leading to the throat for the purpose of supply to the gases as they enter kiln. A small trench say ten by sixteen inches, must now be made connecting furnace and branch sewer. These must be supplied with valves to regulate supply of gas to the kiln.

To a great many men, unacquainted with the use of producing gas, the process seems to be fraught with a constant danger, and also to require an expensive staff of experts to run it. It is also a general idea with this class of men that a mass of auxiliary machinery such as purifiers, meters, holders, etc., is required in connection, but such is not the case. I have included in my brief description all the apparatus. I will now proceed to a description of the method of making or producing the gas.

As I have before described, the producer is fitted with large and spacious doors at the bottom of the periphery. These are thrown open and a fire kindled upon the grates. As soon as this fire has enough vitality, or, as the gasman says, "will stand it," coal is fed through the hopper on top and the ash-door partly closed. The loose cover must be removed from the top of down-take and remain off during this beginning of operations and until we are in shape and making gas fit for turning on to kiln. By opening the trial holes on top of producer, the quality of the gas we are making can be ascertained, and if good enough, that is, of a rich bluish yellow, we must close down-take and open man-hole in extreme end of sewer, for the purpose of warming up sewer and preventing explosions. Now, close up and seal the ash-doors and turn on a full head of steam and leave it so until closing man-hole, which must not be done until gas is burning freely in the furnace. This introduces another point which will answer Mr. Smith's question No. 1. Producer gas will not burn to advantage in a cold furnace with a cold kiln of brick behind it. Therefore we have been obliged to water-smoke with wood. After the water-smoke is all off, and the kiln ready for gas, we increase quantity of wood burning in each furnace, making a quick hot fire for about one hour. This will heat the furnace to the degree necessary for the ignition of the gas. It is also customary to lay thin iron plates over gas inlets to prevent ashes falling into gas flues. These plates are now withdrawn, carrying with them the ashes, etc., from the wood fires. Now throw in a piece of lighted pine wood and open the gas valve gradually until you can see it flame above perforations or inlets. Now close man-hole and reduce supply of steam. Practice and experience will very soon enable you to determine the force of steam required at the different stages of your burning. I don't want you to hook on to the idea expressed by a speaker at the Washington convention that once get the gas started on a kiln your course will be one uninterrupted round of pleasure, all plain sailing, and no head winds. If you do, you are very liable to disappointment. On the face of it, it certainly does look as if all a man had to do was to keep on gradually increasing the supply of gas to kiln, and his heat would increase correspondingly in the kiln, but I am sorry to say that contingencies often arise to break that monotony. For instance, your supply of gas begins to slacken without any change of damper, so far as you know. You immediately start for the producer, and after finding gas all right and in sufficient quantity you decide that you must have a little more steam pressure. Accordingly you open steam valve a little and go back to kiln to see how it works. You find a little improvement and congratulate yourself that you got onto that nicely, but I am afraid not. After awhile it will slacken again and no amount of steam pressure will overcome the difficulty. What is the matter? you ask, and that question brings us to one of the principle objections to this method. And that is the deposition of tar in flues and on the valves. Of course some coal will yield a much greater body of tar than others, according to its composition. That of the coal we mine and use is given by analysis as follows:

Moisture 4.8, volatile matter 40.9, carbon in coke 49.1, ash 5.2, total 100. Its specific gravity is 1.2631, loss in coking 45.7, giving weight of coke 54.3. The amount of carbon in coal is given as 53 in the 100 parts. This will serve you for the purpose of comparison. The gas from this coal is heavily charged with tar, which is carried along and deposited in the sewers, gradually diminishing their area. This is the reason why these are made so large, as by having an excess of capacity, it leaves a margin for the tar to fill. When this happens all valves and dampers must be closed, the man-hole covers removed from top of sewer and the tar burned out. To burn out a valve is a very simple matter requiring very little time and entailing no loss of heat in the kiln. It will facilitate this operation, if in constructing the trench before described you leave a loose tile immediately behind the valve. Raise this slightly and then drop a piece of lighted waste onto the crack, taking care to avoid the puff that generally comes before the flame is sucked in. See that the valve is opened to its fullest extent, and in a few moments the tar will all be burned up and the products of combustion

utilized in your furnace. Now close down tile and cover good with loam and you are all O. K. until it fills again. Burning out a sewer is another matter, and the length of time between burnings will depend entirely on the coal you use and on the quantity of gas consumed. I understand in Sweden, where such producers are in common use, manufacturing gas from sawdust and sawmill refuse, a condenser is used to extract the tar from the gas. This is in the form of a square chamber constructed of iron and made of the same width as sewer, but from two to three feet deeper. A spray of water is made to fall from the roof through which the gas passes on its way to the furnace. The tar and other impurities are arrested by the water, and fall with it into the bottom of condenser and off through an overflow pipe. This is said to overcome the tar difficulty, but I have never seen it in operation; therefore I can not speak of it with any certainty. I like the idea, and believe it to be practical, hence its introduction. With our coal we find it necessary to burn out the sewer every two or three weeks, and it usually takes about four hours, sometimes less, before the flame has all died off.

It is not at all necessary to wait for the sewer to cool off before filling with gas, but it is necessary to see that all the man-holes are sealed tight before gas is admitted. It is well to remember that air *must not* be allowed to mix with the gas at any point between steam jet and kiln furnace. If by any means this should happen, you will have the trouble to replace all man-hole covers and coax back your employes from their place of refuge. After the sewer has been burned out about three times it will be necessary to clean out all the refuse. This is a very troublesome operation. After the final burning out it will take from two to four days to cool sufficiently for a man to get in, and then it is a very hot and disagreeable job. One day is ample for the cleaning out of a sewer—say one hundred feet long—making about four or five days that the sewer is lying idle. What becomes of the producer during this time is a very natural question but not a difficult one to answer, and I may add, that the same answer will serve, if you should at any time be called upon to hold producer while waiting for a kiln. At these seasons you must shut down producer. This is done by first shutting off steam and covering steam inlet with sliding cover provided for the purpose. See that the ash doors are perfectly air-tight, and open cap of door, take about two inches, then slide cap back so as to leave an opening of two inches on one side of hole.

It will be necessary to put in a hopper of coal every twenty-four hours and be careful to keep full level in producer and to see that holes are not allowed to burn through. By attending to this carefully, you can hold it for two weeks if necessary, and the gas will be ready for you at any time. Now, a few words as to the advantages of this system, and I am through. In the first place we have proven to our satisfaction, that the gas from seventy-five bushels of coal will do as much effective work in the kiln as one hundred bushels shoveled into furnace direct; but this gain is somewhat modified by the coal consumed when holding or changing producer. The points of greatest superiority of this system over direct feeding can be summed up as follows: You can use a very inferior coal. You can get a heat in the kiln with gas that is almost impossible with coal direct. There is no clinkering to be done at the kiln, consequently no loss of heat from that operation, and your furnaces are not being continually hacked to pieces in separating brick from clinkers. The saving of skilled and therefore high-priced labor, is a big item, one man on the kilns and one on the producer are amply sufficient for the burning of two or even three kilns per turn or shift of twelve hours each. You can burn the most tender red brick or the most refractory fire brick with equal success, as proven by the samples of brick I have brought for your inspection. It can also be burned under your boilers to very good advantage, providing they are not too far from producer, and if you dry your brick by the dry-floor arrangement or by driers of the Chambers or Sharer system, its use can be made economical and satisfactory.

In conclusion, I want to call your attention to a point of criminal carelessness, that I have noticed on a good many brickyards using coal direct, and that is, the want of a clean substantial coal ground. Sometimes the coal is dumped on a piece of ground leveled off with ashes and furnace refuse, or on the bare ground. When the coal wheeler loads up his barrow, he invariably and almost unavoidably loads up some of the coal ground. This he takes to the kiln with the coal and again dumps it on the ground. By this time it is pretty thoroughly mixed, and in this state goes into the furnace along with a fair proportion of the firing ground. We are adding about five per cent. of incombustible matter to our fuel, increasing clinkers in the furnace, but decreasing the heat that would otherwise have been obtained from the coal. A clean, substantial coal ground is a paying investment, in that it reduces the coal bill, and lessens the wear and tear of kiln furnaces.

In closing, gentlemen, I must express my inability to do justice to this very important subject. It is a subject of wide range and possibilities, demanding our closest attention. I firmly believe that producer gas is the fuel of the future, not in its present very imperfect application, but when the brains and genius of our craft shall have lifted it out of its present state of possibility, and placed it on the solid footing of assurity. I thank you gentlemen for your kind and courteous attention.

MR. MCGRAW—To me this has been the most important paper read at this convention, and I have no doubt but that it has interested many. Now, there are a couple of questions that occur to me. The first is about water smoking with wood. This gas seems to be a very clean fuel, and the gentleman simply makes the statement that it is not practical to water smoke with gas and use wood. Now, I would like to know why. The second question is in regard to



coal tar. The price of coal tar has risen from \$5 and \$6 to \$8 and \$9 a barrel. Now, it seems to me that the coal tar produced in this producer is just as valuable as coal.

MR. CARSON—We have tried water smoking with the gas, and have not met with success. The tar is not deposited, but goes along with the gas into the kiln and is deposited on the brick, and when they are burned they are spotted.

MR. MCGRAW—That covers the first question. It seems to me if there was a purifier to free the gas of the coal tar, it would be better.

MR. DAVIS—As is well known to most of you, I am agent in this country for the Dunachie continuous kiln. About four years ago I attempted to introduce that method of brick burning in the United States. I am not talking for the advertisement of this kiln, but I want to give this convention some facts of interest. When attempting to introduce this fuel gas, I had a consultation with some of the best known engineers, some of the most experienced men in this country, and gained all the information possible. I found it was not profitable to the brick manufacturer, whether he be a manufacturer of building brick or fire brick, to burn fuel gas in separate kilns such as described in the paper. The economy of the fuel gas comes from using the continuous kilns, and that method requires large capital. I would not advise any one to embark in this line with less than a quarter of a million dollars to invest.

MR. BLAIR—I believe if you have any money to invest in any business, it is like Mr. Chambers said in his paper, when you are getting a machine, get a good one, if you have to pay for it. I believe when you get a kiln, you should get a good kiln and you have to pay for it. I believe the continuous kiln is the kiln of the future. I believe the reason the same has been a failure in this country is because the craftsmen do not know how to operate them, but where you get a continuous kiln of the right kind with all the improvements that have been added to date, and get a man who thoroughly understands the operation of it, I believe you reduce the cost of burning to a minimum. We have our faith so well grounded on them that we are about to erect a continuous kiln of 50,000 a day capacity, and all things being equal, I think if the weather permits, we shall start it at once. I believe it is the kiln, and when thoroughly understood, that the brick can be produced at a minimum cost. My brother and I inspected a continuous kiln in New Jersey. It was a Hoffman kiln, with all the latest improvements added, and I saw there brick burned from top to bottom and from bottom to top, all good hard brick. The brick were so set that the fuel did not come in contact with them at all. With some of them you can get 75 per cent. good face brick out of them. They are simple in construction, so that any one who understands their operation can impart it to any one who has any experience in burning a kiln. I will not mention the name of the kiln we will erect, but if we do erect it, I will be pleased to have any member of this Association visit our works and inspect it.

MR. ADAMS—This is a very interesting discussion. But in regard to the item about expense, I am reminded of a little story. A manufacturer of engines in our city had a letter from a gentleman in Texas who wanted to know the price of a saw-mill and engine fully equipped. My friend answered the letter and said he could send him a saw-mill and engine outfit for the sum of \$3,000. The reply he got was this: "If I had \$3,000 what in the h— would I want of a saw-mill."

W. S. PURINGTON—I would liked to know if any one knows of paving brick being burned in a continuous kiln?

MR. TAYLOR—We are not discussing kilns, but the fuel question, and we have hardly hit the fuel question since the reading of the paper.

MR. D. V. PURINGTON—Mr. President, I move we adjourn.

MR. CARSON—Second the motion.

Motion carried.

## FIFTH SESSION.

The fifth and last session was called to order by President Ittner Thursday afternoon at 2 o'clock.

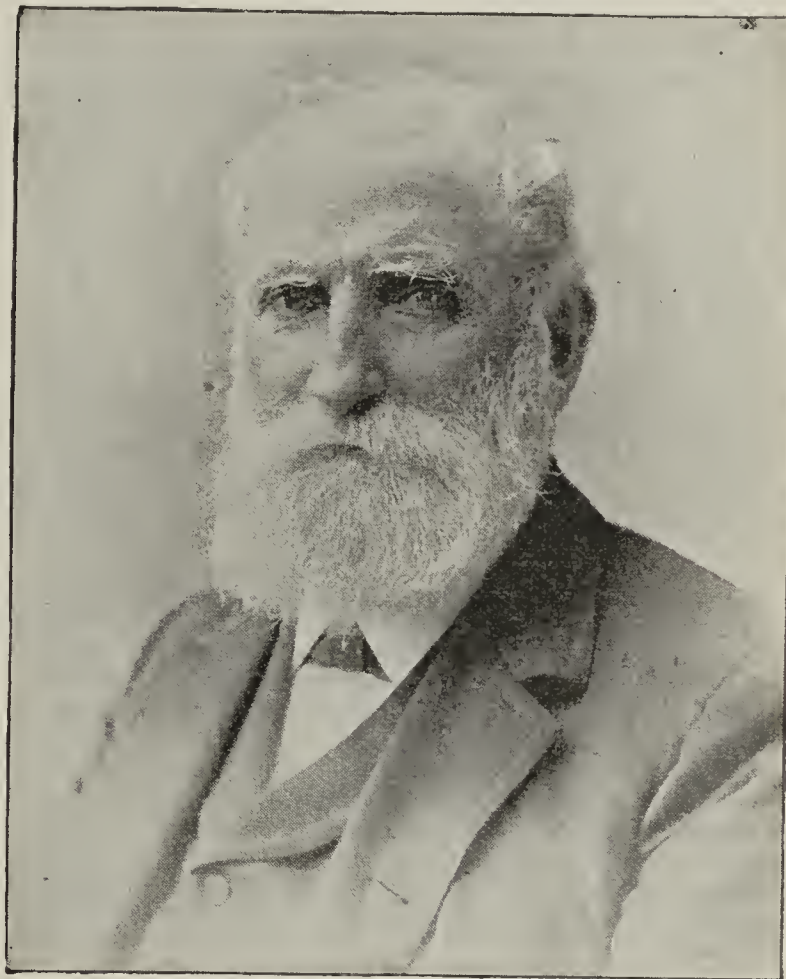
PRESIDENT ITTNER—Gentlemen of the Convention, we will proceed with the regular order of business. The first number on the regular programme is an essay, "Front Brick, Their Relation to Architectural Design," by James Taylor, of Long Island City, N. Y.

## FRONT BRICK, THEIR RELATION TO ARCHITECTURAL DESIGN.

BY JAMES TAYLOR, OF LONG ISLAND CITY, N. Y.

The subject before us is a very broad one, and may perhaps lead to much controversy. In a convention of brick manufacturers like this, embracing, as it does, practical men from all the States, being truly a national association, the subject, however, is worthy of careful consideration. It is a question which, if studied from its past development, will give some true basis upon which to build our hopes for the future.

We are here for education. We wish to learn something. We are not here



CAPT. S. P. CRAFTS, NORTH HAVEN, CONN.

to confirm any one set of ideas. But we are here to consider the relation which front brick bears toward architectural design. We do not pretend to study the subject from an artistic standpoint. We are not pretending to be creators of architecture. We simply wish to study the modern history of front brickwork in our country, so as to learn the probable demands of architects and builders for the near future, in order that we, as front brick manufacturers, may be prepared to co-operate with the architects in furnishing material for improving and advancing the development of artistic brickwork.

It would be quite out of place at this time to do more than give a recognition to the front brick work of past generations. They did their work, and they did it well.

Our present duty as an association is to grasp and measure the work of our own generation and time, to understand its results thoroughly, in order that we may learn how to wisely and safely guide our craft over a right course in the immediate future. Fine front brick is an established and permanent necessity of our day. It is a necessity which will most surely grow. It will doubtless keep pace with the material prosperity of this country. On every hand we are confronted with the almost startling evidences of the popularity of good front brick work, and there are good reasons for it.

Front brick offers so many advantages in outline, color, decoration and cost which no other material can hope to compete with. They are the young architect's friends. They enable him to produce effects of outline, surface and color far superior to any that are possible in stone or iron, at a moderate cost.



This fact is entirely a modern one. It is a recent outcome. It may surprise you to hear it stated, that there is no good example of molded front brick building more than twenty years old in America.

Twenty years ago the ideal front brick of America was known as the "Philadelphia Front." It was a good shaped, fair faced, well made brick, of a bright red color. It made a good looking wall, but it was too often, if not always, used in connection with stone or iron. It was used to fill out or face the wall between sill or lintel courses, and had no other relation to the design of the building than that of a background for other architectural details. Very frequently it was not used as a front brick even, but was a facing to an exposed gable wall of a building, having a front of brown stone. Architects gave it no recognition as a particular feature in design. It was merely a convenient and decent looking material. Its principal recommendation was its good shape and its bright color. It was used simply as a veneer, without any correct consideration as to the bonding even, therefore it could have no bearing or influence upon architectural design.

In the year 1876, a notable year, the first great advance in true front brick-making was inaugurated by the organization of the Peerless Brick Company of Philadelphia. This company called to their aid architects and designers to enable them to produce good and desirable forms of front brick.

By this step they recognized the absolute necessity of co-operation between architectural design and front brick. It proved to be a wise step, for their products at once leaped into a very prominent position as an architectural material, and were readily adopted by architects everywhere. The architects at once comprehended that now there was a fair prospect of obtaining good material for molded courses and other details of construction. This led them to begin making designs for buildings, with an intention of having them constructed of brick work, and thus they evolve what are known as Queen Ann designs, which are, therefore, distinctively and correctly classed as brick buildings. Thus the Peerless brick became the standard of excellence. It was a good and useful material, and deservedly became very popular. It marked true progress, in an orderly course, therefore it found its place, and filled it thoroughly. But it was soon found that the utility of molded brick was not quite as universal or broad as the organizers of the Peerless Company expected. It seems to have done its greatest work as an educator in architecture all at once, and that in its very infancy.

We find that its very best, and largest work as a medium for design, was done within two years of its introduction.

It is very generally acknowledged, and rightfully, that the most complete and best specimen of modern front brick work in America, is the Morse building, at the corner of Nassau and Beekman streets, New York. The front brick for which were made by the Peerless Brick Co., in 1878. It was a grand first effort, and a great success. The building was designed by Messrs. Silliman & Farnsworth, and it was for several years the representative brick building of New York, because of its unique character, its good brick work and its great size.

Since the completion of the Morse building, thousands of other buildings have been erected in all parts of the United States, from designs prepared expressly, with an intention of using Peerless Front Brick. Thus the Peerless Front Brick gave a new direction to American architectural design.

Perhaps it might have been a good thing for the Peerless Brick Company if a law restricting immigration had been enforced before the establishment of their company. For then a certain terra cotta maker might have been kept out of the market, and the field left entirely free for them to occupy.

This terra cotta maker got his work introduced on the Morse building as a supplement to the front brick work. In conjunction with terra cotta, the Peerless Co.'s brick, produced better results than they could have one alone. And the combination of front brick and terra cotta became recognized in the Eastern states as a very good thing. Architects saw a prospect, opening into new fields of study in designs, promising rich results. Here was something that could well occupy a share of the field heretofore monopolized by stones and iron; and which would also give them additional advantages, by its ability of introducing desirable colors. They had been surfeited with gray granites, Whitey limestones and sombre brown stone. Red terra cotta and Peerless Front Brick was a new revelation to them, and they hastened to utilize the new material. The result has been the final conjunction of front brick work and terra cotta trimming. Here the clay-workers have united, and together they have furnished to the world the fire-proof buildings of to-day.

All the principal cities of America now possess many mammoth and beautiful buildings, constructed of front brick and terra cotta, the product of this new sphere of architectural design. The great demand for front brick and terra cotta has forced from Philadelphia the monopoly of making front brick. Other cities and sections have also entered into the new industry, and the term "Philadelphia fronts" has passed away. We now speak of front brick, not as of one thing, but as a class of brick. We have Philadelphia and Baltimore, Trenton and St. Louis, Milwaukee and Hydraulic, Dry Press and Anderson, Columbus and Pittsburgh, and a host of others too numerous to specify. All of these great centers, employing thousands of men and millions of dollars, have come into existence during the past twenty years, many of them since the organization of our National Brick Manufacturers Association. What Philadelphia once did alone, all these combined can not do now. The market is not supplied yet. (Many buildings in every city are delayed for want of front brick at this time.) What has caused this great change? It is the connection of front brick and architectural designs, and the architects have gotten ahead of the brickmaker.

Having thus recorded the relation existing between front brick and architectural design, as to quantity,—let us now briefly consider its relation to the quality of architectural designs. Before the successful employment of front

brick and terra cotta, very few private buildings were erected, which made any pretense to any decorative character. Public buildings and churches, being built with public money, did sometimes have some decoration, according to the style in which they were designed, and the amount of money spent. But the buildings erected by individuals and citizens were very generally plain and simple in character and design, and rarely exceeded four stories in height. In all of our cities there were miles of streets, all lined on either side, with houses so intensely alike, and so similar in appearance, that the only chance an owner had of knowing his own was to remember and find its number. The only land marks were the churches, schools and public buildings, but all this has been changed, since front brick came to the help of architectural design. Now nearly every house differs in outline, color or material from its neighbor. Now we have theaters and hotels, office buildings and apartment houses, warehouses and factories, which completely over-shadow the former land-marks. We have now actually to hunt for the churches, the banks, and the post-offices, which used to loom up over the average buildings of our cities.

The use of front brick created a demand for a greater variety, and more elaborate quality of designs, for architectural exteriors. The Greek or Roman temple no longer sufficed as a model for a church, a bank, a post-office, a public school or a residence equally. Architects sought to impress the purpose of a building upon the design, and thus many novel and decorative features were added to modern architecture. The result is, that now few buildings of any class are built without some consideration of its purpose, and some corresponding character being given to its outline, and the decoration of its surfaces and molded details.

When architects found that their ideas could be so thoroughly expressed in form by the clay-worker, they, like the Athenians of old, began "to look for some new thing." Having obtained form, why not ask for color? They did call for color, and the front brickmakers gave them what they called for.

Philadelphia dark reds; Baltimore light reds, and Milwaukee buffs would no longer satisfy the improving and advancing ideas of the architectural designers. Color was very important now. True, they had thought of it heretofore. When they had specified stone, they took it as the quarry gave it. It was as the Almighty had made it. But now they were dealing with human productions, and must have it "just so." For the public taste had become so esthetic during the past few years, that color had become almost of more importance than form.

An architect recently declared that if he could not get the exact shade of a color which he had chosen for a very costly and elaborate building in New York, which he had designed, he would entirely alter the design, leave out the decorative features, and use plain stone work. He well knew that he could not get the color even (much less the exact shade of color in stone). But in front brick and terra cotta it was different, and he *must* have it. He did get it. The front brick and terra cotta makers carried out his design successfully; and he is now probably very busy cudgeling his brains, seeking to produce some new development or complication of architectural design.

There are several standard colors now produced generally, and a list may well be given here:

*Light buff or lemon color.* Yellow buff. Dark or warm buff, made by the addition of a little red clay to the stock mud. *Grays*, made by the addition of some metallic oxide, mostly oxide of manganese (less than one per cent). *Browns*, made by mixture of gray and red burning stock muds. *Hard Salmons* and telephones of various shades, made by mixtures of yellow and red burning stock muds. *Old golds*, made by applying a fusible wash or slip to buff or yellow burning brick before firing. *Pompeian and Roman brick*, made by using the refuse spotted clays which for ages have been discarded as worthless, because of the iron-stone and sulphur balls which it contains.

These are the present standards of color, with an almost infinite variety of shade being constantly called for. It is a just cause for honest pride, that we, as front brick makers, have been so well able to meet the demands of the new school of architectural designers. How has it been done, and who have done it? It has been done by the men who got out of the old ruts. It has been done by the men who saw in the clay pit something better than mud. It has been done by the men who were willing to think while they worked; who sought to elevate their craft, and thereby themselves, onto a higher plane than it or their fathers had occupied in the past generations. It has been done by the present generation; this Association has done it. We do not disparage the past. We love and reverence our fathers, but "their eyes were holden." They did not "even darkly as through a glass see" the things which we see to-day. They supplied the demand of their own time faithfully and well. Happy are we if we as honestly work by the light given us now, in seeking to supply the broader demands of our day.

What has caused this vast and constantly increasing change in the quantity and quality of front brick? It has been the result of a closer and more generous co-operation between the architects and the brickmakers of America. Each has helped the other. And we are guilty of no exaggeration or egotism when we here publicly claim that the present advanced position of architectural design in America is, in a very large measure, due to the intelligent co-operation of the members of this National Association of American Brick Manufacturers. The front brick maker of the present has had to turn his clay pit into a crude chemical laboratory. No longer isolated in a mud hole; he uses various clays, gathered from different localities, carefully selected. Correct admixtures of other materials, simple but necessary, have to be made in his stock mud. Improved machinery has to be found and employed, and various degrees of burning have to be regulated. He is no longer a stolid mud shover, but he has become an artisan. Without his aid our architects would still be limited in their designs,



by the necessity of using Eastern granites, Vermont marbles, Connecticut brown stone, Ohio sand stones, Illinois lime stones, Wyoming blue stone, or cast iron. The cost of these, and the difficulty and labor incident to working and handling them, would have been seriously impediments in the path of architectural design, and our architects would still be limited to the employment of the classic styles, which for ages have been the ultimate of architecture. But the use of front brick and terra cotta have made possible the many great and elaborate and beautiful structures which attract the critical attention of all men in the streets of all our great cities to-day.

We surely as members of this National Association have good reason to be proud of our past labors. We have helped to make a grand record on the architectural annals of our century. But we have not yet completed our work. It will remain after we are gone. Others will take it up where we lay it down. Let us see to it that we leave them a good and sure foundation upon which to build.

As individuals we make brick, but as members of this National Association of Brick Manufacturers we are here in convention to make brickmakers.

We have helped to educate the architects; let us not forget to educate ourselves. The prime object of our meeting will not be obtained unless we can all go away feeling that we have got some practical benefit by coming together. Let us help one another to do better than we have done.

There are great improvements before us. Co-operation is the grand idea that will help us to go away to our homes filled with more knowledge of how to do our work. Let co-operation be our motto. Let it work honestly among us, then we shall all go back feeling that it has been good for us to be here.

PRESIDENT ITTNER—You have heard the paper just read by Mr. Taylor. It is now open for discussion.

MR. MCGRAW—Mr. President, if there is no discussion on this paper, there is a matter I would like to bring up. That is in regard to the disposition made this morning of the paper on "The Manufacture of Dry Press Brick from Shale, by the Dry Press Process." I move that the paper be now read.

MR. MCGRAW's motion was seconded and carried.

MR. RANDALL then read the following letter from Mr. Figh:

*Theodore A. Randall, Esq., Corresponding Secretary N. B. M. A.:*

DEAR SIR—At the twelfth hour I discover that it will be impossible for me to attend the convention at Louisville next Tuesday. A pressing contract has made it necessary for us to put in additional machinery, and we are now right at a point in the work that requires my presence constantly, so I can not leave without considerable loss of time, that might delay us in fulfilling contract. I send you by same mail the results of my efforts upon the topic assigned me. If you are not too kind-hearted to inflict the punishment, and will magnanimously recognize that you are a party to the crime, I would ask you to kindly read same for me or otherwise dispose of it. I appreciate the loss I sustain both as to pleasure and profit in not being able to attend the convention, knowing that Louisville will maintain the reputation of the South for hospitality as fully as did Memphis. With regret, I am

Yours very truly, JOHN R. FIGH.

#### MANUFACTURE OF BRICK FROM SHALE BY THE DRY-PRESS PROCESS.

BY J. R. FIGH, OF DALLAS, TEX.

When some weeks since our corresponding secretary called upon some member of our firm to take part in the programme of this convention, the matter was turned over to me as the practical member. In Texas, when a prediction is made as to the weather, invariably follows the question, "Mister, how long have you been in Texas?" The response confirms the fact that the speaker is a "tender foot." In our State the older the citizen the more cautious he is in his prognostications on the weather. The more practical the brickmaker the less stable he is in his convictions, consequently the less he knows. *Ergo*, were I very practical my discourse is now ended. But when Mr. Randall so courteously and complimentarily extended to us the invitation to represent our section in the convention, although our first impulse was to decline, knowing our inability to clothe whatever of ideas or experience we might possess in such phraseology as would make them presentable or of interest to a body of brickmakers in the last decade of the nineteenth century, we shrank from the task. Upon second thought we felt that we could not honorably shirk. While we may readily assent to a lack of good looks, intellectual and educational attainments, we are slow to admit that we are not honest and honorable in the payment of our debts. Nor could we afford to be recreant to our State. We had been largely beneficiaries of conventional discussions, and was its debtor. This is the first time Texas has had an opportunity to announce that she was in the van of progress in brickmaking. A desire to at least show a disposition to discharge my debt and show my loyalty to State has impelled me into your presence to-day to, as I

understand it, *open* the discussion upon "The Manufacture of Brick from Shale by the Dry-Press Process."

In contemplating this question two phases arise, viz.: The material and the process. To each of these certain elementary principles involved in the general science of brickmaking attach. In our remarks we will try as near as possible to confine ourselves to the peculiarities of the material and the process when combined.

To determine the practicability of making brick from shale by the dry-press process the following questions are to be decided:

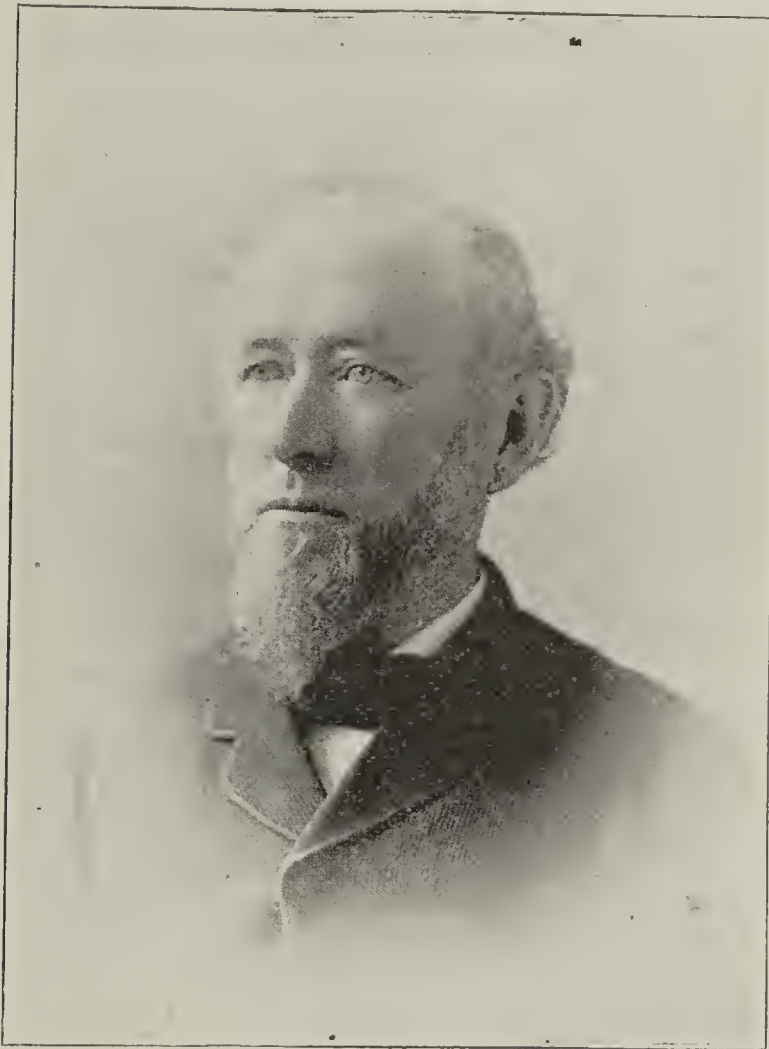
First. Is your shale accessible, both as to mining and market, and in what quantity?

Second. Is it adapted to dry process?

Third. Will front and dry press common brick sell more readily than stiff-mud building and paving brick in your market?

These questions decided affirmatively, we are confronted with a series of problems. The most perplexing may be set forth as follows: A, location and arrangement of yard, or factory, if you please; B, arrangement for mining or gathering clay; C, preparing clay and auxiliary machinery; D, machine for pressing; E, setting and burning; F, delivery, collections and what you will do with all the money you make?

In the explication of the above propositions, I shall be in a great degree limited to my own experience and observations. These resources have led me into many errors that have been discovered and probably into more that have



THOS. FLOOD, PHILADELPHIA, PA.

not yet been revealed. The errors will be embodied in this paper and will doubtless be of more value than the happy hits, if any. As we are dependent upon these sources, a history of our plant will form the basis of argument. Let us take up the foregoing theories and problems *seriatim*.

First. Is your shale accessible? Is it exposed to the surface horizontally? or so nearly so as to be "stripped?" Or does it occur in perpendicular bluff; if so, is it dry enough in bank to be crushed readily? Is it accessible as regards profitable working by the dry process? Shale may be obtained and to my knowledge, is at various points, mined from bluff by pick or blasted; by drift mining at Kansas City, by shaft, notably at St. Louis for fire-clay and sewer pipe goods and taken from the surface. If your shale can be taken from the bank *dry enough* to be ground readily by a dry pan, it matters little if it is obtained in any one of these ways, except as regards cost of putting it under shelter; as to whether it is preferable to locate your plant near your market and suffer inconveniences and expense in the delivery of raw material to machinery in order to get certain other advantages in the way of delivery of product, shipping facilities and compactness of business, etc. Extreme individual circumstance may make it advisable. In our opinion a location where your raw material can be easily and cheaply procured and delivered to your machinery is paramount to proximity to market; a location on a railroad we consider a necessity in either case, except possibly in very large cities. As a plant for the dry process is usually more expensive than for stiff mud then it is more important that your deposit of shale be great enough to insure permanency,



Second. Is your material adapted to the dry press process? This may be determined by chemical analysis, but as yet our chemists are such poor brickmakers and our brickmakers know so little about chemistry that after the analysis is made the chemist knows nothing and the brickmaker less. Of course there are rare cases where the analysis is of great value, but, generally speaking, a brickmaker receives no real intelligible and tangible assistance from a chemical analysis. Another method of determining this is to have sample brick made, usually by parties selling machinery. When you get your samples you are elated. You send some of your shale to other parties. When the samples arrive you are dejected. You have the green brick from both parties, and can see no difference in the appearance and density of them. You must conclude that the difference is not in the machine, and that you have not proven that your shale will make brick commercially and profitably; but you are impressed with the superiority of one man over another in the manipulation of clays. You may be perfectly satisfied that your samples were made from your material, and you decide that what you want to know is not whether good brick can be made from the material, not whether Smith, Jones and Brown can make fine sample brick, but can I do it?

The only way I know of to find out is to try it. In our case we first tried it by grinding a little in a coffee mill and pressing about an one and one half inch thick on a hand repress. We then got a horse power corn crusher and ground enough for several hundred brick, pressing on repress. To avoid steaming from the mud brick, as we were forced to burn in kiln of this sort of brick, we would leave a hole in top of kiln and when water-smoke is all off put the dry-press brick in hole and cover over. We made some excellent brick; still we hadn't proven that we could do it commercially, and were too cowardly to invest \$30,000 or \$40,000 until we had.

So we bought a second-hand dry-press machine (which, by the way, we got without any trouble, could have got a dozen if we had needed them), set up a dry pan, elevator and screen on our old yard, hauled the shale four miles, pressed the brick one at a time on a three mold press, to insure plenty of pressure; made two kilns of about 50,000 each, at a cost of about \$20 per 1,000. When the kilns were burned we had demonstrated that our shale was adapted to the dry process and we could make them profitably. Of course this was expensive, but possibly not more so than some other plans of guarantee offered.

Upon the adaptability of clay to dry process I would say that we have a shale that whitewashes badly when made by the mud process, due to salts of lime and magnesia that are soluble in the water used in pugging, and is left as a residue on the surface after evaporation of water. This remains on the brick after it is burned. This does not occur when made by the dry press process.

A point to be guarded against in shales is plucking or splitting under pressure. Some shales do this to an extent that unfits them for use. This trouble may not occur in making sample brick that are pressed very slowly, giving time for the particles of clay to bond. The condition as regards dryness and moisture or insufficient mixing may cause this, and proper attention to gathering and grinding may overcome it.

Question Third. Will front and dry press common brick sell more readily in your market than stiff mud paving and building brick? It is much easier to talk and write about vitrified pavers than it is to make them in quantities, or rather to burn them in large proportion. To compete with other pavements they must be sold at a price very little in advance of ordinary brick. In some localities the demand must be created, and this calls for an outlay of money and requires time. If you can sell a goodly percentage of your product for fronts at price enough to pay for selecting and bring up the average price above that of pavers, then, possible offsets not considered, the conclusion would be to put in a dry press machine. As to whether the advantage might be carried further and the statement made that pavers can be made by this process as well as by the stiff mud, I will not venture an opinion, as we have made no efforts to that end, and will leave this to our Louisville brethren, whom, I am sure, are anxious to be heard upon this topic.

Now to the problems of actual and practical working:

A, location and management of yard. Every novice thinks that in the arrangement of his yard he will excel. He does not care to copy any particular plant. We knew exactly how we wanted ours arranged, but somehow we made a number of plans and arrangements on paper that would not work and had to be abandoned. The local circumstances preclude any detailed plan for all yards. We can only say in a general way, take every advantage of gravity, and cover as little space with your machinery, kilns, switches and storage shed as possible, remembering every step saved to your employe, or every labor lightening facility, makes money for you. Shale deposits usually afford better opportunities for taking advantage of gravity. The dry-press process enables you to build your plant more compactly. A cursory description of our plant might suggest some ideas. Our property of twenty-two acres is located on either side of the Texas & Pacific R. R. On the south is a strip 1250 feet long by 400 feet wide, upon which the yard is located. From the main track, and at an angle of about twenty-five degrees runs a spur switch. Upon this spur and at lowest part of ground are located five common clamp kilns setting perpendicular to and 20 feet distant from the track. These kilns are 25 feet wide inside and 18 feet apart. Each kiln has twelve eyes, making them about 42 feet long. Twenty feet distant from and opposite the middle kiln is the machine house, 40 by 50 feet; attached to rear and end nearest clay field is clay storage shed. The runways from machine to kiln are on a slight down grade. The clay is all hauled down hill. We have left space between switch and main track for brick storage shed, with floor the height of car floor.

B, arrangement for mining or gathering clay. Shale is usually taken from bluff, and is fallen with pick or with blasting powder and dynamite, and con-

veyed to machinery on dump cars, or wagons or carts; if drift mined like coal, tram road and dump cars are essential. We think nature has given us especial advantage in the gathering of our clay, and has afforded us conditions to gather in a manner that is most economical and conducive to best results for the dry process. We strip the surface off varying in depth from nothing to about three feet, then we plow and gather in the way commonly in vogue for dry-press plants, shoveling by hand, and hauling with wagons and carts. We use for plowing an implement known as the "Chicago Screw Pulverizer." This plows to a depth of one to two inches, breaking shale up into pieces about like nut-coal. This plan admits of faster drying, and gives better exposure to air which in some way seems to be an advantage. We are satisfied that with shale as with clay, it is absolutely necessary to put it under shelter, and store for several months to get the best results. It undergoes a change by way of sweating, curing, or all becoming of same dampness, that renders it more easily worked both by dry pan and press, and it makes better brick; even a few weeks under shed shows a difference.

C, preparing clay and auxiliary machinery. This is the rock upon which most dry-press plants are stranded.

We do not feel equal to the task of advising the best machinery for grinding or crushing shale. It seems, however, by common consent that the dry pan and shale are naturally associated with each other, and whether for sufficient reasons or not, very little effort, as far as I can ascertain, has been made to use other machinery. As we knew that the dry pan would do the work, to avoid an error we put them in our works. While we have no reason to complain at the manufacturers of our particular pans, the very nature of the work performed precludes the idea of perfect satisfaction and freedom from annoyances. Every few weeks we are reminded of the fact that we have a dry-pan and also screener and elevator, and the fact is very much emphasized when we undertake to work the material damp or direct from the bank.

For elevator we use single strand chain and buckets. For screen we have revolving conical shaped screen. It is our observation that shale must be ground and screened very much finer than clays, and is much more liable to granulation.

The effort to reduce our material to the proper degree of fineness has been the source of greatest annoyance. The larger lumps must absolutely be screened out. This requires regrinding, elevating and screening the same material several times possibly, taxing these parts of machinery to the utmost or reducing the capacity. We would suggest here that an essential point in erection of plant is the arrangement of screens and chutes to have as little rolling of clay as possible. Have your clay to fall as near plumb into feed box of machine as you can. This will, in a great measure, overcome granulation.

Do not depend upon your machine to take out or overcome granulation. There is not a brick press on the market that will prepare your clay.

D, machine for pressing. It is not my intention nor desire to advertise any particular machine. The makers of the different machines have proven themselves amply able to do this. The reputation of the machine and the reputation of its product are so closely allied that testimonials or recommendations from manufacturers of brick to machine builders taints somewhat of self praise. I believe it to be a duty that every brickmaker owes to himself to, at all times and under all circumstances, uphold and fully appreciate the quality of his product. Some years ago I learned that with the most successful brickmakers, the last kiln was always the best. With this sort of modifying preamble, I think I may be allowed to say modestly, that we are satisfied with the machine we are operating. The selection of machine is of greatest importance. If you intend the manufacture of front and ornamental brick and can afford to grind your shale damp, thereby lessening your capacity and then dry your brick in rack or dry kilns before setting in kiln, then you have a wide range of selection. When it comes to the manufacture of fronts and ornamentals exclusively, I am not enthusiastic and have nothing to say, but believe such a policy would soon put us into the hands of the sheriff.

But where common brick forms the basis, with fronts and ornamentals as incidental, the greatest care must be exercised in the selection of a press that can exert the maximum pressure, and offer resistance to strain and wear consequent to constant use from day to day, year in and year out. For the profitable manufacture of shale brick the material must be dry to get the best results, both as to quantity and degree of fineness in grinding. The drier and the finer your materials the more it is absolutely necessary that you have a machine that can give supreme pressure equally upon top and bottom of brick.

In the selection of a machine, the history of the machine for constant use, for annual capacity and repairs, and its product in competition with other presses, is a vital consideration.

St. Louis is unquestionably the city of dry press brick. A visit to this point will show you nearly all the different dry-press machines in existence, either in use or otherwise. An inspection of the various yards in this city, and a comparison of machines in use, will repay any person contemplating the purchase of a dry-press machine.

You may possibly run across one or two machine agents in this city of dry press brick, all of whom I promise you will treat you right royally, and give you all the assistance in your tour of investigation that they can.

E, setting and burning. These two items properly belong together. The setting of brick made from shale differs from that of brick made from clay, in only one respect that I now call to mind, that is, to guard against rolling consequent to shrinkage. Shale usually shrinks more than clay and uneven shrinkage will cause the brick to roll which is objectionable for several reasons that are patent. To avoid this rolling we set only two brick directly over each other instead of three, as is often done in stock brick, and we reverse the direction of the brick



in horizontal plane across kiln, every alternate block, that is we let the ends of brick in second block abut against sides in first block; ends in third, against sides in second, and so on across the kiln.

In burning it is our observation that the water-smoking can be done with less care and more safety in shale than in clay brick, certainly than with the clays that we have used.

The total absence of any technology upon this branch of manufacture makes it difficult, if not impossible, to intelligibly convey to you any correct impressions of ideas I may have as to degree of heat necessary, etc.

I can only say in a general way that when we are satisfied kiln is nearly dry or free from water-smoke, we increase our heat slowly, getting heat well out on top all over, then after closing the platting we begin to settle, watching top and bottom carefully till we get as nearly as possible a settle of eighteen or twenty inches, when we set forty-two high, uniformly over top. This settle allows for shrinkage of about one-ninth. If we should, from any freaks of the fires, get one portion settled in advance of the other we cover this part we think is burned sufficiently with asbestos paper and keep up the heat in eyes with light fires. We sometimes cover the whole top. We think this causes the brick to burn out closer to the top, and frequently burns the soot off top platting, enabling us to pitch out and deliver if we desire, as these are always best hard brick.

Then comes the process of annealing, upon which subject much has been written recently. I would be glad to give our process, as we doubt not it will be of incalculable value to all of you. The first step in this process is to shove all the coal off the grate bars; this is done chiefly to save the grate; then we daub the doors tight and let them anneal. About the third or fourth day we open the casing; make a test. If the brick are hot enough to set fire to the straw or wagon beds we conclude they haven't thoroughly annealed, and let them alone, unless we are too much rushed. This may appear to you as treating the annealing or toughening of brick very slightly. We recognize that it is not well to let a cold draft of air on to white hot clay wares of any kind, as, in brickyard parlance, it "chills" them. But if you have not taken the proper steps to toughen your brick in the grinding, pressing and burning, you will accomplish little in cooling.

F, Delivery, collections and spending your money. All three of these little details in the business we find very much improved by the use of shale by the dry press process, the material and the process being peculiarly favorable. We make a superior brick and can deliver them easier, because we always have a place to put them. Our collections are easier made because our customers are better satisfied. The enthusiasm is kept up, and we always have our money spent before we get it, for more machinery and other improvements and repairs. I don't care to give it away on the outside, but we all know how it is, the brick-maker's, that is the *progressive* brickmaker's money, is spent with very little trouble. It is done mostly by handing his banker a little piece of paper with his signature at the bottom, and the banker gives him another with the same signature. Queer, isn't it? But let's stop. If we start on the circulation of money we might get into politics, and when it comes to politics Texas "is in it." Only one way and at this writing it would be a little discourteous and uncharitable for us to flaunt any of the ideas that have obtained in this section on the money and other political questions.

Trusting that what I have said may bring out something by way of discussion that will be of value to those engaged in or contemplating the manufacture of brick from shale by the dry press process, I leave the subject, by no means finished and hardly touched upon, with you. [Applause.]

SECRETARY RANDALL—I have a letter here just received from an absent member, one who is admired very much by those who have met him at former conventions. It is from George M. Fiske, of Boston. [Applause.]

PITTSBURGH, PA., January 24, 1893.

MY DEAR RANDALL—I regret very much that I can not be present at the convention. I was unavoidably detained at Philadelphia and again here by important matters which I can not well neglect. I particularly wanted to be with you this year to make amends, if possible, for the mistake which I made at the powwow at Washington a year ago. Please remember me to the brethren.

Yours truly,

GEORGE M. FISKE.

PRESIDENT ITTNER—Mr. Alsip desires to say a word in regard to the invitation which Chicago has extended to the Association.

MR. ALSIP—The invitation extended by Chicago was originally intended for next January, but since extending the invitation we have heard a number express a desire to hold a meeting there during the World's Fair. Now, we extend to you an invitation to hold a mid-year meeting in Chicago during the World's Fair as well as later. I want to say further, that from the last day in May to the last day of October, I don't know how many days there will be in October in Chicago this year, but from the time the fair opens until it closes, we will have a room in which visiting brickmakers and craftsmen can be entertained, and we extend to you a hearty and cordial welcome to avail yourselves of the hospitality which we shall offer. [Applause.]

PRESIDENT ITTNER—The next order of business is a paper on "Burned Clay as a Roofing Material," by John R. Elder, Indianapolis.

## BURNED CLAY AS A ROOFING MATERIAL.

BY JOHN R. ELDER, INDIANAPOLIS, IND.

Mr. President and Gentlemen of the Association:

Under the head of burned clay as a roofing material, the word tile expresses the material it is made of, how it is made, and its uses. The Century dictionary defines the word tile, as a thin slab of baked clay used for covering the roofs of buildings, etc. A thin slab of tin, iron, or metal of any kind is not tile. Tile is burned clay as a roofing material, and nothing else, and that is what I want to occupy your attention with for a few minutes.

In one of my trips in a Pullman car, from New Orleans to Louisville, I had the good fortune to have for a traveling companion, a gentleman nearly ninety years of age. He was a chatty old man, with a good memory. Among other things, we talked of the changes that had taken place since he and I were young. Here we were riding day and night in a car going thirty miles an hour, with the best hotel accommodations on the train, instead of traveling by horse, road wagon, or walking. He said if any one had told him, when a young man, that he would live to see the wonderful changes he actually saw now, he would think they were telling him a fairy tale.

The improvements that had been made in every branch, within his single life, was beyond comprehension. He spoke of light—the fat pan, with a rag to burn; the tallow dip; then sperm oil; then lard oil; then gas; then petroleum; then electricity, that rivals the sun. He was a papermaker by trade, and commenced making paper a single sheet at a time, with a sieve to collect the pulp, then spread in blankets, and pressed in a screw press. He told of the different



J. A. BLAFFER, NEW ORLEANS, LA.

improvements in his trade, how each one was thought to be the best and last, until now, logs were put in at one end of the building and hardly touched by hand until it came out paper ready for the press at the other. If you gentlemen before me, with silver locks, will think of how things were when you were young, and how they are now, you will agree with the old gentleman, that it was a fairy tale—that imagination then could not conceive of the wonderful improvements that now actually exist, and are considered common place, every day necessities.

Edward L. Morse published a series of articles in the *American Architect*, in 1892, on the older form of roofing tiles, that are exhaustive in tracing their history. He traces their use back to China, several thousand years before Christ, and says they were made even before the sloping roof was first used. Palm leaves, straw, and the bark of trees formed the first coverings for sloping roofs, and then comes terra-cotta tile, made in the form of bark, with the larger pieces curving upward, and smaller pieces to cover the joints.

Relics of these ancient tiles are found in the art galleries in Berlin, Dresden and London. The articles are illustrated with cuts of tiles made in different countries, and it is a remarkable fact that tile are made and used in this country to-day of the same general form that were used four thousand years ago.

In his classification Mr. Morse shows that the *Normal* (Asiatic) tile were used in the Orient, ancient Greece and Italy, China, India, Greece and Italy; the *Pan* (Belgic) in England, Scandinavia, Belgium, Holland, Japan, Java and various modern countries; the *Flat* (Germanic) in Germany, Austria, Hungary, Poland, Switzerland, France and England.

In the shape and form of these tiles you will see the same shapes and forms most generally used to-day, both in Europe and America. It is shown that these old forms of tile are bedded in mud and clay—it is necessary in laying most of the tiles made at this day to bed them in cement. The most artistic tiles are



found in China, Korea and Japan, where they are highly glazed, in different colors, with very elaborate finishings, making a very showy and ornamental roof.

The old form of tile were made of material the most enduring of man's fabrications, and the terra cotta roof tile, when properly made is, all things considered, one of the cheapest and most durable. Acting as a non-conductor, the upper portion of the house, under a tile roof, is warmer in winter and cooler in summer. Slate absorbs and transmits a great deal of heat. Shingles are short-lived and a menace in times of conflagration. With the best tile clays in the world, and an abundance of unskilled labor usually employed in making tile, there is no reason why roofing tile should not come into common use in this country, as they have in all other parts of the world. These are the conclusions of Mr. Morse, after an exhaustive investigation of tile roofing—I must say that I fully agree with him.

In *Encyclopedia of Architecture and Construction*, A. Rospide has an article on roofing tile in France, which gives a good description of the latest improvements. He divides his article on roofing material into four parts—first, clay; second, stone; third, metallic and fourth, wood, giving the preference in the order named. In speaking of the manufacture of tile, he says it is still carried on just as it was before the development of machinery. The clay must be selected with great care reduced to a paste, run into a plaster mould, then dried and burned. This necessarily makes the tile thick, and requires a great deal of trimming and handling. The simple flat tile was long ago almost universally superseded by the lapping and interlocking tile. He says the following are requisites of every good roofing material.

First. It must exclude moisture, which rots wooden framework.

Second. It must be capable of withstanding the force of the wind, and must admit of provision for all expansion and contraction consequent upon variations in temperature.

Third. It must not overweight the trussing so as to increase the size of the supporting timbers.

Fourth. It must be fire-proof.

Fifth. The original expense should be consistent with the purpose which the construction is to serve.

Sixth. It should require but little care.

Every one of these conditions are fully complied with by the tile made under the patents of the Clay Shingle Company.

Louis H. Gibson, architect, spent years in France and Germany investigating their manner of building, especially in constructing their houses so as to be secure from fire. He speaks in no uncertain way about burned clay for covering houses. It is the ideal covering—the only material that is reliable, and will stand the test for centuries. He says, "The arguments in favor of a tile roof are too old and too numerous to need anything more than mere mention. If we stop to think about it, we know that the roofing material in general use is far from satisfactory. Slate, at best, is a temporary roofing; it is readily affected by heat; so much so, indeed, that a little heat will expose all the woodwork of an ordinary roof to the action of fire. Shingles are as inflammable as it is possible to arrange the same amount of wood. Slate and shingles, as we know, are the general roofing materials. Tiles being a clay product, afford protection to all woodwork under it in a perfectly satisfactory way. The heat does not affect the tiles in the least. Frosts affects them much less than slate.

The covering of a roof with tile practically means not only the protection from the elements, but, as well, protection from conflagrations, or any unusual or dangerous degree of heat. Heat, as we know, can not affect burned clay products. This quality, together with its ability to resist other elements of nature, renders it the ideal building material. Its qualities of this character are quite as apparent for roof covering as for other use. For some reason, not easily understood, tile roofs have not been generally manufactured in America. While the field is open, and while there is a general demand for the material, it is not satisfied. There is a difficulty in securing a satisfactory tile roof at a moderate price.

"For the purpose of demonstrating the real value of tile roof, I choose to go back to their history in France. There are many roofs existing in this country which are not quite one thousand years old, and those of the tenth and eleventh centuries are common indeed. What better evidence of their quality can be asked?"

In the western part of Indiana, in a small country town, lives a very intelligent old gentleman. He is a carpenter, and supports himself and family by work at his trade. He had traveled very little, his business did not allow him much time for reading, but he was a great thinker. He had an inventive mind, and understood the use of tools. As there were excellent clays in his town, he tried to form a tile for roofing houses. He spent all his spare time and money for years in experimenting. The forms he made were burned in a fire-brick factory near. When he got a good point he kept it, and changed and altered and improved until he succeeded in getting what he believed to be just the thing. He wanted a tile that would be strong, light on the roof, that would be guarded at every point against sleet, rain and drifting snow, that would be wind, water and frost proof, and fire proof, that could be made by machinery at a small expense, and could be worked and burned without loss. After getting all these points to his satisfaction, he consulted a patent attorney and found his form and principle was new—that his tile was patentable. He secured one patent, and followed that with others, until he now has six. Like most inventors he had no money to manufacture his tile. He had no money, nor influence to seek the capital necessary. After several years the president of the railroad running through his town became interested in his invention, and through his influence the necessary capital was obtained. A factory was started. Again time and money was spent in putting his theories into practical use. Tile were

made—the factory was run successfully and profitably, and to-day some splendid buildings are covered with tile made at his little factory. He can show roofs equal to any in the world. Unfortunately the factory burned, and has not yet rebuilt, but four factories are now at work in different parts of the country, and before this year is out more tile will be made of his pattern, and under his patents, than in all the other tile factories in the United States.

Architects and others often wonder why more tile have not been used in the United States. This question is easily answered. In the first place this was a timber country; clap-boards and shingles were easily made out of timber, and they formed a cheap roof that answered the purpose for a time. Then came slate, and tin, and galvanized iron, and felt and gravel, that could always be obtained when wanted, were light and cheap. Tile, as made, was heavy, expensive, hard to get, and in consequence were only used on expensive buildings, that could contract for them in ample time. Many have tried to make tile, but the rule has been to follow the old forms of tile, and the old manner of making them, so that there was no profit in it. Both Mr. Morse and Mr. Rospide, quoted above, confirm this fact. The manufacture of tile has not kept pace in advancement with that of any other branch of clay industry. The idea has been to invent a machine to make tile easily and cheaply, while the fact is, there is plenty of machinery exactly suited for the purpose. The brick presses of to-day can make tile just as easily as they can make brick, and the best of these are not expensive. I would not consider a repress expensive that will make 4,000 tile a day and cost but \$225. The German press that forms the tile in plaster moulds is not what progressive Americans want. The application of our improved machinery in preparing clay, and forming tile, is a long step in the direction of increasing the use of tile, improving their quality, and cheapening their cost.

So far as I have been able to learn, there are only five tile works in the United States. Three of these are in Baltimore and two in Ohio. Terra cotta works have made tile on orders, but it is a branch they have not prepared for, and only make them when they feel compelled to. There are more tile made by one factory in Ohio than by all the balance in the United States. This fact would indicate that making roofing tile has not been profitable in this country, and this is probably true, as we find where any business is successful competition starts up all around it. In our opinion the reason the tile business has not been more successful is because the old form of tile, and the old way of making them in the old country, has been followed in this. The tile is too heavy, has to be laid in cement, and the improved machinery has not been used in making them. And, again, stocks have never been kept on hand to fill orders on short notice. When you think of the vast sums that are spent each year in building, and that fully one-twentieth of the cost of all these buildings are for the roofs, you can see what a business can be done, if the tile can be had at a reasonable price.

In speaking of the tile factories above, I did not include four that have been started within the last year to make tile under the patents of the Clay Shingle Company. One factory has been started at Baltimore, one at Trenton, New Jersey, one at Chicago and one at Denver. Before this year is out all these factories will be making tile on a large scale, and negotiations are now pending for several other factories.

In considering the value of roofing tile, the question of protection from fire and insurance enters largely into the account. In these days, when so much money is spent in fire-proofing the inside of buildings with hollow brick walls, deadening the floors with terra cotta blocks, and steel joists and girders, it seems like folly to put materials on a roof, the most exposed part of the building, that will not resist the least heat, but rather attracts fire from adjoining buildings, and often when more than a square away. Many of you have had fires, and know what it means to be burned out; and all of you pay insurance, and know what a heavy tax that is. In Germany, where buildings are constructed under government inspection, with all possible protection against fire, and where tile roofs are universal, the rate of insurance is one-tenth of what it is in this country. A risk that will cost one dollar there, will cost ten dollars here, and losses by fire there are as one to one hundred here. In the last seventeen years in the United States, the losses by fire were \$1,818,323,306—more than the present national debt. In the year 1891, the loss was \$143,764,967, in 23,313 fires; of these fires forty-four brick and tile works were destroyed; 481 fires were caused by sparks from locomotives and flues, on which the loss was \$4,506,184. Twelve thousand, three hundred and ninety-four business failures were traced directly to the loss by fires in 1891. Last year \$40,600,000 of property was destroyed by fire that did not originate on the premises, or by exposure to adjoining property. The per centage of loss in 1891 that originated on the premises was 71.8, and by exposure 28.2. This is a fearful record of loss by fire, and the worst of it is, every one of you have to pay part of it, whether your property was insured or not. This is only the money value of the loss, and if the loss in time and business by men thrown out of work was estimated, it would probably be more than doubled. Now, as it is an admitted and unquestioned fact that there is no material that affords as certain a protection from fire as burned clay, you see the value tile has for roofing. Nearly one-third the fires, and one-third the loss in 1891, was from outside exposures that might and would have been saved if the buildings had been covered with tile. Can any stronger argument be used in favor of covering your houses with tile?

Another valuable quality in the clay roof covering is that it is a non-conductor. This is evidenced by the use of porcelain insulators on electric lines. They are considered just as good for this purpose as glass. Now, it is as important in building a house to keep out the heat in summer as to keep it in in winter. It is the rule that the attics of our houses, and especially if covered by slate, are as hot as ovens; and as long as a single floor and coat of plaster only separate the attic from the sleeping room, the temperature in the latter nearly equals that of the former. Nothing so effectually overcomes this as a tile roof,



which neither attracts the heat nor retains the frost. The sleeping rooms in a house covered with tile are always comfortable—cooler in summer, and warmer in winter.

The day for boring augur-holes with gimlets has passed. In all mechanical business, and particularly in clay industries, in these days, it takes capital to start a business and carry it on. The profit is more to-day on the amount of business done—on the use of the best machinery and appliances, and conveniences for handling and shipping. Little fish can't swim safely in streams where big fish live and thrive. The point I want to make is, that to be successful in any branch of the clay business, in these days, you must have money enough to get the best machinery, and to meet all bills until your business gets on a paying basis. This is particularly true in the tile business. Many have the idea that the roofing tile business is a small one—that it is like the drain tile business—a neighborhood affair. It is not. It is a business as large as you have the money and business brains to make it. No tile factory I know of in this country has been able to keep a stock on hands to supply immediate demands. It has been necessary to order the tile for the roof before the cellar was dug, and then often wait weeks or months, with the building exposed to the weather, before you got them. The consequence of this uncertainty and delay has compelled architects and owners to substitute other roof covering—they would not be deviled to death waiting. Tile will stand shipping. The business is a large and growing one, but it must not be started and carried on in the gimlet principle.

You have read in your papers of the trials and tribulations of the man who tried to run a brickyard. He had read about making brick in the papers and therefore knew all about it. All he had to do was to buy a machine, start a yard, and the machine would make the brick. He tells of his troubles, the time lost, money lost, brick lost, temper lost, and even his religion lost, before he succeeded in becoming a good brickmaker. If this is true of brick, it is doubly true of tile. It is possible some of you have had experience in trying to make tile, and could tell interesting stories of how sanguine you were when you started in and how disgusted you were when you started out. If you have not been there others have. I have met them—plenty of them. I have heard of men that could tell you all about making tile—but their tile never got on the roof. I suppose I am talking to practical men, that can appreciate a practical business proposition. When I tell you that if you want to start in the tile business buy experience and knowledge from the successful man, you will understand it. If the knowledge is of the right kind it is cheap at any price. It will save you much more than you pay for it. Experimenting costs a great deal more than practical knowledge and experience. The man that has the knowledge and experience has paid for it. You see the point?

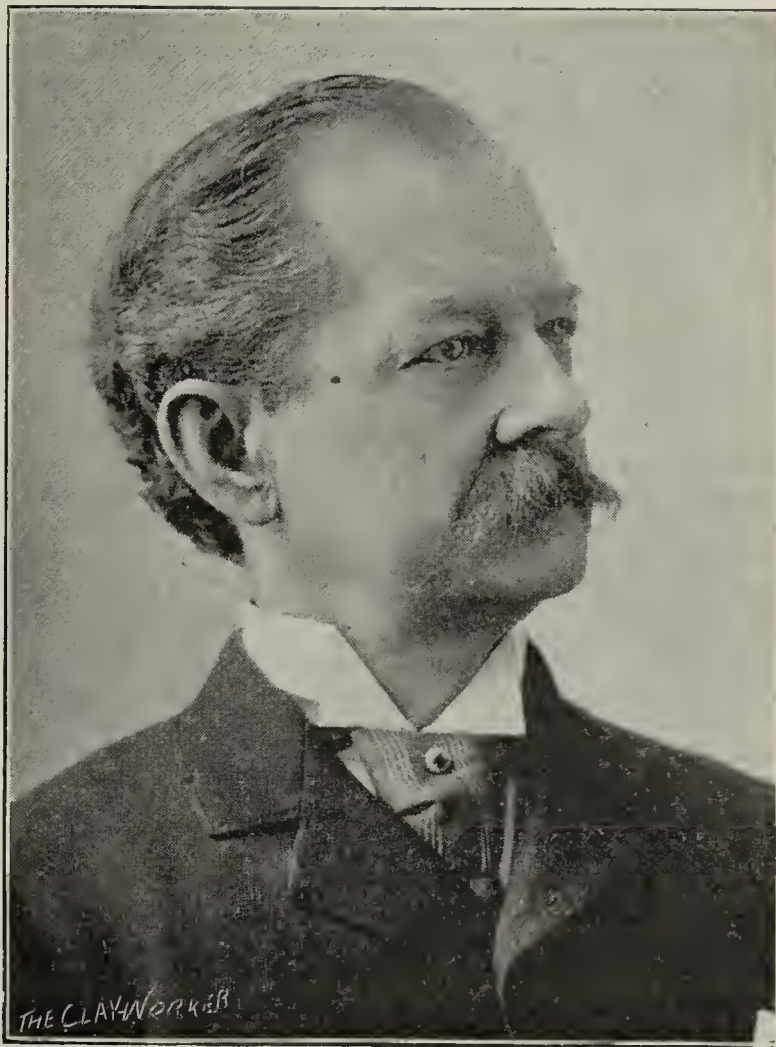
Will tile sell? Is a question that may be asked. I have been in a position to know they will. Of course tile, as compared with other roofs is not a cheap roof, and will not be used on the cheaper class of buildings. But tile has qualities for roofing no other material has, and if a tile looks well, has the fire and frost properties, can be laid at a small cost, is not too heavy, and can be sold at a reasonable price, every building that has valuable records and property to protect, churches, school-houses, railroad depots, and elegant private residences will use them. The trouble is not to sell them, but to have them to sell, so that architects and builders know they can get them when wanted, without delay. I know what I am saying when I tell you the only trouble about selling tile is in keeping a stock on hand to supply the demand. Tile is the coming roof in the United States.

I have shown you from the best authority that there is no roofing material equals tile. Slate is the next best, and in considering prices with an inferior article, you must bear in mind the relative qualities. The American architect quotes prices on building materials. In looking at the quotations on slate in Chicago, to builders and contractors, the prices range from \$5.50 to \$14 per square. Red slate is \$12 to \$14, and unfading black and purple from \$7.10 to \$9. Now, the tile made under the patents of the Clay Shingle Company, can be sold at a good profit for \$8.00 per square, and can be laid on the roof as cheap or cheaper than slate, so you see the modern tile, made by machinery, having all the valuable qualities of the old tile, has the advantages in weight and price over the better class of slate. With these points in their favor, who can say that tile is not the coming roof?

PRESIDENT ITTNER—We will return to the discussion of Mr. Figh's paper. It is now open for discussion.

MR. MORGAN—I would like to say a few words upon this paper. I know it is about time to close the convention, and what is to be done must be done in a short time. The discussion on drying this morning made me feel as though I were in an old-fashioned Methodist experience meeting. I was pleased with this paper, because it was based on the experience of the writer. In regard to this question, I am not quite exactly like the young man who advertised to deliver a lecture on "The Experience of Married Life," when he had only been married two weeks. I have had more than two weeks' experience in the dry process of making brick. Sometime ago a gentleman in the East wrote me on the question, and I told him that I had a hope for making dry-press brick where the material was suitable. I knew that this gentleman had gone over the United States, and made the statement in the East that any material that was suitable for the manufacture of brick, either by the soft mud or by a better process, was suitable for the dry process.

Hence, I said I had a hope of making dry-press brick with a suitable material. He wrote back, and said he was satisfied that I had no experience with the dry-press process. If that gentleman, or any of his representatives, are here, I would like to say to him that I was making dry-press brick when he was wearing his swaddling clothes, and I am here to make the statement, without fear of successful contradiction, that where you have a special material taken into the dry house, and then dried by artificial means, preparing the clay for the grinding process, I say that the dry-press process is not adapted to it. I know that any of the dry-press machine manufacturers will bear me out on that question. It is a very important matter, and one that I will commend to your serious consideration, to look first and see that your material is suitable for that process. Another important item is: Insist on having your clays tested. A good many people make the mistake of sending their clays to machine or drier men to be tested. I say don't you ever send your clay to be tested to any dry-press machine manufacturers, unless you go with it yourself or send your superintendent.



JAMES DINGEE, PHILADELPHIA, PA.

The next important item, burning and drying reminds me of an experience I had in Staffordshire. I was sent to erect and start works for a man who had been burning about 50,000 thousands a day in the old, old type, and he had corns on every toe and all ten of his fingers; he was very ticklish, and would not listen to any suggestions. They had the old-fashioned down-draft kiln, something like Mr. Eudaly's, only, of course, not so good. We made the brick and set them in the kiln, and I said to him now be very careful what you do, and I told him to be extremely careful in the water-smoking. He peremptorily told me he knew what he was doing. He went to work and set his fires just as he had always been accustomed to do, and a man had to be employed to haul those brick out and put them back in the bank. My brethren, if you are determined to take your brick direct from machine to kiln, get a kiln that will dry your brick with the up-draft, and then finish with the down-draft.

MR. GUISE—I want to relate a little of my experience in drying brick. I sent some of my material to different machine men for a



test. I sent to parties that make dry press machinery, and to parties who make auger machines, and also to some who make stiff mud machines. The result was I got no sample from the parties who make dry press machines, but got some very fair pavers from the parties who make the auger machine and also from the stiff mud machine. I inquired of the parties who made the dry press machine why they did not send me any pavers. They did not give me any reason for it, but sent me some fair samples of brick and I came to the conclusion that the dry press machine was not adapted to the manufacture of paving brick and I am thoroughly convinced that the stiff mud machine is the true one for making paving brick.

PRESIDENT ITTNER—We will pass on to the last paper of the afternoon session, "Vitrification of Clays," by A. L. McDonald, of Louisville, Ky.

MR. McDONALD—Mr. President and Gentlemen of the Convention, I must make a confession and ask your indulgence. I have not prepared a formal paper on the subject assigned me. In truth, I never agreed to. Our industrious and persistent secretary asked me to take a place on the programme, and knowing it was no use to say no, for Randall never takes "no" for an answer, I permitted him to have his way, as he is accustomed to do, and put me on the programme. Now, you have my confession. The indulgence I crave is that I be permitted to speak in a desultory manner, as I am not prepared to speak seriously or at much length upon the subject.

#### THE VITRIFICATION OF CLAYS.

BY A. L. McDONALD, LOUISVILLE, KY.

That originality often makes men famous is admitted, but the man, unless he be at least a "five-year-old," who has ambition in this direction and gets his name on the programme of the N. B. M. A. for the last day on any such narrow topic as the "Fuel Question," "Burned Clay as a Roofing Material," or "Vitrification of Clays," is apt to be disappointed and come to real grief. Notified long before—at least a month—that he is down for an essay or address, with the time before him he feels able to write a quarto volume on his chosen subject, the one chosen for him. He has some reading in this direction and more or less experience that he considers unique and original. He is down on the "fuel question," and wishing to start out on a "broad gauge" treatment of the subject and work in his original matter in such a way as gain his point, *i. e.*, hide the mass of what he don't know behind the molecule of what he thinks he does know, he goes first to the old and established authorities, finds pages on wood peat and coal as fuels, but nothing of value at this day on oil, and nothing at all on natural gas, or artificial gas for burning brick. He takes down the later works—Davis, Craig and others—and finds a little more, but rather behind what he has read during the last year in the technical journals and what his own experience has been in that time, so he turns to the current volumes of journals—gray, blue, orange and pink and yellow backed and reads, noting carefully so as to avoid a semblance of plagiarism. He finds that R. Brick, G. R. A., J. I. N., X. Y. Z. have gone over most of the ground and recorded many of the same experiences and observations before him—space costs nothing in the journals—and that if he is to confine himself to original matter the quarto volume will be a very thin one.

Still he thinks that he has one or two new things that R. Brick and other regulars have not touched upon, even if they knew anything about them, and feeling not altogether disheartened he goes to work and avoids carefully appropriating anything published prior to January 15th—the latest issue of the clay journals—and fully completes his task, reads it over, culls a little here and adds a little there, feels very thankful, that, like Purington and the heat unites, R. Brick don't know anything. He is satisfied that he has presented one or two new things at least and treated some others from a new point of view. With a pardonable feeling of pride and a genuine feeling of relief, he comes to the convention, and while waiting his turn quietly drinks in the words of wisdom, drafted up, down and continuously from such nestors of the yard as Eudaly, Pike, Davis and others who are always ready to honor any draft, and information, whether drawn on them or not, when Keystone is not around. And he really enjoys the confessions of some others, that, they like himself have made mistakes; for he does not quite like to accept the doctrine that "all men are liars." Surprises are in store for him. He never dreams for a moment that after all his worry and work, his original experiences on this subject, especially assigned to him and to no one else, are to be incidentally related by his Hoosier friend Adams, who burns with natural gas, or by Purington who tells how he burns with oil forty-five million vitrified pavers at Galesburgh, and some awful cyclonic number of millions at the "Windy City," or some other who shows how he gets 190 per cwt. vitrified by his method of burning in answer to a question from the "box."

It may be that they brought "Burned Clay as a Roofing Material" from Genesis pretty well up to date, and yet he finds that a generous brother from St. Louis, with but little respect for the right of elders and such a limited range for thought and pen as "Burned Clay," has not only tile-roofed a good part of his field (he got there first), but underlaid it with sewers and drains—some 800,000

miles (St. Louis can't let Chicago beat her when it comes to putting numbers on paper) and vitrified both roof and foundation. Last, but not least in point of generosity, comes the help extended to the "Vitrification of Clays" man—as he was the last on the list—the opportunities for giving him a lift were more numerous—and as a matter of course he finds that such unrestricted philanthropists as Howard (Burned Clays), Fairhall (Professional Brickmaker), Williams (Paving Brick and their Manufacture), assisted by Snell, Morgan and other guerrillas, to say nothing of those who had been to the confessional in their fullness of experience and broadness of observation had taken the convention over. The whole limits of the horizon of this subject pointed out everything of interest, and recognized as old friends all his new and original experiences, thus relieving him of all necessity of attempting to instruct or entertain this convention with an address on Vitrification of Clays.

MR. ITTNER—If there is no discussion on this paper, we will take up the last number on the regular programme, the question box. We have a few questions here. I will ask the secretary to read them.

SECRETARY RANDALL—I have an announcement here I wish to make. The Dumesnil Brothers extend an invitation to the members of this convention to visit their works on Twelfth street. The works are not in operation, but you can see there a Chambers' machine, a Sharer drier, a Eudaly kiln and Raymond repress. Mr. Dumesnil is present and will gladly escort any of the members to the works who may wish to go.

#### THE QUESTION BOX.

The first question is, "Given a material which makes a buff building brick; why do they burn a variety of shades in a down draft kiln without grate bars, while in a down draft kiln using grate bars they are burned all one shade or color?"

A MEMBER—Does the gentleman who asked the question know it to be true?

A MEMBER—Yes it is true.

SECRETARY RANDALL—Here is another question: What is the cure for cold spots in a kiln?

A NUMBER OF VOICES—"Warm it."

PRESIDENT ITTNER—The next order of business is reports of committees.

MR. MCGRAW—If resolutions are in order, I have one I desire to offer. I want to introduce a resolution whereby we will be supplied with a chaplain. At Washington Brother Eudaly had to perform this service for us; happily, the Louisville brethren were thoughtful enough to supply us with a regular chaplain this year. For the benefit of the Association I desire to offer the following resolution:

WHEREAS, It is customary in all large deliberative bodies of this character to have a regularly appointed chaplain, and

WHEREAS, We have on former occasions experienced some difficulty in securing the services of a divine to perform the duties of a chaplain, and

WHEREAS, Our venerable and beloved brother from the Quaker City, Mr. Thomas M. Flood, has, on many occasions, by copious quotations, shown great familiarity with the Scriptures and peculiar qualifications for the office; therefore be it

Resolved, That our venerable brother be appointed the regularly ordained chaplain of this Association for the ensuing year. [Laughter and applause and calls for Flood.]

MR. ADAMS—I rise to a question of privilege. This resolution contemplates the appointment of Thomas M. Flood. Why should it be M? Does the M stand for malt? [Laughter.]

MR. A. L. McDONALD—I believe this is a cut and dried scheme. Ever since the arrival of the Philadelphia delegation they have been industriously circulating cards which read: "THE BIG FOUR. WHO ARE THEY? *Damfino.*" [Laughter.] Now Brother Flood has been electioneering for sergeant-at-arms of this convention, and unless he wants to be made chaplain, I think it would be well to amend this resolution to read sergeant-at-arms, and I make a motion to that effect. [Applause.]

MR. PIKE—Second the motion.

MR. EUDALY—Does this contemplate the amendment of our Constitution? This is certainly a very serious matter, and I think,



of course, we would like very much to have the gentleman named appointed as sergeant-at-arms, because he is in every way qualified for the position, and yet—

PRESIDENT ITTNER—I think the best way to dispose of this matter is to declare it out of order. [Applause.] We will now hear the

#### REPORT OF THE COMMITTEE ON RESOLUTIONS.

MR. D. V. PURINGTON, chairman of the committee, then read the following resolutions.

MR. PURINGTON—Mr. President, your Committee on Resolutions beg leave to submit the following:

First. We have carefully considered the resolution offered by Mr. Donald McDonald, of Louisville, and respectfully submit that while we believe the convention is in hearty sympathy with the spirit that prompted Mr. McDonald, we think the action proposed by him is impractical. We, therefore, beg leave to report and recommend the adoption of the following as a substitute:

*Resolved*, That members of our Association shall be entitled to call upon the corresponding secretary for information respecting the standing and reliability of individuals or firms who propose to erect new brickyard plants, and it shall be the duty of the corresponding secretary to refer all such communications to the executive committee. The executive committee shall, at their first meeting thereafter, take such action, and make such reply as the facts within their knowledge seem to warrant.

Second. *Resolved*, That, hereafter, at the annual meetings of this Association, the election of officers and their installation shall be the last regular business of the convention.

Third. *Resolved*, That this Association extend to Brother John McCain, of Denver, its sincere sympathy for the illness of his beloved wife, and that the secretary of this Association be directed to convey to both Mr. and Mrs. McCain a fitting expression of our sorrow and disappointment for the affliction which has kept them from us at this time.

Fourth. *Resolved*, That this Association wishes to place upon its records some testimonial commemorative of the life and services of Thomas Moulding, of Chicago; Geo. B. Oldfield, of Norfolk, Va., and J. Keener, of Middleport, Pa., who, during the past year, have gone from works to reward. We shall always miss their kindly faces and wise counsel. Happy will it be for us if we close our books with a balance of respect and affection to our fellow-men, as large as these men left. We tender to their sorrowing families the sincere sympathy of every individual member of the Association, and direct that the Secretary forward them a copy of this resolution.

Fifth. *Resolved*, That in closing up the work of the eleventh annual convention, this Association wishes to tender its congratulations to the Louisville Brick Manufacturers' Association for the magnificent success which has attended their efforts to make our stay in their city pleasant and profitable. We appreciate the fact that though few in numbers they have been ubiquitous, and that nothing which could possibly contribute to our happiness or comfort has been neglected. To each and every member of the local Association, the national body tenders its sincere and hearty thanks.

Sixth. *Resolved*, That to the Louisville Board of Trade, the Builders' and Traders' Exchange, and especially to Leo P. Kanfman, its secretary, and to all the citizens of this warm hearted generous city we confess our great obligations for the courtesies of the week. We tender them our grateful thanks and leave with them our benedictions.

Seventh. *Resolved*, That we feel it due to ourselves to say that in no city in which our conventions have previously been held have we received such fair, impartial and generous treatment from the press as has been accorded to us here. To the Louisville press without exception we extend our unqualified thanks.

|                                      |              |
|--------------------------------------|--------------|
| D. V. PURINGTON, Chicago, Ill.,      | } Committee. |
| F. L. STILES, New Haven, Conn.,      |              |
| JAS. E. DINGEE, Philadelphia, Pa.,   |              |
| T. L. HERBERT, Nashville, Tenn.,     |              |
| C. J. HOLMAN, Sergeant Bluffs, Iowa, |              |
| J. P. NORTON, York Corner, Maine,    |              |
| H. W. BOHMAN, Louisville, Ky.,       |              |

RAYMOND PENFIELD—I move that we take up this report and consider it section by section.

L. J. HOWARD—Second the motion.

Motion carried.

PRESIDENT ITTNER—The secretary will please read the first resolution.

SECRETARY RANDALL then read the first resolution.

MR. PURINGTON—I want to say that there is not a member of that committee that cares a cent about this resolution, except as a matter of courtesy to the Louisville association. The resolution as originally introduced by Mr. McDonald would require the corresponding secretary to write letters to every individual in the United States, whether they belonged to the Association or not, and the

result would be we would have a kindergarten school for brick-makers. If they belong to the Association, they are entitled to this information anyway.

MR. PENFIELD—I move that resolution No. 1 be stricken out.

MR. DINGEE—Second the motion.

Motion carried.

SECRETARY RANDALL then read resolution No. 2.

MR. EUDALY—I move this resolution be stricken from the report.

MR. PURINGTON—I want to explain this. This resolution was made in accordance with a suggestion made by at least a dozen members of this convention, and a great deal more elaborate plan was arranged for than that, but we have put it in just as few words as possible. It was thought that after the first day's session we were much more fitted to select the proper man for presiding officer, and it would be better than for a half dozen men to come here and put up a job on us at the start. The committee, personally, have no feeling in the matter; you can do as you please with the resolution.

MR. McDONALD—If the men of this convention had known that a dozen men were going to the committee with that suggestion, I think there would have been four dozen to offer suggestions in the



D. V. PURINGTON, CHAIRMAN COMMITTEE ON RESOLUTIONS, CHICAGO, ILL.

opposite direction. The very point that Mr. Purington makes, that after being here two or three days we would be better fitted to select the presiding officer than at first, argues against this resolution. Are we selecting this man for ourselves, or for someone else?

MR. PURINGTON—I want to say one word further. The National Builders' Association have recently adopted this plan, and our honorable president was made president of that Association on the very last day of the session. From the fact that it worked well with them it was thought it would work well with us.

MR. ADAMS—In regard to this resolution, at first blush I thought it worthy of consideration, but on further thought, I believe it would not be well to consider it. Instead of being a benefit by giving the members a chance to become acquainted with each other, it would be the means of turning the first two or three days' sessions into a regular lobbying process to elect such and such a man president.

MR. MCGRAW—Mr. Adams' sentiments are my sentiments exactly. Such a proceeding would turn our conventions into political gatherings. Now we have been electing our officers the first day of the convention for seven years, and have been getting along nicely, and there is no reason why we should not get along just



as nicely for the next seven years. I see no reason why we should change the system now in vague.

MR. EUDALY—I would rise to a point of order. It tends to change the constitution, and the constitution can not be changed by a resolution. It should be brought up in the regular way.

MR. PURINGTON—I think if Mr. Eudaly will read the constitution he will see that his point of order is not well taken.

MR. EUDALY—The constitution says nothing about the Committee on Resolutions.

MR. DINGEE—Mr. Eudaly knows that this does not change the constitution. The constitution says the officers shall be elected at the regular annual meeting. What difference is it, whether it is done the last day or the first day?

MR. RANDALL—This is a question that to those intimately acquainted with the governing of this body is no new one. It has been agitated each year ever since our first meeting. It is a many-sided question; there are advantages and disadvantages upon both sides. It is a question that I hesitate to talk upon because I am one of the Executive Committee. Heretofore we have thought it best to follow the rule of electing our officers the first day because then we always have our presiding officer with us, he being chosen from among the members then present, hence we have always followed the plan adopted at the first convention. We are now breaking away from one of our precedents, whether for benefit or not is not yet determined. The point taken by Mr. Purington that a better acquaintance would enable us to make a better choice is well taken. We have prospered under the old rule, and I expect it would be safe to follow it. I have gone over this question with other members of the Executive Committee time and time again. It is six of one and half a dozen of another.

MR. ADAMS—In order to settle this matter, I move that the further consideration of this matter be postponed indefinitely.

MR. MCGRAW—Second the motion.

Carried.

SECRETARY RANDALL then read the rest of the resolutions.

MR. PENFIELD—I move the adoption of these resolutions as a whole by a standing vote.

MR. PIKE—Second the motion.

Motion carried, every member rising as one man.

#### MISCELLANEOUS BUSINESS.

PRESIDENT ITTNER—We have with us at this time Mr. Charles B. Ballard, President of the Board of Trade, in whose room we have been meeting for the last two or three days, and I now take pleasure in introducing him to you.

MR. BALLARD then spoke as follows:

Gentlemen, I was called upon very unexpectedly to say something to you. I thought when I came in I was going to see how you elect your officers, but I see I was mistaken. It is a pleasure to every good citizen of Louisville to see so many business men in our midst. You have selected a noble profession. Has it ever struck you that you are not merely machines, but you are practical professional men? You are engaged in reclaiming from Mother Earth the product which our Creator has given us for the use of man. Can there be anything more noble than to produce something from the earth itself for the use of entire mankind? Take our granite quarries; you may find them inferior, but you take your material, and, with the proper handling, you convert your clay into something that is everlasting and better than good granite itself. I say that to you merely as a fact, happening myself to be engaged in a profession that converts the raw material into a product for the use of man.

It is a great pleasure for us to have you here. This, all say who are right here and have seen you daily in your sessions and noticed the business-like manner in which you conducted your affairs, and I only wish that in any convention it is my pleasure to attend we could have the same business-like methods. If every member of you present are giving the same considerate thought to your busi-

ness interests that you give to this convention, I do not see how you can help but be successful.

I wish to thank you, in behalf of the Board of Trade, for your kind resolution. We are here for the accommodation of ourselves and our friends. Having you with us once, we hope you will consider us your friends always. And whether you select some other place for your future meetings, please bear in mind that the portals of this institution are open to you at all times. [Applause.]

MR. EUDLAY—It has been suggested to me and perhaps to other gentlemen, that it would be well to find out what the members of the Association think about having a meeting in Chicago in the summer. A number have stated that they would like to know, so they can make their arrangements accordingly. While, I presume, in the end the Executive Committee will settle the time, yet we might ascertain what the will of the convention is concerning it, and I would suggest that we call for a rising vote, asking all who deem it advisable to hold a mid-summer meeting or a meeting during the World's Fair to rise.

MR. MCGRAW—I have the good of the Association at heart, and if I did not I would not be a member of it. It seems to me that if we hold a convention during the World's Fair, we will have a very poor attendance. I am sure none of our members would want to sit in the convention day after day, knowing the excitement going on at the Fair, and I think it would be a great mistake to hold our convention during the World's Fair.

SECRETARY RANDALL—In preparing the work for this convention, the question if we could not arrange for a midyear meeting during the summer of '93 at Chicago has been asked me a number of times, and the idea seems to be to set a time when we could go to Chicago and meet the brickmakers from all quarters. We need have but one or two sessions, with a programme of a very light character. It is not the intention to have a regular convention. I appreciate heartily what Mr. McGraw says. We could not hope to get members in a convention hall and keep them there when there was so much of interest at the Fair. The idea is to set a week—brickmakers' week—in September, and those of us who can, arrange to attend then, and so have a little family reunion. It would be very pleasant, and I hope such a scheme can be worked out. Nearly all of the brick manufacturers throughout the United States will go to the World's Fair some time during the summer. Why not have a brickmakers' week, when we can all take in the sights together?

MR. ADAMS—The Chicago brickmakers have already assured us that they will have accommodations and quarters where we can see each other. I do not think it will be a good idea to hold a midsummer meeting. For myself, I would rather have one well attended convention than two failures—one in the summer and one in the winter. To bring this matter to a conclusion, I move that we hold our next meeting in Chicago some time during the ensuing winter, as may be determined by the Executive Committee.

Motion seconded and carried.

MR. EUDALY—The Chicago Association has very kindly extended to us an invitation to visit them this summer, and have informed us they will have open house during the Worlds' Fair, and I think it would be a good idea for us to set a time and have it understood generally when we will be in Chicago, so we can meet each other and not be dribbling along all summer.

MR. RANDALL—That is virtually the idea I had in view. I would like to ask for the enlightenment of the Executive Committee how many in this convention would prefer to have the next convention held in December instead of January.

PRESIDENT ITTNER—I would suggest that all in favor of meeting in January will please rise.

The members rose almost without exception.

PRESIDENT ITTNER—The matter is settled. We will meet in January. And before putting the question of adjournment, I desire to say a few words to you in regard to the World's Columbian Exposition in Chicago. I had the pleasure of being present at the occasion of the dedication of the World's Fair, and I want to say to



you, that whether you go there as brickmakers or as guests of the Chicago Brickmakers' Association during the month of October, of September, or whatever time you go, I say to you, as American citizens, go to the World's Fair. [Applause.] I ask you gentlemen to do this, and I do hope that not only you gentlemen of this Association, but that every American citizen will have an opportunity to see that exposition. I think, as far as I have been able to judge from what has come under my observation, and from what I have read, that it is going to be the greatest fair of this century. The beautiful buildings there displayed, and the beautiful grounds already laid out, are something outside of the exhibits inside the buildings that will pay any American citizen to see, independent entirely of the exhibits, and you can all imagine, I presume, what the exhibits will be. And I desire to say before closing, and I say it with the greatest of feeling, in the interest of that great enterprise, that I hope no occurrence whatever among our people will interfere with the success of this grand enterprise. [Applause.]

JOHN F. WHITING, Chicago, Ill.—I speak as an humble member of the Brickmakers' Club of Chicago, and voice the sentiments of those gentlemen. I have attended every meeting of the club during the past year and can judge as to the reception they will give you gentlemen if you visit the World's Fair. The brickmakers of Chicago are waiting for an opportunity to spread themselves. Some gentlemen here, I take it from the chairman's remarks, come for pleasure and some for business; I do not quite understand whether this convention is held for pleasure or for business, I have indulged in both. If you come to Chicago you can have anything you please. There will be separate committees organized, we will have a reception committee of the whole sixty-five members—distinctly understand that all the brickmakers of Chicago are not in the Chicago Brickmakers' Club, but they are all in but one—and then these sixty-five will be organized into separate committees and we will give you the finest reception you have ever had. You can have business or pleasure—we hope you will have both. [Applause.]

MR. D. V. PURINGTON—I judge from the gentleman's remarks there are two brickmakers' associations in Chicago. He says they have all the brickmakers but one in their association, so I must belong to the other association, and I want to say to you gentlemen that my association will not be outdone by the other one in the cordial reception and welcome given. [Applause.]

MR. WANNA, Pittsburgh, Pa.—Gentlemen, I stand before you a yearling, as my brother from Pittsburgh has been called a five-year-old. I feel as though I had just about entered the race. In looking over the room the thought struck me that I would like to pay a compliment to the brethren present. I think that the great God above must surely have taken from Mother Earth all the best clay to form the brick here represented, and it occurred to me what a grand meeting it would be if every brickmaker here present could enter that heaven above and walk the streets that are paved with the brick of gold. We have not only the one thing to look to in this world, the good of our own individual pocket book, we have a higher matter; we must look to the hereafter. What a pleasant gathering it would be if every brickmaker in this convention, and it may not be a great many years before we may all be called home,

could be gathered around our Father's throne. May it be the desire of every brickmaker here.

Several members, "Amen."

MR. ADAMS—As we are about to close and say a parting word, I desire to offer a word. I know what it is to preside over a body of this kind, and I move that a vote of thanks from this Association be tendered our president, the Honorable Anthony Ittner.

Motion seconded, and being put by Secretary Randall, was unanimously carried.

MR. ETTLA—I want to thank the gentlemen from Chicago, who have given us such a cordial invitation to visit the World's Fair in their city. I want to say, as members of this Association, we shall



WM. H. ALSIP, CHICAGO, ILL.

be most happy to accept their invitation, provided the World's Fair is closed on Sunday.

MR. TAYLOR—I want to say to you, brother brickmakers, that you are in duty bound to visit the World's Fair. I have not had the pleasure of being there, and the reason I speak now is because of the views I have heard of architects and others who have been there. They tell me that the aggregation of buildings being put up there by the people of Chicago are the grandest in the pages of history; that it is absolutely impossible for any one who has not seen them to have any idea of the magnitude of those buildings. By all means, as you love architecture, which is the main-spring of your business, go the World's Fair.

On motion of Mr. Thomas Flood, Philadelphia, seconded by Mr. Walsh, of New York, the convention then adjourned, subject to the call of the Executive Committee.





## LIST OF MEMBERS.

- Pelligrini & Castleberry, Atlanta, Ga.  
 E. R. Harper, Akron, Ohio.  
 McCausland Bros., Akron, Ohio.  
 Jones & Clemans, Anderson, Ind.  
 J. M. Hinshaw (Anderson Foundry and Machine Co.) Anderson, Ind.  
 C. T. Bradbury, Anderson, Ind.  
 Anderson Foundry and Machine Works, Anderson, Ind.  
 C. M. Wilson, Anderson, Ind.  
 Stedman's Foundry and Machine Works, Aurora, Ind.  
 Standard Brick Co., Aurora, Ind.  
 Phillip Wymond, Aurora, Ind.  
 R. A. Bailey, Athol, Mass.  
 Adrian Brick and Tile Co., Adrian, Mich.  
 Alexandria Brick Co., Alexandria, Va.  
 W. H. Carter, Appleton, Wis.  
 New Brittain Terra Cotta Co., Berlin, Conn.  
 Chas. P. Merwin, Berlin, Conn.  
 M. E. Jacobs, Berlin, Conn.  
 M. H. Donnelly, Berlin, Conn.  
 Yale Brick Co., Berlin, Conn.  
 Bardolph Fire Clay Works, Bardolph, Ill.  
 A. Gooding, Belleville, Ill.  
 John A. Day, Belleville, Ill.  
 Wm. Alsip, Belleville, Ill.  
 S. H. Alsip, Belleville, Ill.  
 Geo. H. Drew, Blue Island, Ill.  
 J. W. Carson, Brussels, Ill.  
 Heitger & Winterhalter, Bedford, Ind.  
 Wm. Garig, Baton Rouge, La.  
 Aaron Philips, Bowling Green, Ky.  
 Silas Taylor, Bowling Green, Ky.  
 Smith & Winchester, Boston, Mass.  
 Phila. and Boston Face Brick Co., Boston, Mass.  
 E. O. Glidden, Boston, Mass.  
 Geo. M. Fiske, Boston, Mass.  
 Chas. F. Cutler, Boston, Mass.  
 G. L. Twitchell, Blanford Brick and Tile Co., Boston, Mass.  
 C. H. & Richard, Jr., Cromwell, Baltimore, Md.  
 C. H. Classen, Baltimore, Md.  
 F. and A. Wehr, Baltimore, Md.  
 D. Donnelly, Baltimore, Md.  
 Ferguson & McCord, Benton Harbor, Mich.  
 Geo. W. Schmidt, Buffalo, N. Y.  
 Hector MacLean, Bridgeton, N. S.  
 Geo. W. Bruns, Brecon, Ohio.  
 Frey-Sheckler Co., Bucyrus, Ohio.  
 National Brick and Tile Co., Bradford, Pa.  
 J. A. Snell, Barrington, R. I.  
 W. G. Titcomb, Barrington, R. I.  
 John W. Sibley, Coaldale, Ala.  
 Centinela Brick Kiln and Dryer Co., Centinela P. O. Cal.  
 J. B. Holdener, Centralia, Ill.  
 E. M. Pike, Chenoa, Ill.  
 Theodore Sutton, Chicago, Ill.  
 P. L. Simpson, Chicago, Ill.  
 Dan'l E. Ryan (Hotel Brevort), Chicago, Ill.  
 N. B. Rice, Chicago, Ill.  
 Geo. B. Engle & Co., Chicago, Ill.  
 Lewis Riemer, Chicago, Ill.  
 C. S. Purington, Chicago, Ill.  
 Alexander Prussing, Chicago, Ill.  
 D. V. Purington, Chicago, Ill.  
 W. J. McKenna, Chicago, Ill.  
 John J. McKenna, Chicago, Ill.  
 Wm. A. Miller, Chicago, Ill.  
 Michael Meyers, Chicago, Ill.  
 J. B. Legnard, Chicago, Ill.  
 Geo. Lill, Chicago, Ill.  
 Oswald Kutsche, Chicago, Ill.  
 Geo. Hinchcliff, Chicago, Ill.  
 Wm. D. Gates, American Terra Cotta and Ceramic Co., Chicago, Ill.  
 J. H. Flood, Chicago, Ill.  
 J. B. Eastes, Chicago, Ill.  
 H. M. Zapel, Chicago, Ill.  
 J. Dixie Doyle, Chicago, Ill.  
 C. T. Davis, Chicago, Ill.  
 C. P. Day, Chicago, Ill.  
 S. C. Cosby, Chicago, Ill.  
 S. S. Chisholm, Chicago, Ill.  
 Chas. Bonner, Chicago, Ill.  
 A. F. Barron, Chicago, Ill.  
 H. W. Boyd, Chicago, Ill.  
 J. A. Boyd, Chicago, Ill.  
 B. C. White, Chicago, Ill.  
 W. H. Alsip, Chicago, Ill.  
 F. B. Alsip, Chicago, Ill.  
 John C. Tatge, Chicago, Ill.  
 Edwin Tomlins, Chicago, Ill.  
 John F. Whiting, Chicago, Ill.  
 W. H. Weckler, Chicago, Ill.  
 Tiffany Pressed Brick Co., Chicago, Ill.  
 J. B. Wethrell, Chicago, Ill.  
 C. McClner, Crawfordsville, Ind.  
 B. B. Hart, Clinton, Iowa.  
 L. C. Besley, Council Bluffs, Iowa.  
 J. P. Weaver, Council Bluffs, Iowa.  
 Alfred Morgan, Cloverport, Ky.  
 W. E. Tarkinson, Cloverport, Ky.  
 J. R. Skillman, Cloverport, Ky.  
 L. A. Wood, Covington, Ky.  
 Parry Bros., Cambridge, Mass.  
 I. C. Wheeler, Carthage, Mo.  
 Geo. B. Lower, Canton, Ohio.  
 Otto Geissen, Canton, Ohio.  
 R. H. Crevoisie, Canton, Ohio.  
 The Bonnot Co., Canton, Ohio.  
 W. S. Williams, Canton, Ohio.  
 A. M. Scott, Cincinnati, Ohio.  
 Orville Simpson, Cincinnati, Ohio.  
 H. A. Eudaly, Cincinnati, Ohio.  
 W. A. Eudaly, Cincinnati, Ohio.  
 F. D. Barker, Cincinnati, Ohio.  
 S. H. Burt, Cincinnati, Ohio.  
 B. W. Blair, Cincinnati, Ohio.  
 J. T. Underwood, Cincinnati, Ohio.  
 The Malone Stone Co., Cleveland, O.  
 John Kline, Cleveland, Ohio.  
 A. E. Morrison, Columbus, Ohio.  
 G. S. Ettla (Reed & Ettla), Clearfield, Pa.  
 G. A. Guignard, Columbia, S. C.  
 Frank H. Smith, Columbia, Tenn.  
 John McCain, Denver, Col.  
 F. P. Rice, Danbury, Conn.  
 Davis Brown, Decatur, Ill.  
 Hnyett & Smith, Detroit, Mich.  
 D. H. Haeger, Dundee, Ill.  
 C. W. Raymond, Dayton, Ohio.  
 W. C. Dennison, Delaware, Ohio.  
 Sercombe, Osman & Warren, Exmouth, Eng.  
 John Clark, Earls, Ind.  
 C. G. Reese, Elizabethtown, Ind.  
 Evansville Pressed Brick Co., Evansville, Ind.  
 Gndeman Bros. & Co., Eureka, Ill.  
 S. P. Speers, Erleigh Heights, Robinson P. O., Md.  
 H. C. Dunn, Erie, Pa.  
 B. F. Kidder, Ft. Payne, Ala.  
 W. R. Cunningham, Frankfort, Ind.  
 W. E. Sidney, Frankfort, Ind.  
 Ft. Dodge Clay Works, Ft. Dodge, Iowa.  
 E. A. Poe, Fayetteville, N. C.  
 Edwin Brockway, Fishkill-on-the-Hudson, N. Y.  
 Andrew Harrington, Galesburgh, Ill.  
 W. S. Pnrrington, Galesburgh, Ill.  
 Jos. Fairhall, Grape Creek, Ill.  
 Chas. Scales, Glens Falls, N. Y.  
 D. P. DeLong, Glens Falls, N. Y.  
 B. E. Ladow, Galion, Ohio.  
 E. M. Freese & Co., Galion, Ohio.  
 W. H. Walker, Hong Kong Brick and Cement Co., Hong Kong, China.  
 G. C. Wright, Highland Park, Ky.  
 Kleymeyer & Klute, Henderson, Ky.  
 R. G. Eisenhart, Horseheads, N. Y.  
 Jerome Walsh, Hudson, N. Y.  
 John Kersiner, Home City, Ohio.  
 F. R. Carter, High Cliff, Wis.  
 T. A. Randall & Co., Indianapolis, Ind.  
 W. F. Stiltz, Indianapolis, Ind.  
 Geo. Potts, Indianapolis, Ind.  
 J. C. Adams, Indianapolis, Ind.  
 Al. Potts, Indianapolis, Ind.  
 C. & A. Potts & Co., Indianapolis, Ind.  
 John Martin, Indianapolis, Ind.  
 Dr. J. S. Jeuckes, Indianapolis, Ind.  
 Frank F. Freeley, Indianapolis, Ind.  
 John R. Elder, Indianapolis, Ind.  
 Geo. M. Chandler, Indianapolis, Ind.  
 J. W. Twiname, Indianapolis, Ind.  
 Fletcher & Thomas, Indianapolis, Ind.  
 M. E. Donohue, Ivesdale, Ill.  
 C. F. Poole, Ithaca, N. Y.  
 F. B. Campbell, Ithaca, N. Y.  
 H. O. Whitney, Keokuk, Iowa.  
 Robt. Schmidt, Kewanee, Wis.  
 G. P. Orendorff, Lacon, Ala.  
 L. E. Mace, Lexington, Ind.  
 Frank H. Reid, Lyons, Ind.  
 S. A. Charles, Lexington, Ky.  
 Wm. J. Snnnis, Louisville, Ky.  
 Standard Dry Kiln Co., Louisville, Ky.  
 F. A. Perkins & Son, Louisville, Ky.  
 Sol McCollum, Louisville, Ky.  
 A. L. McDonald, Louisville, Ky.  
 John McKay, Louisville, Ky.  
 F. W. Maury, Louisville, Ky.  
 K. B. Grahm, Louisville, Ky.  
 J. P. McCollum, Louisville, Ky.  
 Robt. Elliott, Louisville, Ky.  
 Donald McDonald, Louisville, Ky.  
 Alfred Crossley, Louisville, Ky.  
 A. T. Bemis, Louisville, Ky.  
 G. F. Howe, Leeds Junction, Me.  
 A. B. Horn, Logan, Ohio.  
 Jas. Taylor, Long Island City, N. Y.  
 Adams Bros. & Payne, Lynchburgh, Va.  
 J. M. Chase, Macomb, Ill.  
 F. T. Melcher, Marion, Ind.  
 O. T. Denison, Mason City, Iowa.  
 Geo. R. Sampson, Middleboro, Mass.  
 A. E. Burcham, Millville, N. J.  
 R. A. Masterson, Manchester, Ohio.  
 Marion Steam Shovel Co., Marion, Ohio.  
 C. H. Carpenter, Martin's Ferry, Ohio.  
 R. C. Garrett, Middleport, Ohio.  
 R. D. McManigal, Middleport, Ohio.  
 C. W. Edmonds, Memphis, Tenn.  
 John Cnbbins, Memphis, Tenn.  
 Chas. M. Espey (Memphis Mfg. and Brick Co.) Memphis, Tenn.  
 M. R. Dayton, Manston, Wis.  
 S. L. Alexander, Menominee, Wis.  
 Frank S. Peck, Menominee, Wis.  
 Dennis & Co., New Brittain, Conn.  
 H. P. Shares, New Haven, Conn.  
 Frank L. Stiles, New Haven, Conn.  
 Wheaton J. Stone (The McLagon Foundry Co.) New Haven, Conn.  
 Geo. W. Ives, New Haven, Conn.  
 F. P. Farnsworth, New Haven, Conn.  
 The Ezra D. Fogg Co., New Haven, Conn.  
 S. P. Crafts, New Haven, Conn.  
 W. D. Sonle, New Albany, Ind.  
 H. C. Kemp, New Albany, Ind.  
 W. D. Hedden, New Albany, Ind.  
 J. F. Elsom, New Albany, Ind.  
 J. J. Clark, New Orleans, La.  
 A. S. Blaffer, New Orleans, La.  
 J. A. Blaffer, New Orleans, La.  
 Frank O'Brien, Natchez, Miss.  
 Somerset & Johnsonburg Mfg. Co., New York, N. Y.  
 D. G. Harriman (19 Park Place), New York, N. Y.  
 D. J. C. Arnold, New London, Ohio.  
 W. D. Richardsou, North Baltimore, Ohio.  
 John Lellyett, Nashville, Tenn.  
 W. G. Bush & Co., Nashville, Tenn.  
 T. L. Herbert, Nashville, Tenn.  
 W. B. Kennady, Owensboro, Ky.  
 J. Tennes, Owensboro, Ky.  
 A. Oberst, Owensboro, Ky.  
 P. L. Monroe, Omaha, Neb.  
 Martin Ittner, Omaha, Neb.  
 Grand View Brick Co., Omaha, Neb.  
 J. D. Jansen, Pekin, Ill.  
 H. H. Pierce, Peoria, Ill.  
 T. C. Lundy, Peoria, Ill.  
 A. W. Walton, Princeton, Ill.  
 H. W. Katterjohn, Paducah, Ky.  
 Sharpsburg Brick and Stone Co., Pittsburgh, Pa.  
 John Kerr & Son, Pittsburgh, Pa.



## CONVENTION BRICK DUST.

BY A CHARTER MEMBER.

WE have met the Louisville brick-makers and we are theirs three hundred strong, never have we been so royally entertained (unless we remember Memphis). They are bricks every one of them, their welcome has the genuine "metallic" ring so grateful to a brickmaker's ears, not only for their grand entertainment do they deserve credit and merit praise, but for the best interests and future welfare of our Association, they cheerfully and firmly gave up the great honor of the presidency, not only this but they threw their influence which was most potent in this case, in favor of one of our most, capable and popular members, and placed in the president's chair, a man singularly fitted by nature as well as by ripe experience to guide the counsels of the Convention, mingling firmness, dignity and geniality in a manner most pleasant to remember. The first vice-presidency went like a mighty tidal wave to Brother McDonald of Louisville, and he must be swift indeed if he succeeds in dodging the presidential lightning in the future.

Second Vice-President Gates, is too well known among the clay workers to need an introduction, socially he is delightful, on the floor of the Convention, we are at his mercy, seasoning his wise and practical advice, with droll sallies of wit, until every last grave and solemn brickmaker wears smiles and pants for breath. We sincerely hope he will never again make so much money, that he will be afraid to leave it to attend the annual meeting, for fear Tim Tinker or some other hustling machine man will get it while he is absent, as was the case at the Washington meeting.

Last of the Vice-Presidents but not least, by any means, is Brother Blair of Cincinnati; should he be called upon at any time to preside he will *fill the chair*, with honor to himself as well as the Association; like Brother Gates he gave up the law for a higher sphere, and has shown to the world what a lawyer may accomplish, when he gets into a broad field. Mr. Blair is the Edwin Booth of our Association, his histrionic efforts are always highly appreciated; on the floor of the Convention he is a forcible speaker who always commands the attention of the brethren.

Recording Secretary Merwin talks lit-

tle on the floor, is a quiet observer of all that transpires, a most excellent officer, methodical and thorough in his official duties, as he is enterprising and successful in his private affairs, a genial companion, whose picture in the daily papers eclipses all rivals, except in intellectual appearance; here Friend Pike takes the cake.

Editor Randall, of course, was elected corresponding secretary, we never think of doing anything else, his grasp of affairs relating to our Association enables him to comprehend the whole situation at a glance, a keen judge of men, quick at repartee, being a match for the redoubtable "Flood," who did not put up at the "Malt House," and who is always in order except when he nominates Randall for recording secretary.

Friend Frank McAvoy after serving as treasurer two terms, turned the treasury in good shape over to friend Sibley of Alabama. This was in accordance with the eternal fitness of things, that for once the surplus should come south where it is so much needed at present, we feel sure we shall have better times this year in the Sunny South. It seems to have been universally conceded among the members, that we have never had a better meeting, taking it all around, than the one just closed. The writer has never heard before so many expressions of satisfaction and appreciation. Our association is just beginning to be fully appreciated even among the old members, it has proved more beneficial to the whole fraternity of brickmakers, more widespread in its influence than we could have hoped. In another article we will pay our respects to the rank and file as well as the honorable ex-officers.

Long live the National Brick Manufacturers Association.

Among other matters of interest at the Louisville Convention, not of little moment, was that of the exhibit of sample brick made on different machines which took place in the Board of Trade rooms. In this place were arranged for inspection a large number of red, fire, paving and other brick of all sizes and description, made by every clayworking process known. Outside of the artistic work done on many of these brick, showing the wonderful progress lately made in working clay, a most noticeable fact was, that nearly all were re-pressed on the Columbian presses, although no effort was made by the manufacturers of this press to exhibit its product.

J. H. Rathbun, Pittsburgh, Pa.  
Wm Radford, Pittsburgh, Pa.  
Edwin C. McGraw, Pittsburgh, Pa.  
H. B. Harmon, Pittsburgh, Pa.  
H. Ebbert, Pittsburgh, Pa.  
John Trunzer, Pittsburgh, Pa.  
Wm. Conway, Philadelphia, Pa.  
H. C. Webster, Philadelphia, Pa.  
Albert Webster, Philadelphia, Pa.  
E. Webster, Philadelphia, Pa.  
Chas. E. Webster, Philadelphia, Pa.  
Wm. Waplington, Philadelphia, Pa.  
John H. Sentner, Philadelphia, Pa.  
Chas. E. Siner, Philadelphia, Pa.  
John Sullivan, Philadelphia, Pa.  
Geo. W. Sharer, Philadelphia, Pa.  
A. Reeves, Philadelphia, Pa.  
Robt. Paschall, Philadelphia, Pa.  
A. C. McAvoy, Philadelphia, Pa.  
Frank McAvoy, Philadelphia, Pa.  
Thos. B. McAvoy, Philadelphia, Pa.  
Frank B. McAvoy, Philadelphia, Pa.  
J. J. McDuffee, Philadelphia, Pa.  
Sam'l Lloyd, Philadelphia, Pa.  
A. D. Keyser, Philadelphia, Pa.  
H. T. Gesner, Philadelphia, Pa.  
Thos. J. Flood, Philadelphia, Pa.  
Geo. B. Drennan, Philadelphia, Pa.  
Jas. E. Dingee, Philadelphia, Pa.  
Abner Dotterer, Philadelphia, Pa.  
Cyrus Chambers Jr., Philadelphia, Pa.  
Robert Crawford, Philadelphia, Pa.  
Wm. Clothier, Philadelphia, Pa.  
J. H. Chambers, Philadelphia, Pa.  
S. B. Chambers, Philadelphia, Pa.  
Peter Byrne, Philadelphia, Pa.  
Benj. Bertelot, Philadelphia, Pa.  
A. T. Shafer, Plymouth, Ohio.  
W. Miller, Plymouth, Ohio.  
R. B. Morrison, Rome, Ga.  
Robin Main, Rondout, N. Y.  
Wm. Bauman, Racine, Wis.  
Jos. Stafford, Springfield, Ill.  
Wm. Beahan, Streator, Ill.  
Geo. Leeper, South Bend, Ind.  
C. J. Holman, Sergeants Bluff, Iowa.  
W. B. Lower, Sioux City, Iowa.  
Geo. H. Brown, Sioux City, Iowa.  
Lewis Oliff, Shreveport, La.  
J. A. Salmen, Slidell, La.  
H. Haigh, Somerset, Mass.  
W. F. Paine, Saginaw, Mich.  
R. L. Jones (Mershon & Co.), Saginaw, Mich.  
L. J. Howard, St. Louis, Mo.  
H. H. Keller, St. Louis, Mo.  
Anthony Ittner, St. Louis, Mo.  
H. B. Hilgeman, St. Louis, Mo.  
H. C. Gillick, St. Louis, Mo.  
J. M. Williams, St. Louis, Mo.  
Wm. T. Graham, Sag Harbor, L. I., N. Y.  
Anderson Bros., Taylorville, Ill.  
Cyrus Knapp, Terre Haute, Ind.  
P. C. Boyll, Terre Haute, Ind.  
H. Brewer & Co., Tecumseh, Mich.  
E. B. Hall, Toledo, Ohio.  
John Doyle, Utica, N. Y.  
W. A. Riemann, Vincennes, Ind.  
Rupright Bros., Van Wert, Ohio.  
A. R. Root, Washington, D. C.  
Chas. B. Pearson, Washington, D. C.  
Wm. C. Morrison, Washington, D. C.  
W. T. Walker & Co., Washington, D. C.  
Jas. H. Beggs, Wilmington, Del.  
J. A. Ridgway, Wabash, Ind.  
Lew Thorne, Wabash, Ind.  
Winston Brick and Tile Co., Winston, N. C.  
Jas. Crowell, Walkill, N. Y.  
C. P. McDermott, Wellington, Ohio.  
F. W. Bennett, Wellington, Ohio.  
R. C. Penfield, Willoughby, Ohio.  
J. B. Mace, Willoughby, Ohio.  
F. E. Frey, Willoughby, Ohio.  
A. J. Muller, Washington, La.  
Geo. J. Fickes, Wilkesbarre, Pa.  
W. Dickover, Wilkesbarre, Pa.  
Geo. B. Waite, Wilkesbarre, Pa.  
A. D. Sharples, Westchester, Pa.  
J. P. Norton, York Center, Me.  
John Ittner, York, Neb.  
Zeeland Brick Co., Zeeland, Mich.  
A. O. Jones, Zanesville, Ohio.



**THE CLAY-WORKER.**OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, FEBRUARY 15, 1893.

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from practical men will always be welcome.  
Address all communications to

T. A. RANDALL &amp; CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

**THE CONVENTION.**

No one could have hoped for a more  
satisfactory meeting. Better than any  
detail connected with it; better than its  
papers, or specific information given in  
the sessions, was the spirit of the body  
as a whole, and as to the members indi-  
vidually.

It takes a good while for a man to  
grow, and it takes several years for an  
Association to develop and establish  
itself in the confidence of craftsmen  
who, until they become thoroughly ac-  
quainted, are apt to be a little suspicious  
of something or somebody. In the  
early stages of an organization there are  
apt to be some bickerings, a lack of  
freedom, certainly not an absence of  
conceit.

A high character of individual mem-  
bership, and a proper regard for self  
interest, have developed a spirit in our  
National Convention than which nothing  
could be better. The spirit of the  
meeting was illustrated by one member,  
in a speech at the Powwow, in a single  
sentence, he said: "The man who  
knows all about brickmaking is not  
here." This is a very terse way of put-  
ting it. All came acknowledging that  
they had made mistakes, would make  
them again; but would not make the  
same mistake twice if they could help  
it. It is this spirit and this state of  
mind which makes the successful Con-  
vention. The man with a secret, who

knows all about it; the one who has  
mastered the science, who has nothing  
to learn and nothing to tell because he  
wants to keep it himself, was not there.  
All came in the good old Quaker spirit  
—to give and to receive. Each member  
was regardful of what others might say.  
The benefits which they were to receive  
came from others, not themselves. In  
order to receive, they must give. This  
was the spirit of the Louisville Con-  
vention.

**SOUTHERN HOSPITALITY.**

We have all heard of it; its fame has  
gone abroad, but there is nothing like  
the experience. Nothing was ever done  
more thoroughly calculated to create a  
favorable impression than was the action  
of the citizens of Louisville and Clover-  
port during the time of our recent  
meeting. There was the profuse open  
hospitality, which showed itself on every  
hand, and it was accompanied by  
actions and expressions that could not  
but impress all with its true sincerity.  
It was not merely functional, it was as  
honest and heartfelt as it was omni-pres-  
ent. The Convention at Louisville was  
one of those red letter occasions. It  
will live for all time in the memory of  
those who attended it.

**THE POWWOW.**

The last baby is always the nicest and  
sweetest. The last Powwow is always  
the best. Thus truth is sustained. Does  
memory fail us or do the Powwows grow  
better? Our hopes are as to the latter  
condition. The spirit of the meetings  
improve along the lines of the develop-  
ment of a higher social instinct. Now,  
there are banquets and banquets. There  
are those elevating in character, and  
there are others. Was there ever a  
gathering of this kind conducted more  
satisfactorily, from a high moral view or  
in a more thoroughly enjoyable manner,  
than our banquet at Louisville? It was  
opened like the good family gatherings  
at the table, with a blessing; it was  
closed with words of high commenda-  
tion and benediction, from a good man.  
To say that the intermediate portion of  
the occasion was in keeping with its  
beginning and its end, proves the  
splendid character of this, the social  
feature of our organization.

There were no set speeches. Many  
were called upon who were not prepared  
in advance. No special assignments  
had been made. The result was a

spontaneity, a sincerity, which was ad-  
mirable. Men stood up and spoke  
exactly as they felt at the time. There  
was nothing "cut and dried" at the  
Powwow, and there was not a speech  
made but was creditable from any point  
of view.

The Powwow helps to make better  
clayworkers. It is practical and far reach-  
ing in its results. It cements the  
friendships; it brings people closer to-  
gether socially, in a way necessary to  
the proper understanding of all matters  
practical. It brings about a higher  
morality in business dealings. When  
we know people well, when we break  
bread with them, we are more careful  
of what we do in their sight. The man  
whom we meet at table, is not the one  
most apt to resort to sharp business  
practice. When people know one an-  
other thoroughly and well, there is  
more charity for the little short-com-  
ings and a disposition to see the good  
qualities of head and heart and to give  
full swing to our better natures rather  
than to criticise and magnify the faults.  
Thus the better nature is developed.  
Great is the Powwow; may it ever con-  
tinue to be a leading feature of our  
yearly meetings.

**THE VISIT TO CLOVERPORT.**

Nearly one hundred and fifty mem-  
bers of the N. B. M. A. accepted the  
invitation extended by the local manu-  
facturers to visit the paving brick works  
at Cloverport, a little town 70 miles  
west of Louisville, and were treated to  
another example of splendid Southern  
hospitality. It was just such a pleasant  
journey as one might expect, surrounded  
by sincere people, full of kindly feeling.  
It was one among the many very en-  
joyable occasions connected with the  
meeting at Louisville.

A special train, consisting of four  
coaches and a baggage car, furnished by  
General Manager, J. K. McCracken, of  
the Louisville, St. Louis & Texas Rail-  
way, left Louisville at 7.45 A. M., and  
arrived at Cloverport at 10.00 A. M. Mr.  
McCracken, Mr. Mordue, Assistant  
Freight and Passenger Agent, and Mr.  
Cayce, Car Accountant, accompanied  
the visitors. As the train halted at  
Cloverport, the visitors were greeted by  
a large gathering of citizens. Judge  
Allen Murray extended a formal wel-  
come. He said: "We are glad you have  
come. We are glad to see you. You  
are welcome. What more can be said



to testify that your visit gives us real pleasure?" This was the spirit of his address—cordial, heart felt and earnest.

In conclusion he said: "But a Kentucky welcome does not consist merely in words. As one has said, we usually lead our guests beside the 'still' waters. We boast (and should be pardoned for it) of the heroism of our men, the beauty, accomplishments and purity of our women, the muscle, symmetry and speed of our horses, the epicurean delicacy and flavor of our cattle upon a thousand hills, and the excellence and health giving properties of our vintages. Of the latter you are invited forthwith to partake, for it shall be made to flow as unfaillingly as the gush of water from our springs."

To Judge Murray's welcome there was felicitous responses by President Ittner, Vice-President, McDonald and others. After the speaking the visitors inspected the clayworking plants of Cloverport, a description of which was given in our January issue, and from thence all repaired to the hotels of the city, Mr. F. J. Ferry, having previously furnished each of the guests with a ticket, where an excellent dinner was served, after which the ladies were taken a short drive and the gentlemen meandered about the town or went back to the brick works, according to their fancy. In either case, however, they were accompanied by some member of the local committee on entertainment, which seemed to include every able bodied citizen in the town.

The hour of departure at length came, and President Ittner at the depot briefly returned thanks to the people of Cloverport on behalf of the visitors, and in response Judge Allen Murray expressed the wish that all might return home in safety and with only pleasant recollections of the trip to Cloverport. Everything was done that was possible to add to the pleasure and interest of the visitors. The ladies of Cloverport opened their homes to the visiting ladies, and altogether the day was full and complete.

#### BREAKING THE PRECEDENT.

The custom of electing the President of the N. B. M. A. from among the members of the Local Association of the city in which the Convention is held, was done away with at Louisville. Louisville was a good place to break the precedent. There could be no chance

for offence. In Louisville there was no scarcity of presidential timber, hence, there could be no reflection on any member in that city. It was unselfish and commendable in Mr. McDonald to take the position that he did in this matter. It showed a sincere desire to protect and advance the best interests of the National Association. His attitude in connection with this matter was thoroughly commendable throughout. His statement before the Convention, showed his quality and made it all the more difficult for some of the members to give up the idea of placing him in the chair. As Mr McDonald stated, the time may come when it would not be wise to elect a President from the city in which the Convention is held. This precedent was broken at a time when it was manifest to all, that no such condition existed. In all future Conventions the president should be selected from among the Charter Members, or at any rate no one should be placed in the chair who has not attended one or more of our Annual Conventions, and so have a knowledge of the aims of the organization and some acquaintance with the members, for without this knowledge and acquaintance no man, no matter what his ability may be, can do justice either to himself or to the Association.

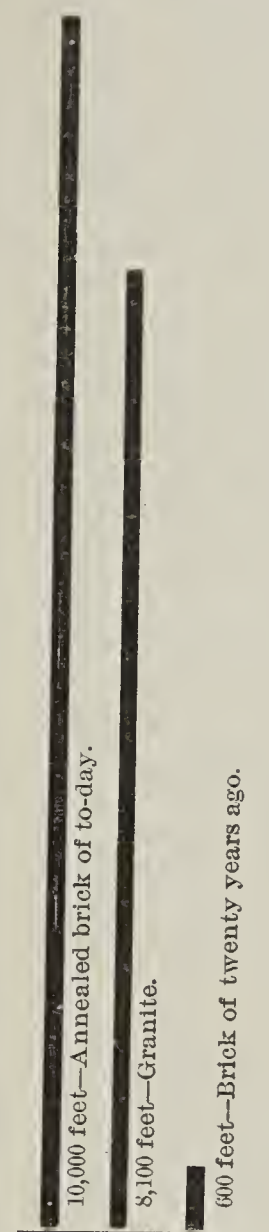
Any of our readers not acquainted with Mr. McDonald, may look at his picture on page 137, and judge for themselves as to whether there was in Louisville, a man of sufficient strength of character and broad intelligence, to act as President of the National Brick Manufacturers' Association. He declined the presidency not because he did not properly appreciate the high honor, but because he believed the Association's interests would be conserved by breaking away from the precedent previously established. All honor to one so generous. It was a noble act and won for Mr. McDonald a very high place in the estimation of the entire membership. This was clearly evidenced by the hearty manner in which he was unanimously chosen First Vice-President.

When it was announced that the Association was to have a banquet at the Galt House, Mr. Flood, the jester, did not hear aright and became joyously demonstrative at the idea of being entertained "until daylight in a malt house." —*Louisville Courier-Journal.*

#### THE STRENGTH OF BRICK.

Here is a graphic illustration of the statement made by Mr. Williams in his paper on Vitriified Brick, read before the 7th Annual Convention of the N. B.

M. A. Touching on the progress of brick-making in the United States, he quotes from Trautwine, the statement that a column of brick six hundred feet high would crush itself. He takes a test of the crushing strength of annealed brick, and shows that a column ten thousand feet high is required to crush itself; while a column of granite of similar dimensions would crush itself at a height of eighty-one hundred feet. Verily this is a striking illustration of the superiority of the machine made brick of to-day over those made in former years, and is proof that the craft is progressing. What industrial art can



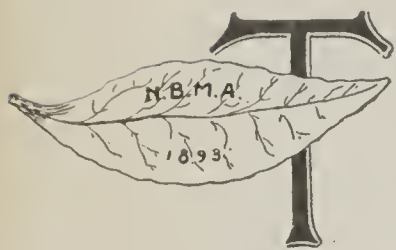
show an equal advance in the quality of manufactured products? This illustration of the relative height that a column of certain dimensions may be built of the materials named will give a better idea of the superiority of vitrified or annealed brick than is generally prevalent, even among those who are informed on the subject.

THE Louisville craftsmen one and all did everything in their power to make the visitors comfortable and happy during their stay. Though none of them excepting the McDonald Bros., and Mr. J. P. McCollum, took an active part in the Convention work, they all attended the sessions regularly and the older members, especially M. Berger, F. E. Perkins, Sol. McCollum and C. Nist, paying close attention to every feature of the work. The younger members including Wm. Harlammert, Hilderbrand & Redeman, J. Hofmeister, Krupp and Bohmer and Poehlein and Lawrence



devoted themselves to showing the visitors about town between sessions. It is to be hoped that they will all attend the next Convention and give the Chicago committee on entertainment a chance to retaliate.

#### CONVENTION ECHOES.



THE Souvenir badge presented by the Louisville Brickmakers Association was greatly admired by every one. The accompanying sketch gives the reader a better idea of its appearance than can be expressed in words. It is made of oxidized copper and represents a tobacco leaf upon which the initials, N. B. M. A., appear in raised letters, also the date 1893. One of these badges will be sent to members who were unable to attend but have continued their membership in the National Association. Those who have not already done so are requested to remit \$2, the annual fee, to the Corresponding Secretary, T. A. Randall, Indianapolis. This will entitle them to a badge and a copy of the report of the recent convention which will be published in book form, as usual.

President Pearson's address impressed the convention very pleasantly. It is like the man—modest yet forceful. President Pearson by his kindly manner and just and impartial ruling has gained the confidence and hearty good will of every individual member of the National Association.

President Ittner is the right man in the right place. His ripe, practical experience as brickmaker, his knowledge of parliamentary law, his good judgment and thorough acquaintance with the general membership of the Association, make him, all in all, an ideal presiding officer.

Capt. S. P. Crafts of New Haven, Conn., fully maintained his reputation as the youngest old man in attendance.

The "Big Four" of Philadelphia were among the first to arrive and the last to leave. Headed by our level headed, big hearted ex-president Thos. B. McAvoy, the party saw all of the pleasant side of Convention pastime. A more genial set it would be hard to find, search the country over. The four, McAvoy, Siner, Beggs and Flood, are big in many ways

and particularly in avordupois. Collectively they "tip the beam" at about 1,000 pounds.

Mr. A. L. McDonald's speech nominating Mr. Ittner for president evinced such marked ability that many of the members were loth to comply with his request but rather inclined them to insist on his accepting the position whether or no. The members of the N. B. M. A. know a good man when he speaks.

One of the pleasant incidents and one which the ladies will not soon forget was the presentation of several dozen of the most beautiful roses to the visiting ladies by the "Big Four." We suspect that gallant Colonel D. V. Purington also had a hand in the matter. At any rate we know that he gained the gratitude of the official stenographer, Miss Addie Wallace, by decorating her table with a bouquet of lovely roses.

The visiting ladies were delighted with the entertainment afforded by the local committee and unanimously tendered a vote of thanks for the many courtesies shown them by Chairman Harry Dumesnil and his co-workers who were untiring in their efforts to make the ladies feel at home. At Cloverport especial attention was shown them by Judge and Mrs. Murray and a committee of ladies, whose names we failed to get, who by many little kindly acts made the short stay there a rare treat.

Good brother "Keystone" was the most "talked at" of any member. Several of the brethren seemed to have it in for him. He complacently maintained a discreet silence through it all and, we surmise, rather enjoyed the frequent reference to himself. The fact that during the first sessions, at least, the discussions were participated in by the lay members more generally than heretofore, may, in part, be due to his kindly suggestions. At any rate he will doubtless take unto himself the credit.

In justice to "the Four-year-old" we feel constrained to declare that "brother" Edwin McGraw and "Keystone" are not one and the same. Whatever sins "brother" McGraw may have to answer for, "Keystone" is not one of them.

As a glance at the list of members will show, the Chicago Brickmakers' Club attended in a body. Under the leader-

ship of genial Will Alsip they took the town by storm and held full possession for the entire week. If other large cities would follow suit, organize local associations and send regularly appointed delegates, what a splendid convention we could have.

The first delegate on the ground from a distance was jovial C. P. McDermott, of the Wellington (Ohio) Machine Co. He attends the Conventions for pleasure and business and always gets his full share of both. He exhibited a working model of their "Monarch" to crowded houses through the engagement.

The exhibitions of specimen brick were numerous and told more plainly than words the progress the craft has made the past year. In ornamental and paving brick especially the display was very fine. Our official duties kept us so busy that we hardly got a glimpse of the exhibition and so can not particularize as we would like to do. The displays were made in small but well lighted rooms adjoining the Convention hall and interfered less with the Convention work than any former exhibit.

The machinery men were out in full force, as usual. One object of great interest was a fac-simile model of a standard, latest improved, 3-Mold Boyd Brick Press, shown in the room next the Convention Hall. This machine attracted much attention, being surrounded by an interested group throughout the week of the Convention; it was running almost constantly. Unlike machinery models in general, this one was not a toy, but a perfect little brick press capable of turning out diminutive dry pressed brick as dense and hard and perfect, and as free from granulations and other defects, as the full-sized brick turned out by the standard Boyd presses. In addition to the model, this enterprising firm had on exhibition some beautiful samples of dry pressed brick made from various clays, both of the Pompeian and standard shapes, also some fine fire brick such as are now being successfully made on the Boyd presses in a number of localities.

G. W. Alexander, St. Paul, Minn., wants to correspond with a practical and experienced brickmaker, with some capital, to take an interest in and the management of a stock company to erect a brick plant.



## EDITORIAL NOTES and CLIPPINGS

B. F. Reed, Piqua, Ohio, writes that he will put up a machine plant in the spring.

An Ad. of the genuine Hoffman kiln, of which our readers have heard much, appears on page 124.

G. L. Hardison, Thurman, N. C., is looking for the best soft mud brick machine, also wants a hand repress.

Wise Bros., Canfield, Colo., think they have a clay that will make vitrified pavers and will probably erect works.

The Frey-Sheckler Co., Bucyrus, O., make an unusually attractive display in this issue, as the readers may see by turning to pages 219, 220, 221 and 222.

Petoskey, Mich., is thought to be a particularly good point for the location of a brick, tile or pottery works. Mr. A. S. Johnson will gladly give particulars.

The Streator (Ill.) Clay Manufacturing Co., desires information in regard to the use of oil for burning brick and tile, also the manufacture and use of fuel gas.

Roeske Bros., Michigan City, Ind., are thinking of adopting oil as a fuel for burning brick and will be pleased to receive price list of burners, etc., etc. Also illustrated circulars from Dry Press machine manufacturers.

The Buffalo Forge Co., show on page 129, a type of apparatus used by them in constructing their "Progressive" brick dryers, for which they claim many advantages. They will be glad to correspond with any one thinking of erecting a brick dryer.

Adams Bros. & Payne write that they have concluded to double their brick plant at Lynchburg, Va., and on and after the first of March will be prepared to make 50,000 bricks per day, instead of 25,000 which has been their capacity heretofore.

We are indebted to the Huyett & Smith Mfg. Co., Detroit, Mich., for a handy pocket memorandum book. They gave one to each of the delegates to the Louisville Convention and we presume will be pleased to mail one to any of our readers who may write them. See ad. on page 131.

C. & A. Potts & Co., Indianapolis, Ind., report trade good, and state that they have a number of orders in their works for spring delivery. They have just

shipped a complete plant to J. A. Blaffer & Son of New Orleans, La. Their Disintegrator is in as great demand as ever. They have made several improvements in their machines the past year, and now have this machine as near perfection as it will ever be brought. They look for an unusually good year.

Fletcher & Thomas, Indianapolis, Ind., manufacturers of the New Quaker Brick Machine and Brickmaker's Supplies, report business in their line as opening up exceedingly well for the coming season. They have sold, since the 1st. of January, and are now preparing for shipment, 3 complete heavy steam-power outfits to the Patent Brick Co., San Francisco, Cal. Also a complete brickmaking plant, including engine and boiler, for Red Key, Ind. One of the same character for West Salem, Ill. A complete outfit to the Sheldon Brick Co., Urbana, Ill., and one to John F. Rodefer, Elwood, Ind, and one for Mound City, Mo.

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## NEW INVENTIONS.

The following is a list of patents appertaining to brick, tile, terra cotta sewer pipe, pottery, etc., and the machinery used in their manufacture issued since our last number:

- 486,557. Brick Kiln. Chas. B. Coxe, Brooklyn, N. Y.
- 486,931. Drier car for bricks. Nathan Harper, Newark, N. J.
- 487,158. Brick kiln. Louis H. Reppell, Kansas City, Mo.
- 487,161. Brick machine. R. N. Ross and H. H. Keller, St. Louis, Mo.
- 487,174. Brick kiln. Jos. Conley and Jas. M. Wolfe, Tarkio, Mo.
- 487,652. Paving brick. L. C. Turley, Portsmouth, Ohio.
- 487,827. Process of drying brick. Chas. J. Dion, St. Paul, Minn.
- 488,049. Brick press. Geo. H. Babcock, Plainfield, N. J.
- 488,106. Brick machine. S. P. Babcock, Adrian, Mich.
- 488,343. Brick or tile cutter. A. Z. Williams, Chicago, Ohio.
- 488,413. Pottery kiln. W. H. Zimmer and O. G. Hess, Wheeling, W. Va.
- 488,622. Brick machine. Bruce C. White, Chicago, Ill.
- 488,623. Steam heater for brick presses. B. C. White, Chicago, Ill.
- 488,883. Brick cutting machine. Chas. T. Fitch and A. Schantz, Perth Amboy, New Jersey.
- 488,936. Brick drying car. Cyrus Chambers, Philadelphia, Penn.
- 489,617. Brick kiln. Benny Swenson, Roland, Iowa.
- 489,805. Brick kiln. J. B. Griswold, Zanesville, Ohio.
- 489,805. Building brick. J. B. Griswold, Zanesville, Ohio.
- 489,874. Brick machine. Jos. B. Mowrey, Mansfield, Ohio.
- 490,110. Tile machine. Frank Goodfellow, Vienna Cross Roads, Ohio.
- 490,160. Brick mold. E. C., G. W. and H. L. McGraw, Pittsburgh, Pa.
- 490,412. Apparatus for pressing brick, J. G. Naylor and H. Williams, Richmond, Victoria.
- 490,611. Pug mill. Alonzo R. Miller, Washington, D. C.
- 491,037. Brick kiln. Jos. Conley, St. Joseph, Mo.

## A FAIR PROPOSAL.

For responsible, practical parties we will erect a limited number of our Diurnal Kilns and guarantee satisfaction. We require the purchaser of the right to furnish men to tend our masons, dig the trenches, tamp in the sub floor filling and furnish the material; we will do the mason work, and, if the kiln is not satisfactory after sixty days trial, the contract shall be void, and no charges made whatever. We reserve the right to give a preference to parties remote from where we now have kilns. Write for terms.

STEWART BROTHERS.

Mt. Victory, Ohio.



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# \$2,000 BRICK HOUSES.

8 Complete sets of Plans, Elevations, Details, and Specifications, published in our Special November and December Double Number. Sent postpaid for 50 cents, or

## Free to New Subscribers

For 1893.

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THE BRICK BUILDER,

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Halbert E. Paine,

Story B. Ladd.

Ex-Commissioner of Patents.

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Paine & Ladd,

Attorneys at Law.

Loan and Trust B'd'g.

WASHINGTON, D. C.

## BOOKS FOR BRICKMAKERS.

It is pretty generally conceded that wonderful progress is being made in the ancient and heretofore unprogressive art of brickmaking. Among the best evidences of this is the fact that the brickmaking craft is no longer without a literature of its own. There are now some good practical books treating on the manipulation of clay—the making, drying and burning of brick. The list is not so large but that every brickmaker can afford to have them all. Get them and read them.

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Morrison and Reep, \$3.00

“BRICKMAKING AND BURNING,”

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“TABLE OF ANALYSES OF CLAYS,”

Alfred Crossley, \$1.00

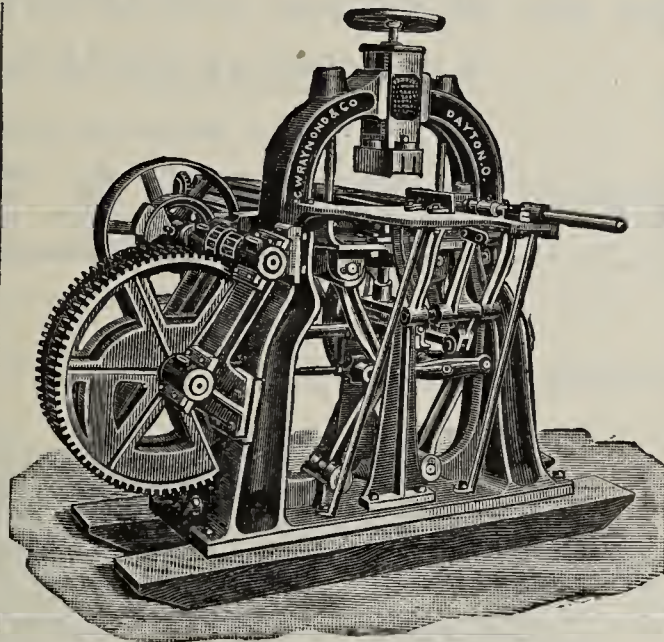
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Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.



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“COLUMBIAN,”  
AUTOMATIC POWER RE-PRESS



NOT An experiment, nor the rejuvenation of an antiquated foreign press.

BUT A FULLY DEMONSTRATED MODERN RE-PRESS. Rapid in Operation. Powerful in Execution. Durable in Construction.

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C. W. RAYMOND & CO.  
DAYTON, OHIO.



## GOING TO BUILD A CONTINUOUS KILN.

*Editor Clay-Worker:*

J. M. Blair the president of our company together with the undersigned recently visited the fire brick works of the Ostrander Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on the yard and they were all first class fire brick and up to the standard. We were pleased with the draft of kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us as there were no fire marks or fuel marks on bricks and the setting such as will allow a large per cent. of face or front brick, a desideration *heretofore unknown* in a continuous kiln. In short to sum all our observations, we can safely say that the kiln was doing *all* the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln" and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned. Yours respectfully,

B. W. BLAIR,  
Gen'l Manager J. M. Blair Brick Co.

AN EVIDENCE OF FAITH.

FULTON, Mo., Jan. 25, 1893.

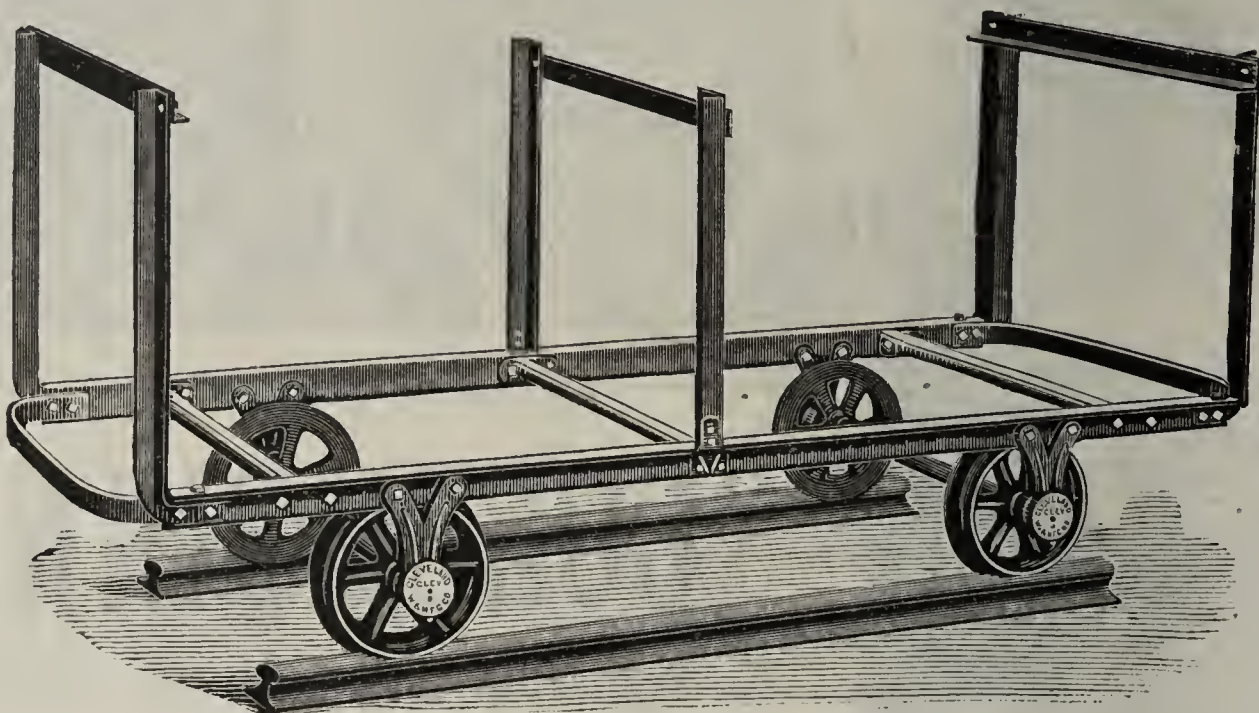
WM. SERCOMBE,  
Fords, N. J.,

DEAR SIR:—I wrote you yesterday to send us plans and specifications for a No. 2 kiln of the Sercombe Patent or Perfect Kiln remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that your kiln will be a success. I think your kiln now being operated at Ostrander, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size.

Wishing you abundant success, I am

Very truly yours,

L. U. NICKELL, Secy.,  
Fulton Fire Brick & Mining Co.

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BRICK DRYER CARS

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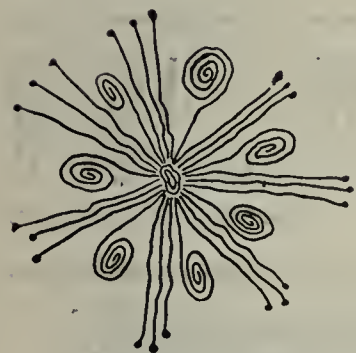
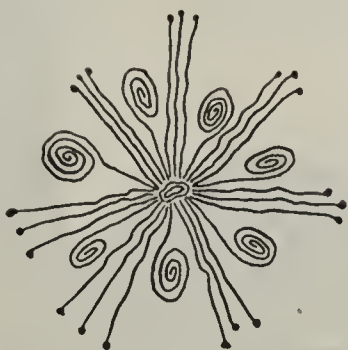
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We wondered not a little that the "BIG FOUR" did not "FLOOD" the Louisville Convention with "KEYSTONES" But it is no wonder that the following people, having investigated them fully, have placed their orders  
——with us for——



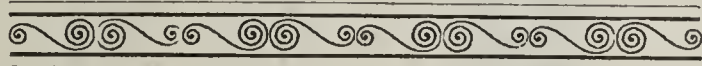
## BIG WONDERS,



The Windfall M'f'g Co., Windfall, Ind., BIG WONDER Brick Machine.

The Lexington Brick Co., Lexington, Ky., BIG WONDER Brick Machine; CUNNINGHAM'S AUTOMATIC CUTTING TABLE and No. 2 Open Top Pug Mill.

The Liberty M'f'g Co., Savannah, Ga., BIG WONDER Brick Machine and AUTOMATIC CUTTING TABLE.



Brick manufacturers may avoid costly mistakes by investigating the merits of our BIG and LITTLE WONDERS before placing their orders elsewhere.

## The Wallace Mfg. Co.,

Manufacturers of Clay Working Machinery,

FRANKFORT, IND.

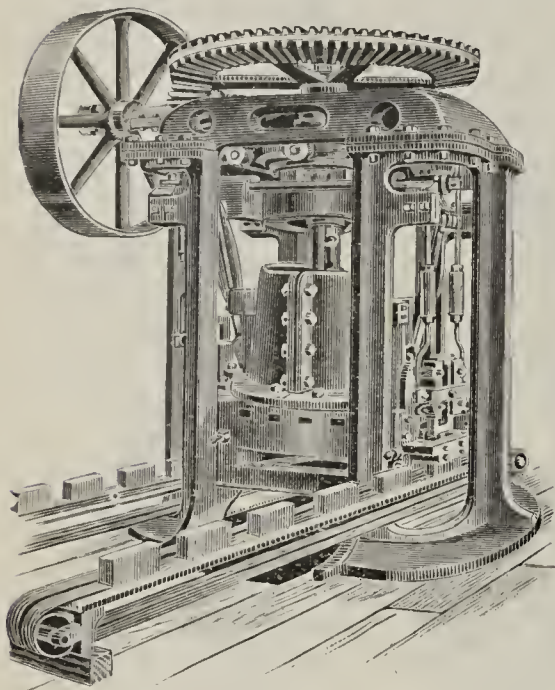
See the BIG WONDER on page 000.



# GRANT BRICK MACHINE

IS THE BEST FOR MAKING

## Street Pavers

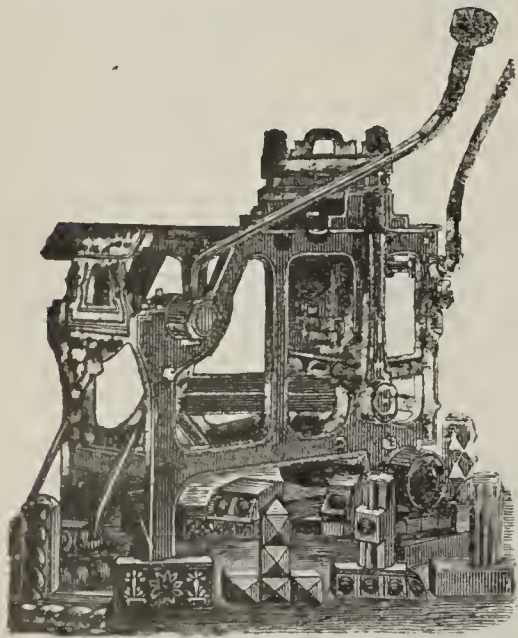


The Advantages are Quality and Economy.

The brick are pressed into solid steel moulds, with one direct pressure, making brick absolutely free from lamination. Address,

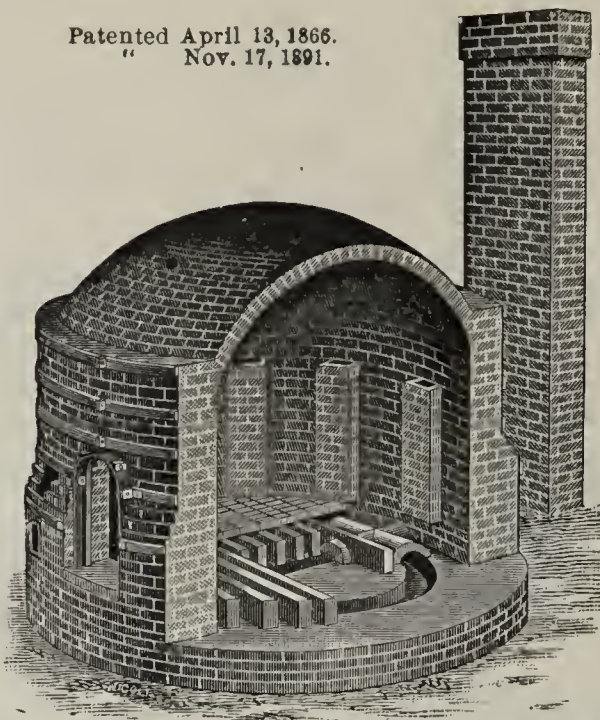
**STRAUB MACHINERY CO.,**  
CINCINNATI, OHIO.

**N. M. KUENY,**  
MANUFACTURER OF  
**Brick Presses**



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PHILADELPHIA.

Patented April 13, 1866.  
" Nov. 17, 1891.



# New Discovery Kiln-It

**Heads the Procession!**

The New Discovery is THE KILN you are looking for if you want THE BEST KILN EXISTANT for burning ALL KINDS of clay products.

Its SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES AND SYSTEM IN USE. Those who are using it, and they are many, THINK SO TOO.

If you will investigate and learn what the New Discovery CAN do you will be WITH US.

This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The New Discovery has PROGRESSED and is still at it.

I don't know IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

For circulars, address,

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# THE AERATED FUEL COMPANY'S SYSTEM

Gives the best oil fire. 200 plants in use. Adopted by large concerns on Terra Cotta, Brick, Pottery and Cement Kilns. Send for Catalogue to Hall Steam Pump Co, Pittsburgh, Pa.

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**BRICKS**  
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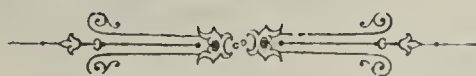
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# Construction Co.,

Brick Manufacturing Experts. Constructing Engineers. Contractors and Builders. Complete Plants a Specialty.



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Send for Catalogue "C."

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PHILADELPHIA, PA.

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SYRACUSE OFFICE: Room 34, Grand Opera House Block, Syracuse, N. Y.

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GURNEY F. COLEMAN, Hotel Chittenden, Columbus, Ohio.

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See ad. on page 116.



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**WANTED—A Dry Press brick burner accustomed to down draft kilns. None but first class men need apply. Address, s t f d**  
DRY PRESS, care "Clay-Worker."

**WANTED—A Superintendent for a dry press brick yard running two 4-mold machines. Must be fully capable of taking charge of such works in all its branches. Address "K," s 1 d**  
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**WANTED.** Situation as burner, building or paving brick. Understands up or down draft kilns. Also practical setter. References given. Address  
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Care Clay-Worker.  
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**FOR SALE.** One good, heavy, slide-valve engine, 16 x 30, 10 foot band wheel, heavy, 12 foot fly wheel in sections. Reasons for selling, being replaced by larger engine. Can be seen at  
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**WANTED.** A man understanding the burning of different clays, with oil, must come well recommended. Address stating experience. s 1 d  
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**WANTED.** A thoroughly competent man a hustler, as superintendent. Wire cut and Dry Clay Machines. Down draft kilns. Give experience and salary expected. Address  
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Care Clay-Worker.  
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**WANTED.** Situation by an experienced man, who understands. Setting and burning sewer pipe, fire and vitrified paving brick and all kind of clay goods. Address Lock Box 41, s 1 c  
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**FOR SALE.** Will sell very cheap on board of cars, an entire brick plant, consisting of one Brewer No. 9 Auger Brick machine; 1 Penfield Pug Mill; 1 Decatur Clay Crusher; 1 Board delivery cutter, 1 Iron Clad Dryer with 50 double deck and 3 transfer cars; all articles almost new and in good order and must be sold at once, reason for selling failure of clay. Address  
HENRY KANNE,  
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FOR BURNING BRICK OF ALL KINDS.

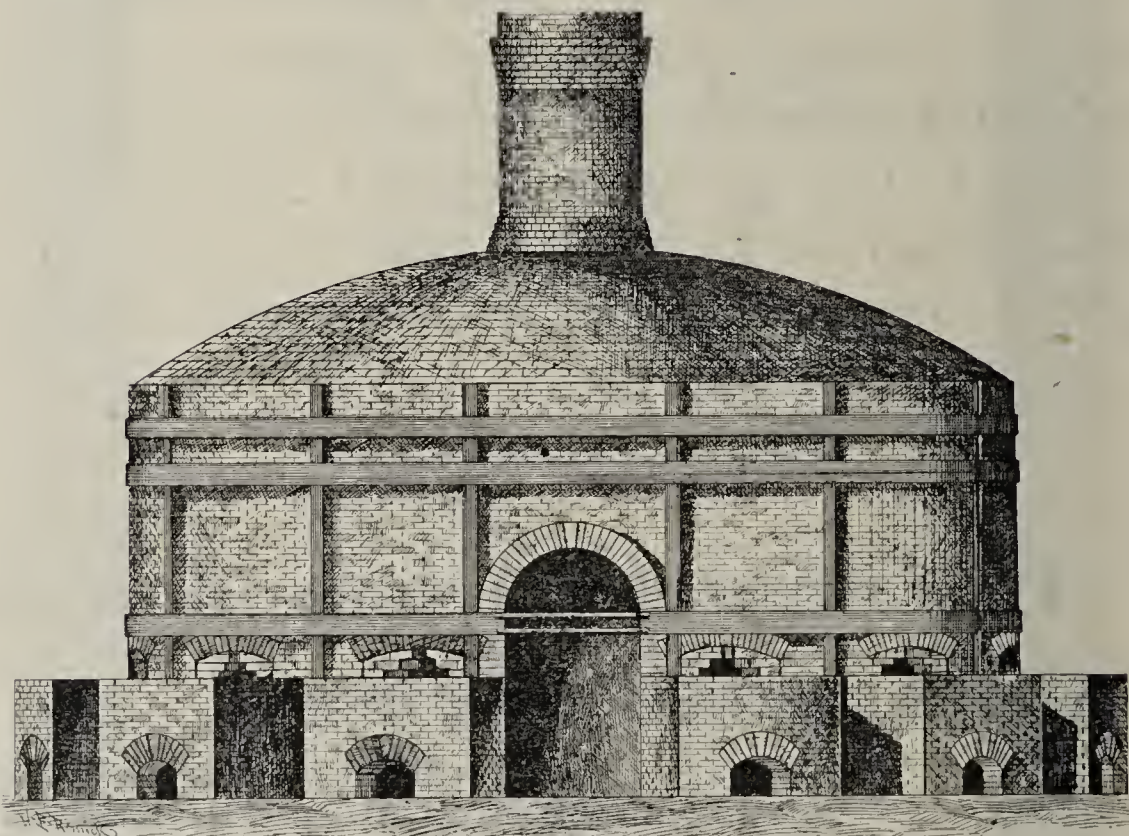


FULLY PROTECTED BY PATENTS.

These Kilns are producing results that make back numbers of their competitors.

We neither buy testimonials or fee superintendents.

❖ WE STAND ON OUR MERITS. ❖



ALFRED YATES,

Write for full description.

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—DEALER IN—

## "Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.

"Air dried" bricks all the year round.  
A new plan of reducing old, approved methods to a System.

This frame enclosure needs no iron pallets.

### The INSIDE FAN Steam Dryer.

A cross, spiral current from fan to fan.  
Bricks are safely dried in five hours.  
No "checking" or discoloration.

### No Chimneys or Brick Structure!

And only half the doors are required.

A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

### More Fans! Less Pipes!

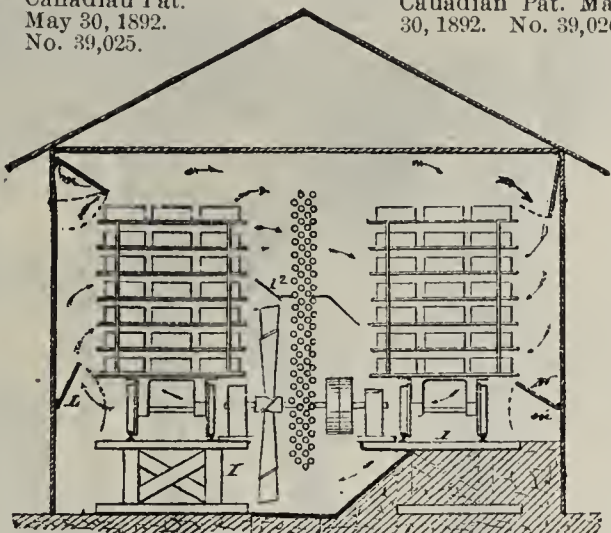
The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live" in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

"SEEING IS BELIEVING,"

Therefore, "at home," this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.



U. S. Patent August 16, 1881. No. 245,742.

U. S. Patent March 31, 1891. No. 449,170.

U. S. Patent March 31, 1891. No. 449,231.

British Patent March 31, 1891. No. 5,520.

## "Better Than Drying in the Sun."—"Exhaust Steam."

S. G. PHILLIPS, Woodbridge, N. J.

OTTUMWA, IOWA, July 7, 1892.

DEAR SIR:—Though I have had your Dryer in operation but a short time, it gives me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTDICK.

## "And Met the Requirements in Every Case."

MR. S. G. PHILLIPS, Woodbridge, N. J.

PHILADELPHIA, December 14, 1892.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks and in a reasonable length of time. Your latest plan of building only two tracks with the entire system of radiators and fans placed between the two lines of loaded cars, we have not yet seen in operation, but would be glad to call on you whenever you have this style of Dryer finished and in practical operation on stiff tempered brick in your locality. We are pleased to hear of the success with which you are meeting in the introduction of your Dryers.

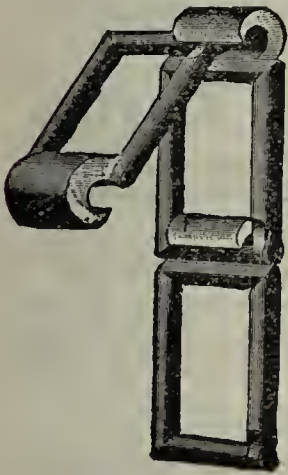
Yours respectfully,

CHAMBERS BROTHERS CO.,  
J. H. Chambers, Gen'l Mgr.

"I think you have the Dryer the brick people are looking for."—JNO. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently; "Not over 12 hours to make them VERY DRY—the best by great odds of any in the market."—The writer has looked the matter of Dryers up very fully, and been to see about all of any importance.

## ELEVATORS

Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.



## JEFFREY CHAIN BELTING,

—ALSO—

Malleable, Steel, Cable and Special Chains,

DESIGNED FOR.....

Elevators, Conveyors, Drive Belts,

FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc,

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Chicago Office & Salesroom: 48 S. Canal Street.  
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Columbus, Ohio.

FOR SALE. Brick and tile machinery. One No. 7 Penfield Brick Machine, tile dies 3 to 12 inches, brick dies and table complete 2 spring trucks, one portable boiler and engine, 12 horse power. All in good running order and will sell at a bargain if sold soon. Price \$400. Address FRANK LANGRAFF, Albion, Ind.

s t f 8 p.

WANTED. A burner accustomed to burning soft mud bricks, one who understands repairing kilns and has some experience in setting preferred. Apply with list of references from last and former employers and salary expected to J. A. BLAFFER & SON, Foot Anstedity St., New Orleans, La.

s t f d

WANTED. A party, active or silent to join a practical man in manufacturing street paving brick. The shale has been thoroughly tested and is equal to the very best in the country. A large section of country ready for paving brick, but not now supplied. Address

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PAVING BRICK,  
Care "Clay-Worker."

WANTED. Parties having a good shale clay convenient to a good market, for paving brick, and desirous of developing same, will learn of a practical clayworker desiring to engage in the business by addressing Box 1211, care "Clay-Worker."

WANTED. Situation as superintendent of a first-class dry press or mud brick yard. By a man who understands and can manage machinery and men and the manufacturing of all kinds of stock, ornamental and shape brick. Not afraid of work. Will take an interest finally in the right kind of a plant. Address "NIM," care "Clay-Worker."

FOR SALE. Brick and tile plant located at Kenney, Ills., will sell one-half or whole. This is a good opportunity for a party of limited means, the plant consists of 4 acres of land, a good house shed 316 feet long, 3 down draft kilns, engine room good engine, boiler, Brewer machine all in good order, good demand for both brick and tile, this will be sold cheap and times given in part, good reasons for selling. Address Box 1211, care "Clay-Worker."

TO LEASE. For a long term, a developed Terra Cotta clay and Koalin property on Staten Island Sound, opposite Woodbridge, N. J. Clays are used for hollow face brick, sewer pipe, colored faced brick, and fancy ornaments for fronts of buildings. Dock house, barns, scales, etc., on property. Apply to R. H. Boyd, 59 Murray St., New York City.

SUPERINTENDENT, wants position, understands thoroughly dry press, stiff or soft mud system first-class burner, in either up or down draft kilns, a practical engineer, can do own repairs and keep machinery in good running order, a good manager of men. References of the highest order. Address "G. B," care "Clay-Worker."

OPENING for a practical brickmaker with some capital, coal, clay sand and wood on the ground and R. R. switch to same, C., B. & Q. R. R. For particulars address J. H. COFFMAN, Augusta, Ills.

FOR SALE CHEAP. 60 iron cars and track for Sharer's Improved Dryer. Used only one season. For full particulars, address, N. A. & J. L. FITZGERALD, Danville, Va.

WANTED. A practical superintendent, thoroughly understanding the working of stiff and soft mud brick machines, and setting and burning a Continuous Down Draft Kiln. References required. D. G. RHOADS & Co., Omaha, Neb.

FOR SALE. New Dry Press Brick Machine, capacity 24,000 and 34,000 per day, also plastic machines, capacity 35,000 per day. For particulars address SAMUEL COLLINGS EAGLE FOUNDRY, Easton, Pa.

FOR SALE. One three-mould Andrus Dry Press. Latest, heaviest pattern. In good order. One Little Wonder Brick Machine. One Cyclone Pulverizer. Apply to MISSOULA BRICK & SEWER PIPE WORKS, Missoula, Mont.

WANTED—Position as superintendent and general manager of first-class brick works, making 100 M. or over per day. Either dry press or mud presses, or both. Understand all about construction of yard, kilns and the management of machinery and men. Been making all kinds of ornamental and front brick. Have present situation for the past four years, and can still retain it, but desire to change location on account of health of family. Address, TOM KINS, Care Clay-Worker.



**FOR SALE.** One Fletcher & Thomas Soft Mud Pug Mill, complete with counter shaft and clutch pulley, in good order for \$100. Also, one Cream City Soft Mud Brick Machine for steam power, capacity 40 M. Counter shaft and extra gears included. Will sell cheap.

C. J. HOLMES & BRO.  
Sergeants Bluff, Ia.  
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**WANTED.** Situation as setter and burner of brick by the usual method of plain clamp kilns by an A No. 1 man. Age 33 years. Acquainted with machinery and all brickyard work, having served all his life at the business, making a study of, and giving particular attention to that most important branch, viz: setting and burning.

Address, THOS. EAST,  
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**FOR SALE.**—Controlling interest in tile factory at Melvin, Ill. Entire interest in tile factory now operated by us at Bloomington, Ill. Also, one 40 horse-power engine, good as new. One Brewer & Co. tile machine, good as new.

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**FOR SALE.**—One Craft Upright, Steam Power Brick Machine. Entirely new. All iron front, iron posts, iron bottom, very heavy and strong. Good machine for pallet brick. Will be sold cheap.

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**FOR SALE.**—65 H. P. Westinghouse Automatic Engine. Cylinder 11 in. diam. Drive pulley 30-inches by 14-inches. Used by a firm having water power and therefore used very little. Was replaced by a larger one. Has been put in good order, and is a bargain.

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**FLORIDA—FOR LEASE, RENT OR SALE.**—40 acres of Clay Land. Yard been worked. Good brick made from clay. Opportunity for one understanding brickmaking. City of 10,000. Brick blocks building. No other kiln within 300 miles. City talking of paving with brick. Write,

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Eighteen  $8\frac{3}{4} \times 4 \times 2\frac{3}{4}$ .  
Fourteen  $8\frac{3}{4} \text{ in.} \times 4\frac{1}{8} \text{ in.} \times 2\frac{1}{2} \text{ in.}$   
Used a few days, but perfectly good:  
Eleven  $8\frac{3}{4} \text{ in.} \times 4$  and 1-16-in.  $\times 2$  and 7-16-in.  
All six brick to the mold and 9-16-in. partitions.  
These will be sold cheap. Address

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**A BARGAIN.**—A valuable pressed brick plant in the city of Chicago, well equipped with improved machinery, kilns, etc., which has been turning out a very high grade of front and ornamental brick for several years past, is offered for sale, owing to present owners having other interests which demand their entire attention. The plant is also well adapted for the manufacture of terra cotta. Address "CHICAGO,"  
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- 1 Ohio Brick and Tile Machine.
- 1 New Departure Brick and Tile Machine.
- 1 Hoosier Brick and Tile Machine.

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Address, BLACKMER & POST PIPE CO.,  
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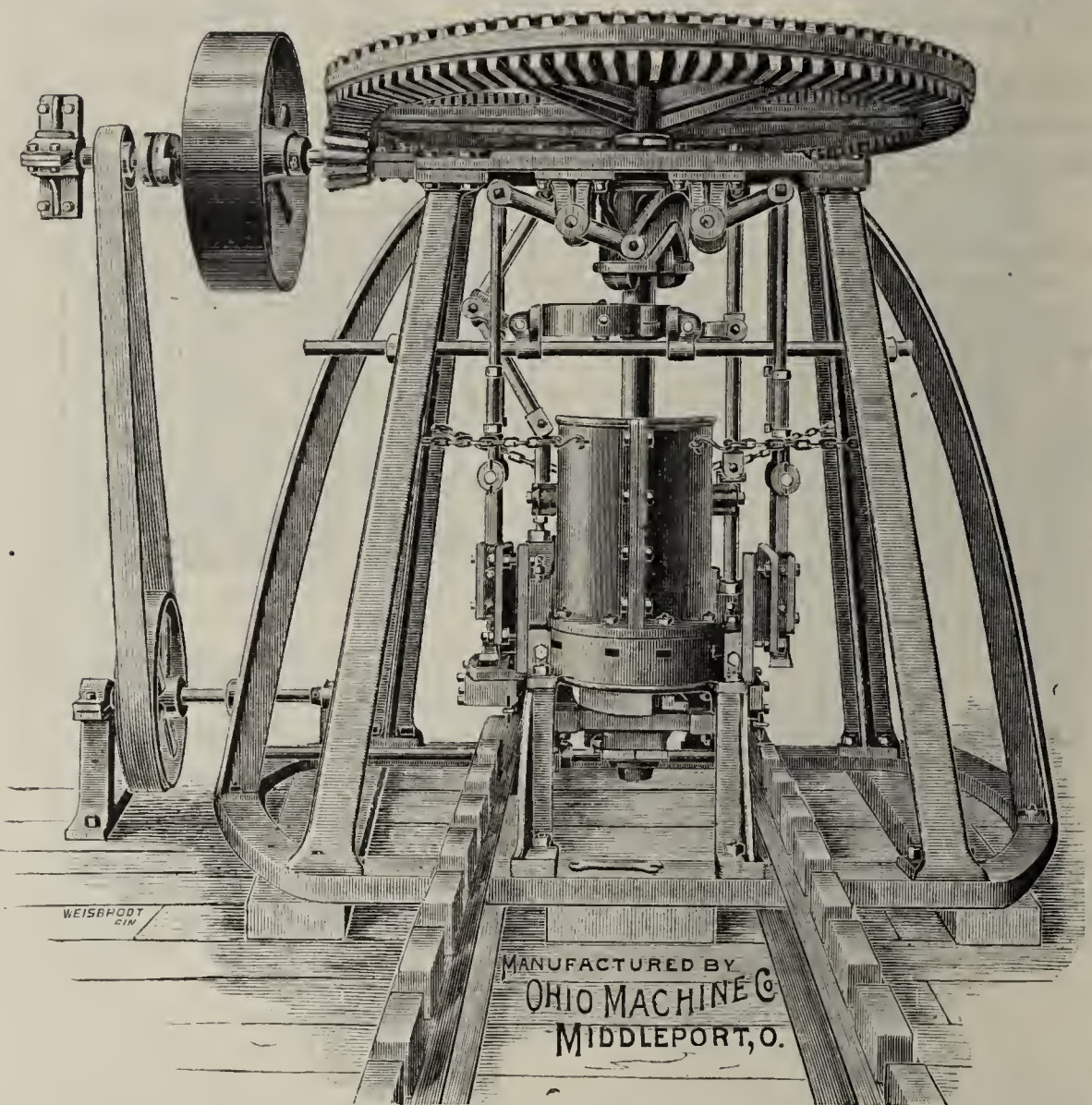
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and 40,000 per 10 hour day.

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For handling Coal, Sand, Clay, Grain, Tan-Bark, Cinders, Ores, Sawdust, Lime, Cement, Shavings, Cotton-Seed, etc.

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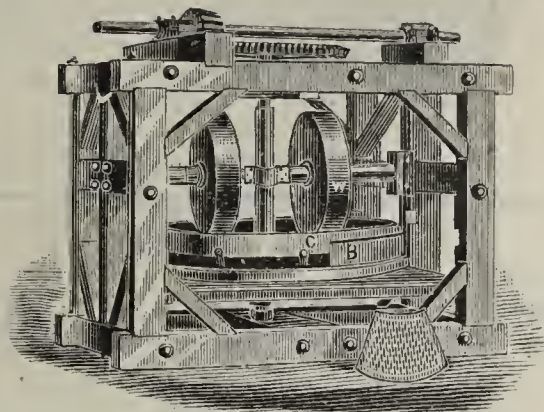
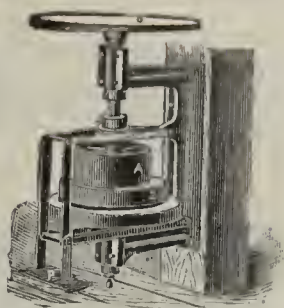
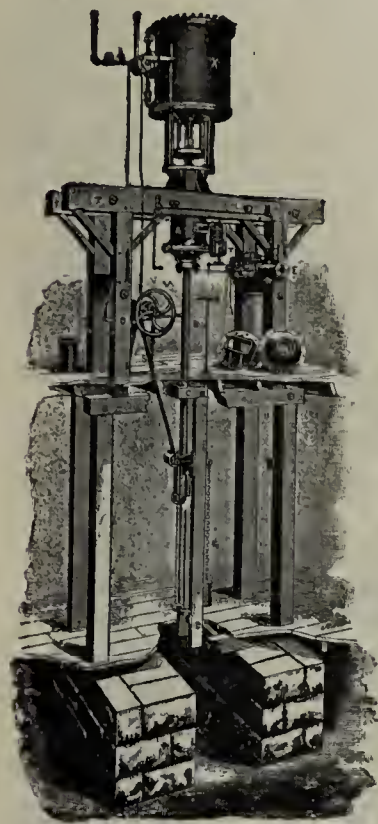


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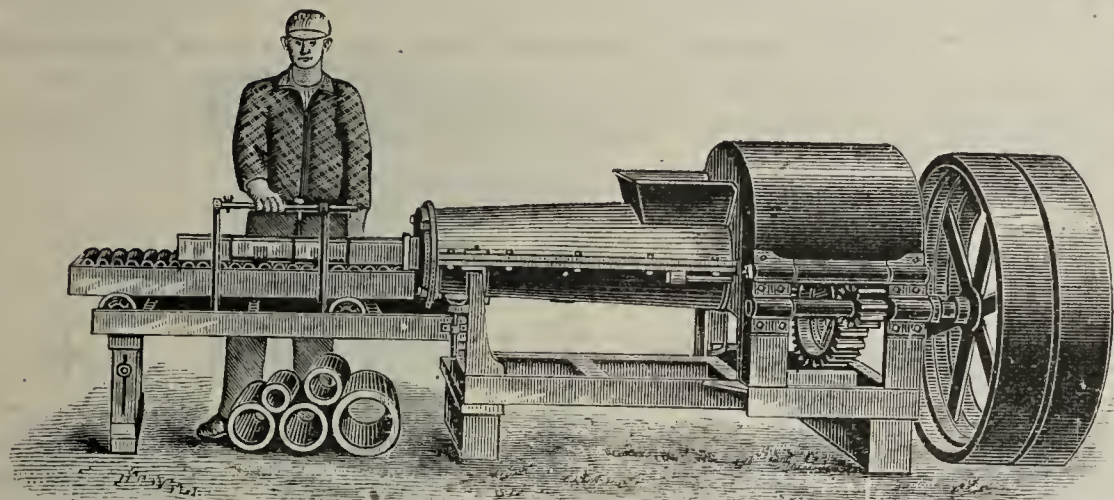
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This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

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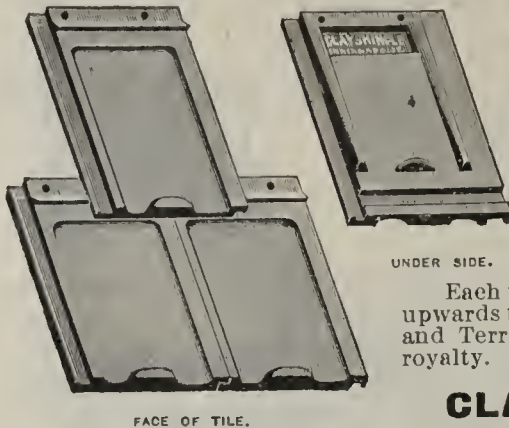
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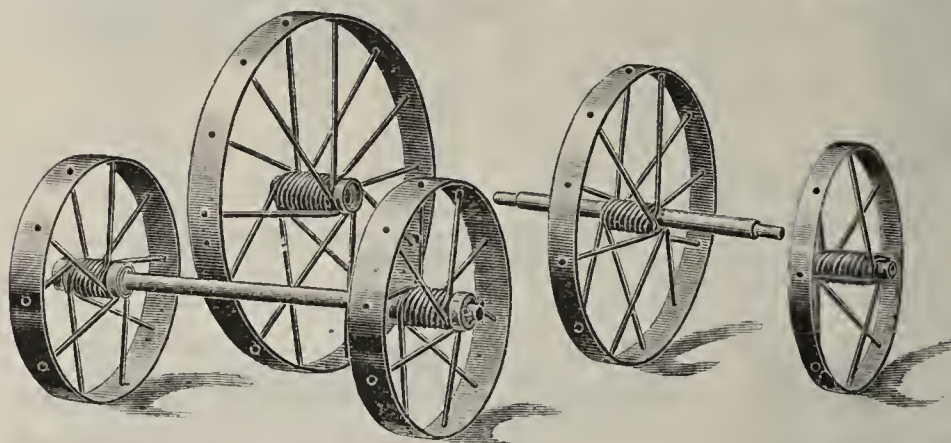
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Each tile locks on the others. Can be laid at one-fourth pitch and upwards to straight. This company owns the patents in all the States and Territories, and will negotiate for factories to manufacture on royalty. Prices very low for tile. For information, prices, etc., address

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Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,

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Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

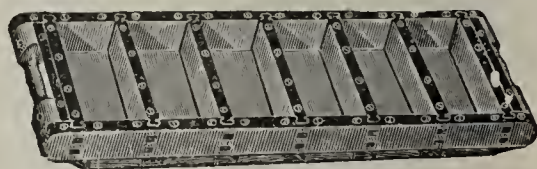
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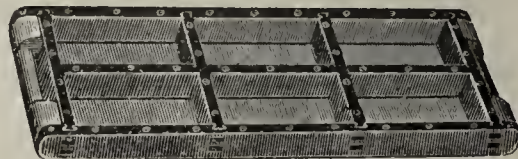
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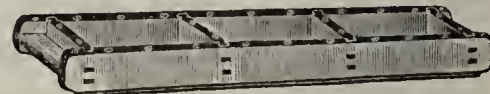
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S. B. HAND MOULD.



S. B. HAND MOULD.

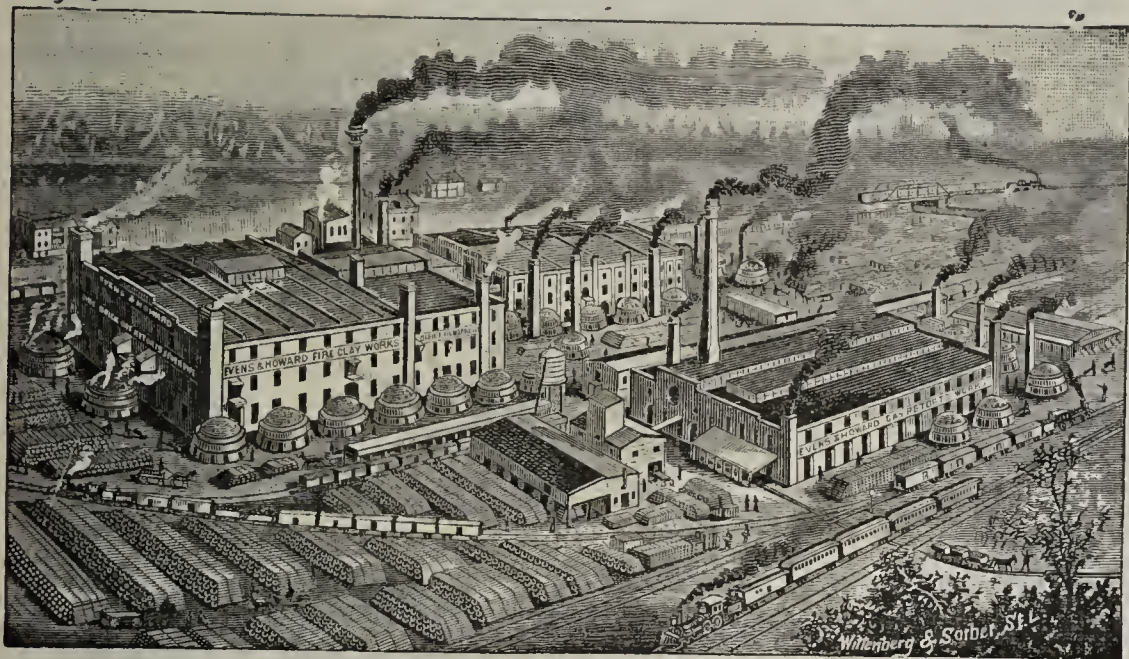


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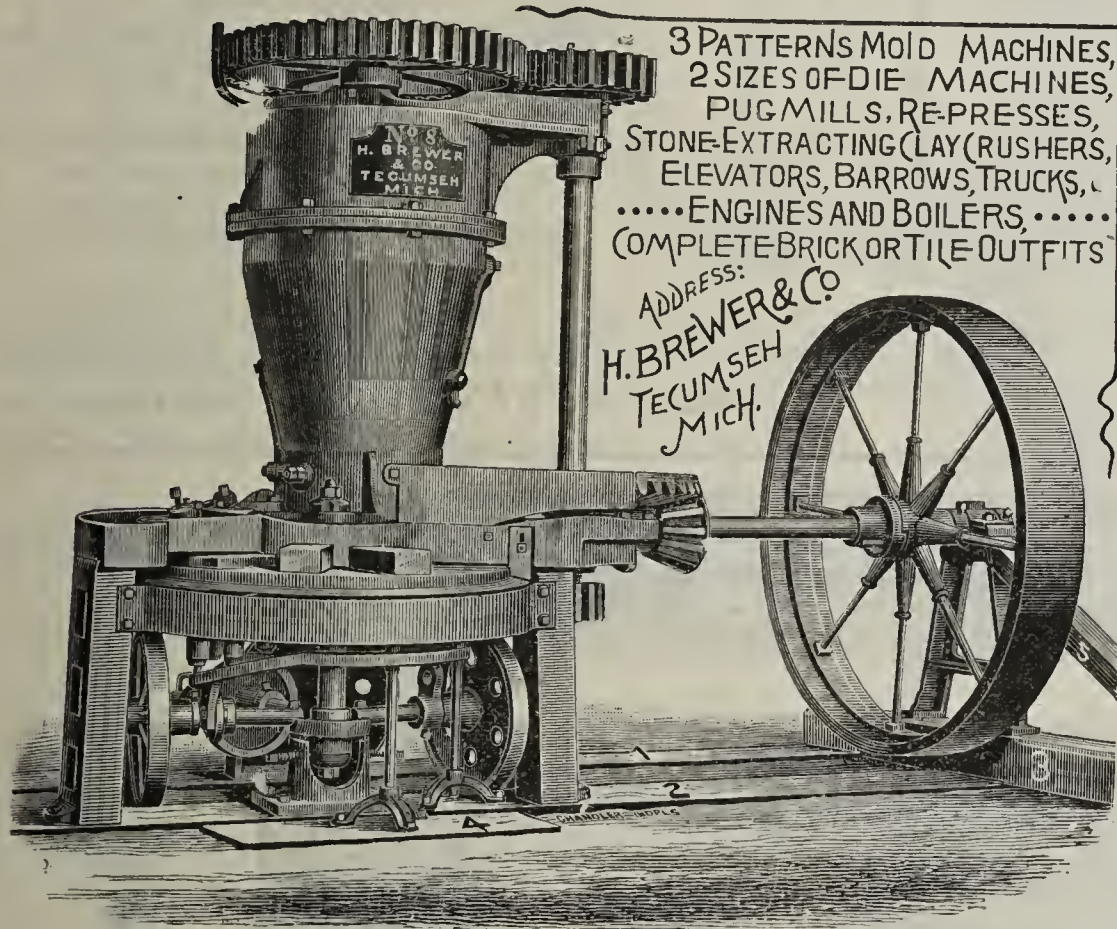


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3 PATTERNS MOLD MACHINES,  
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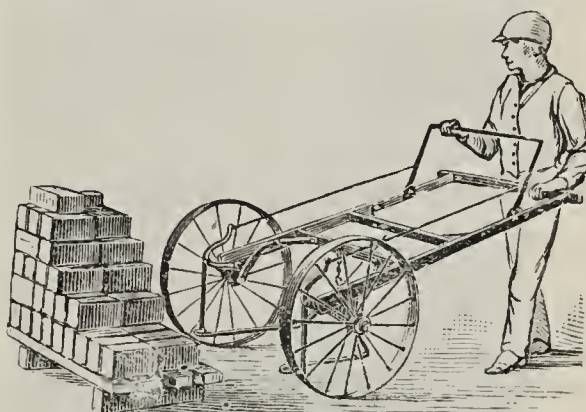
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The principle of handling and drying bricks by  
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DEAR SIR—We have now been using your Hack-  
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take from the machine and put on the yard 25,000  
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keep two setters and two tossers going with one  
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their shape so much better. We will gladly answer  
any enquiries concerning your Trucks who may  
refer to us. Respectfully Yours,

Florence, S. C. COFFIN & PERRY.

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STATESVILLE, N. C.

DEAR SIR—I agree with your many subscribing  
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For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of  
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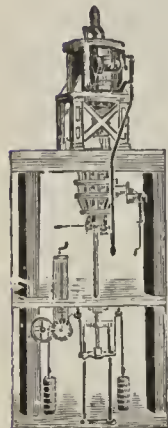
## Steubenville Foundry & Machine Works,

Established in 1820.

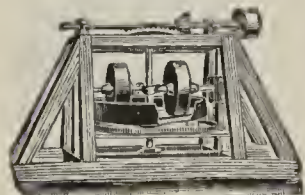
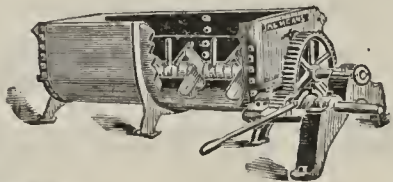
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**JAS. MEANS & CO.,**  
Steubenville, Ohio.



## Boehncke's Continuous Kiln.

U. S. Patent, May 17, 1892. Up and Down Draft.

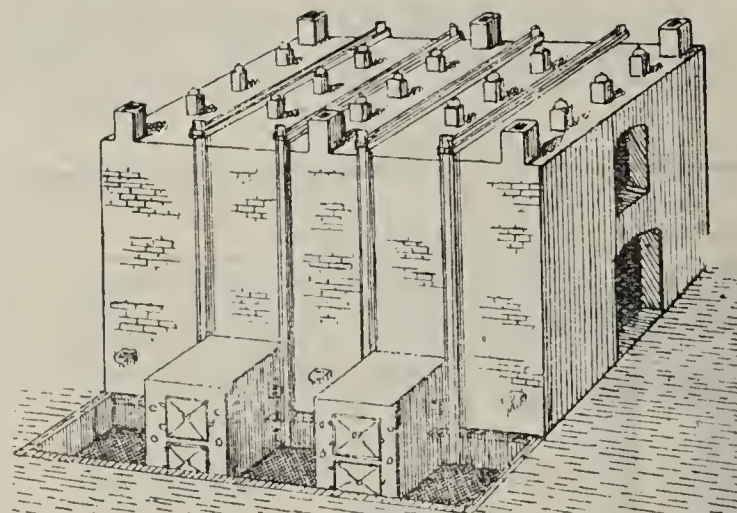
This is the Only Up and Down-draft Continuous Kiln Ever Invented.

Boehncke's Continuous Kiln is the result of 22 years experience in building and running of Continuous Kilns on both sides of the Atlantic. It is no experiment.

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The Kiln burns successfully mud brick or dry pressed brick, paving brick, fire bricks, sewer pipes. No waste or loss of brick in burning. Most even burning throughout the kiln. 80 per cent. fuel saved in comparison with clamp kilns.

Easy firing and handling of the Kiln.



**Boehncke  
&**

McLean's "Common Sense"  
**KILN.**

Up and Down Draft. Pat. May 24, '92

This Kiln is especially adapted to burn all kinds of finer face and front brick. Very cheap in construction, and can be made continuous too. A brick in this kiln burnt even in color and hardness.

If you want to build a Continuous Kiln, or to erect a new brick plant, do not commence before corresponding with the undersigned. We are prepared to send competent men to build and operate kiln and are ready to furnish plans for new plants and to assist arranging the same. Centinela Brick Kiln & Drier Co., P. O., CENTINELA, CAL.

**THE BONNOT COMPANY**  
CANTON, OHIO.

**BRICK & POTTERY PLANTS EQUIPPED COMPLETE READY FOR OPERATION UNDER ONE CONTRACT**

J.E. VOTAW CANTON, O.





## Waplington's Regenerative Gas Furnaces

Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of **Pottery and Fire Bricks**, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

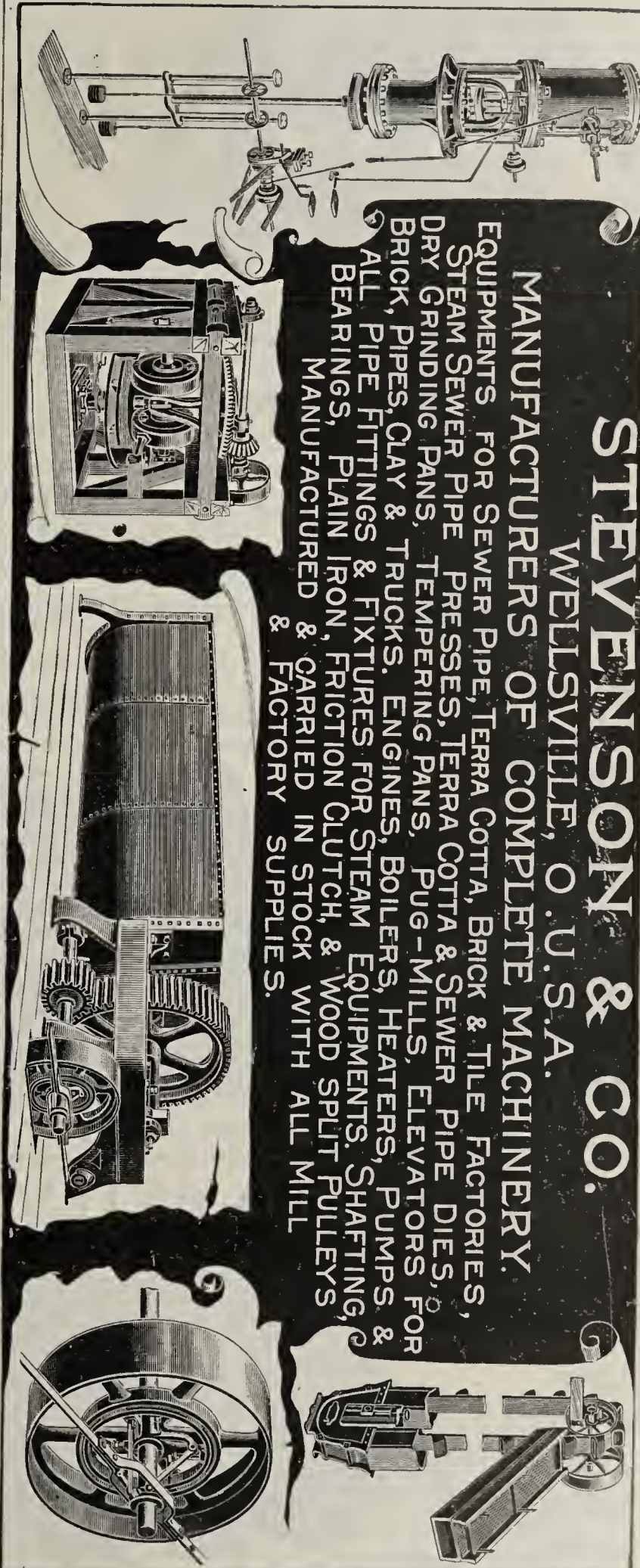
Estimates, specifications and plans on reasonable terms. Plants contracted for on approval to good, responsible parties. Sets of blue prints, 25 cents per set, showing the application of gas to any of the above mentioned purposes.

Send stamp for pamphlet "**Natural versus Artificial Gas.**"

Address,

**WILLIAM WAPLINGTON,**

Westminster Ave., PHILADELPHIA, PA.

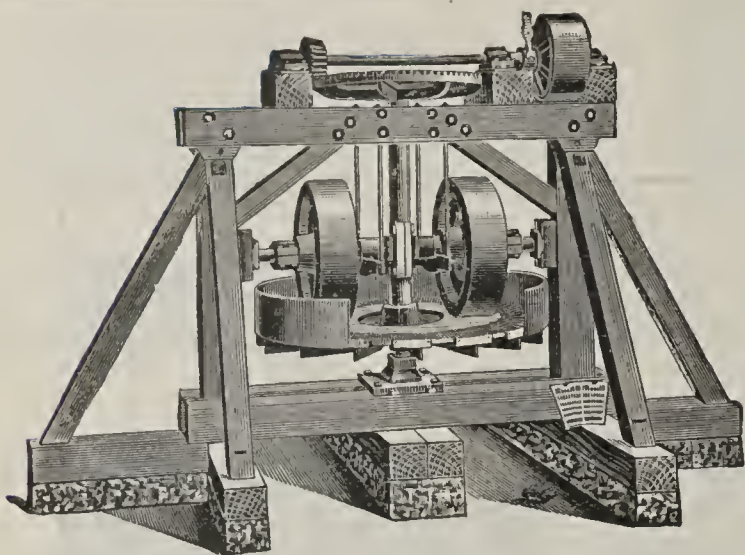


**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING &  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.





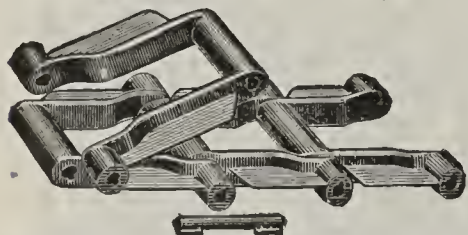
# Frost Dry Pan Crushers.

8 and 9 Foot Sizes

In operation all over the United States and Canada. Send for Catalogue and List of customers.

COMPLETE POWER PLANTS.

FROST ENGINE CO., - - Galesburg, Ill.



F. H. C. MEY CHAIN BELTING  
ENGINEERING WORKS,

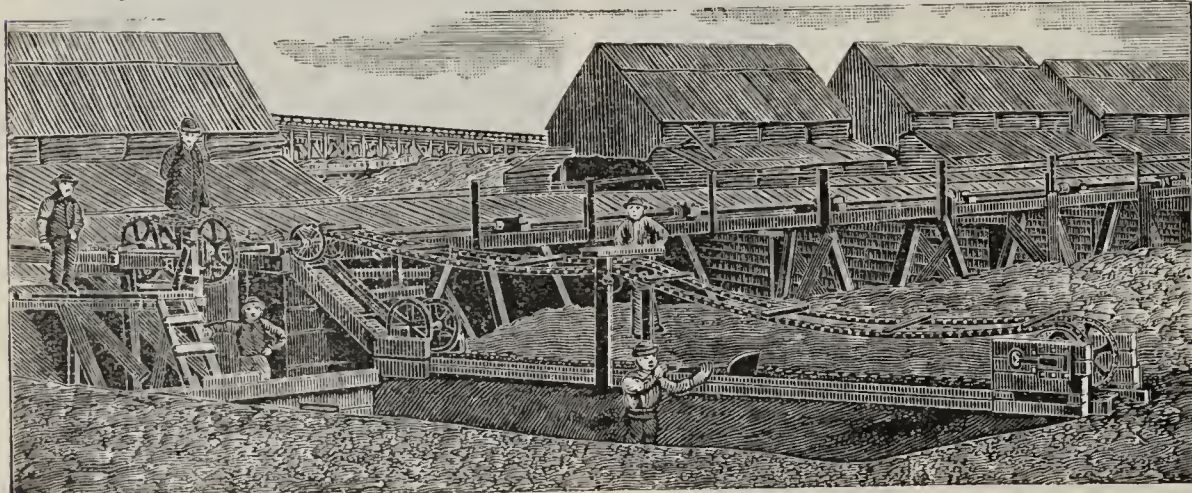
APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

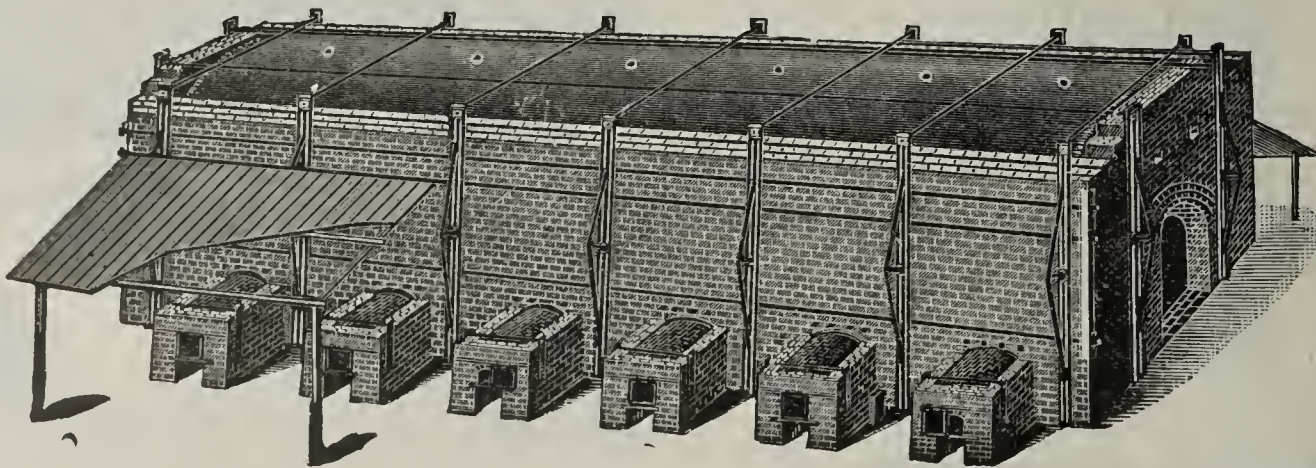
SEND FOR REVISED  
PRICE LIST.



## THE GRISWOLD PATENT IMPROVED BRICK KILN

With  
Its  
Latest  
Improvements  
Has  
No Equal.

For further information and prices for Yard Rights apply to



Works  
with an  
Up and Down  
Draft  
Continuously  
with No  
Change of  
Dampers.

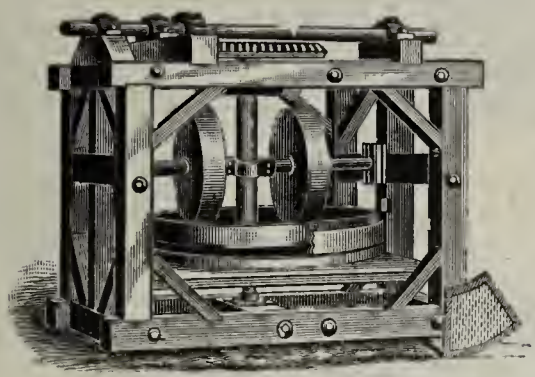
J. B. GRISWOLD & CO.,

Box 1419, Zanesville, O.

Reference: The Oakland Press Brick Co., Zanesville, O.



## EAGLE IRON WORKS, DES MOINES, IOWA.



FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

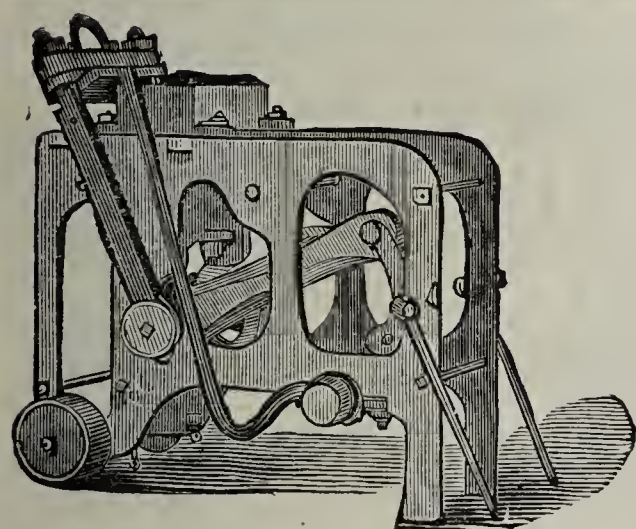
[Mention the Clay-Worker.




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Mention the Clay=Worker  
When writing to Advertisers  
Mention the Clay=Worker.

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RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1819 and 1821 Germantown Avenue,  
and Fifth St.,

PHILADELPHIA, PA.

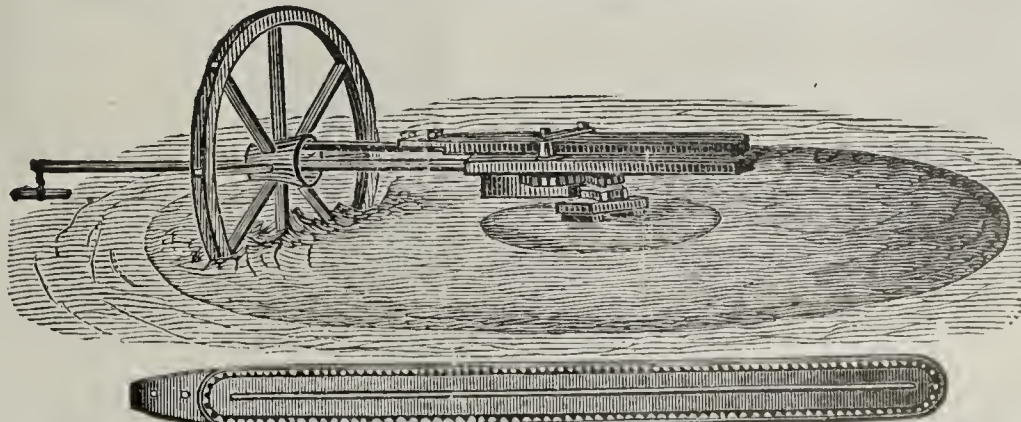
Send for Circular and Price-List.

## Philadelphia Brick Machine Works

—MANUFACTURER OF—

### FIRE AND RED BRICK PRESSES.

Various sizes, from the smallest size up to 24 inches; also, manufacturer of Clay Mills, Tempering Machinery, and all kinds of Brickmakers' Tools.



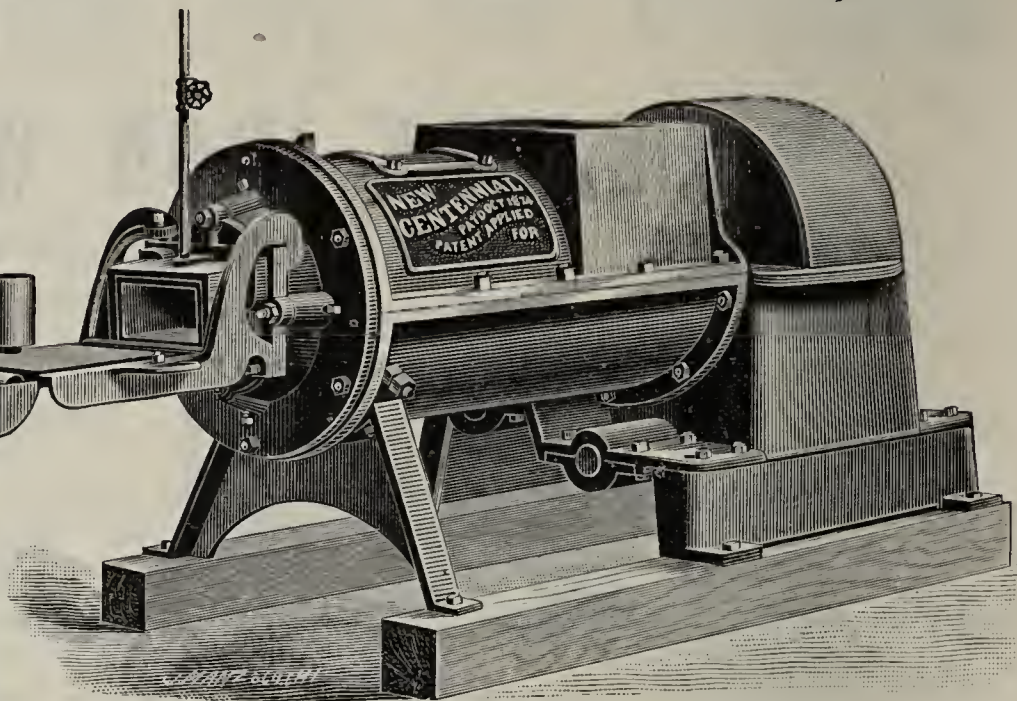
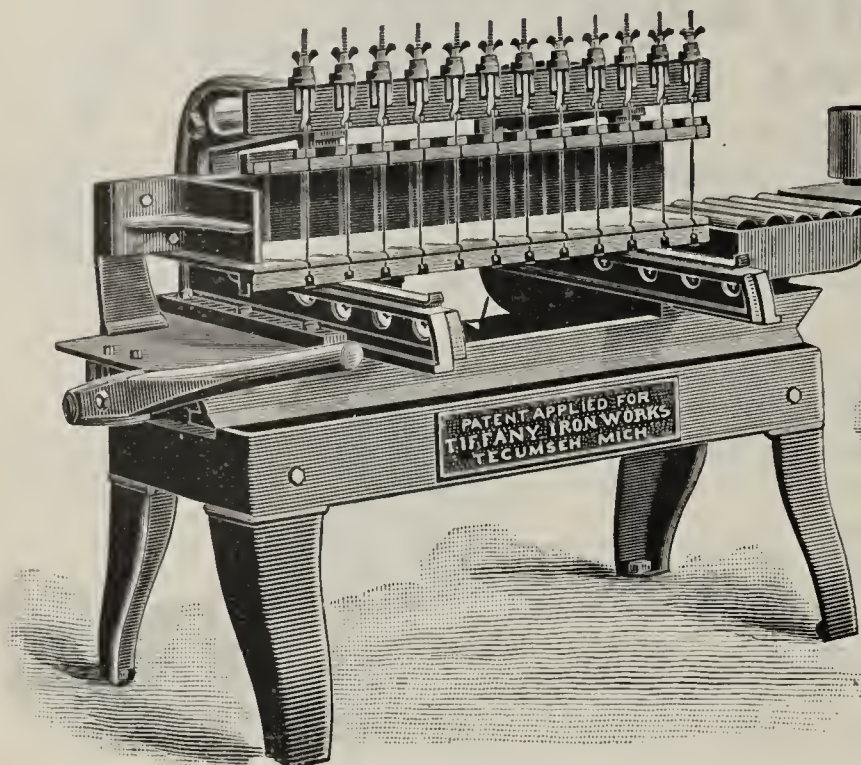
These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and is fitted up ten per cent. cheaper.

☞ Mention THE CLAY WORKER.



# TIFFANY IRON WORKS,

TECUMSEH, MICH.



THE NEW CENTENNIAL.

October 21, 1892—You wrote me that I held the record at 84 brick per minute. Now, how does 108 strike you? We did that often but had not help enough to keep it up.

J. M. IVIE,  
Kirksville, Mo.

The Best Evidence of the Value of a Brick Machine is the Grade of Brick it Makes.

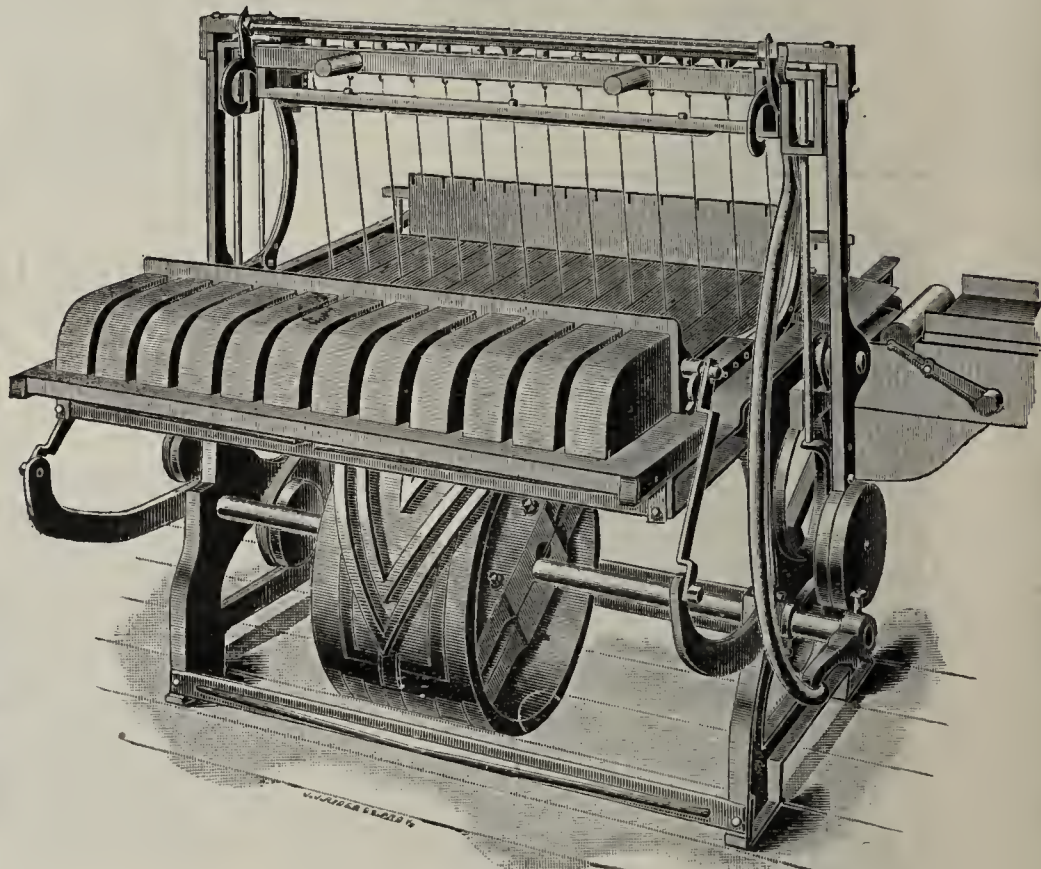
The Board of Engineers that have charge of the Niagara Falls Power Tunnel all say that they are the best red brick they ever saw for their work.

BEAMSVILLE PRESSED BRICK CO.

You ought to see the two houses we are building out of Hollow Blocks. They are fine and look better than anything in Ohio. Our brick will take the first prize sure.

KNOXVILLE SEWER PIPE CO.

## THE :: BARRINGTON :: SMOOTH :: CUT



A Table that cuts clay from an Auger Machine into brick having an edge and finish equal to the best press. After being cut, the bricks are automatically separated and delivered upon pallets, and need never be handled until dry and ready to be set in the kilns.

A machine which is not for sale, but which is placed out upon royalty; and exclusive right given each party having the same, to territory contiguous to his market, and thereby keeping out ruinous competition.

Send for a sample brick as cut upon this table, and judge for yourself as to its value for doing work for your market.

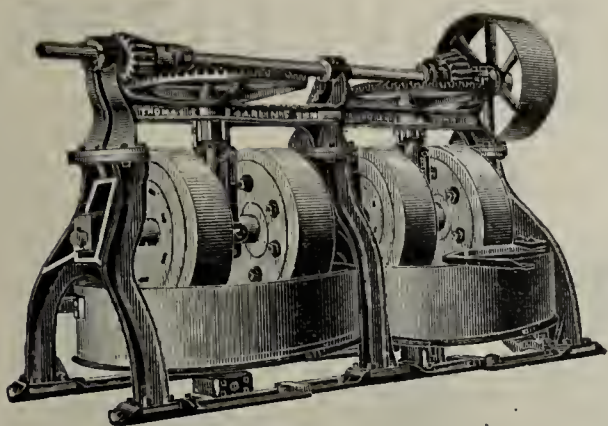
Please direct all communications to

P. L. MONROE, OMAHA, NEB.,

OR

J. A. SNELL, BARRINGTON, R. I.





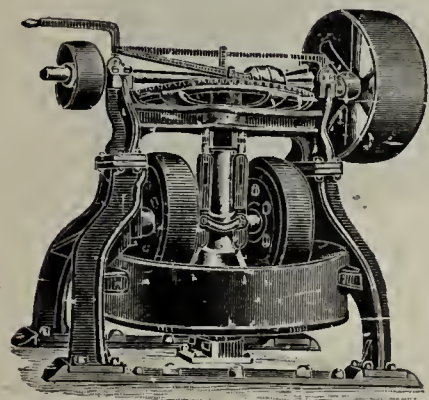
OUR SPECIALTY.

# GRINDING AND MIXING PANS

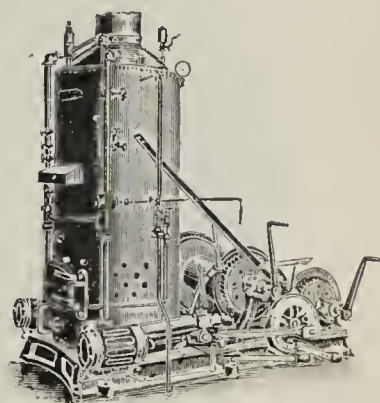
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 { Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF  
 IMPROVED

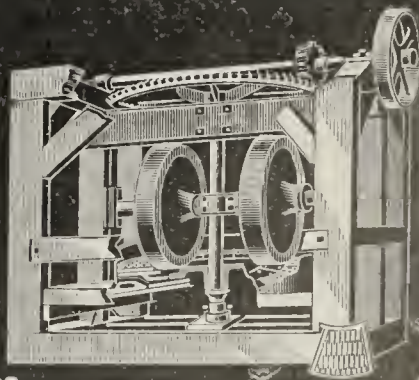
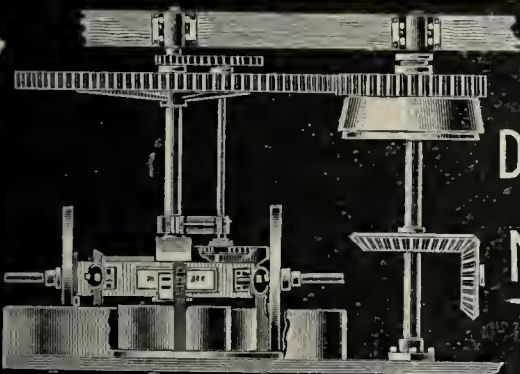
## CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

TAPLIN RICE & CO.

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

AKRON, OHIO, U.S.A.



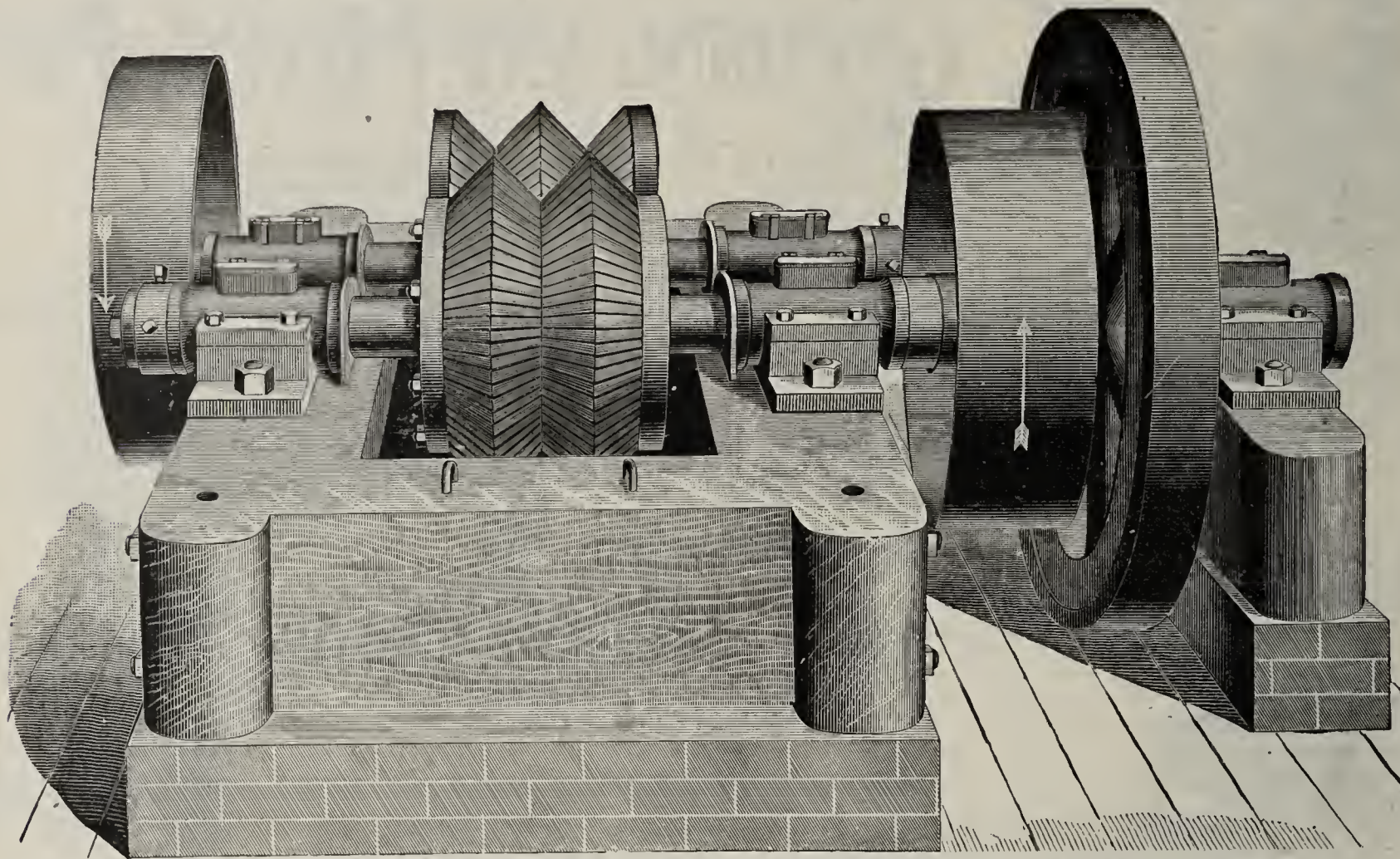
PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



# NEWELL IMPROVED CLAY PULVERIZER

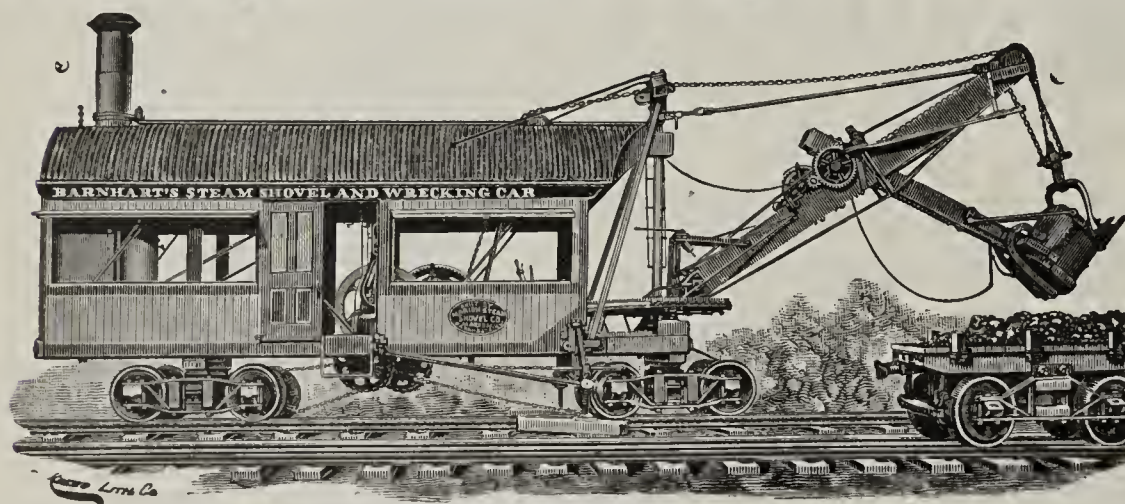
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Electrical Ex. Bldg., 136 Liberty St., N. Y.

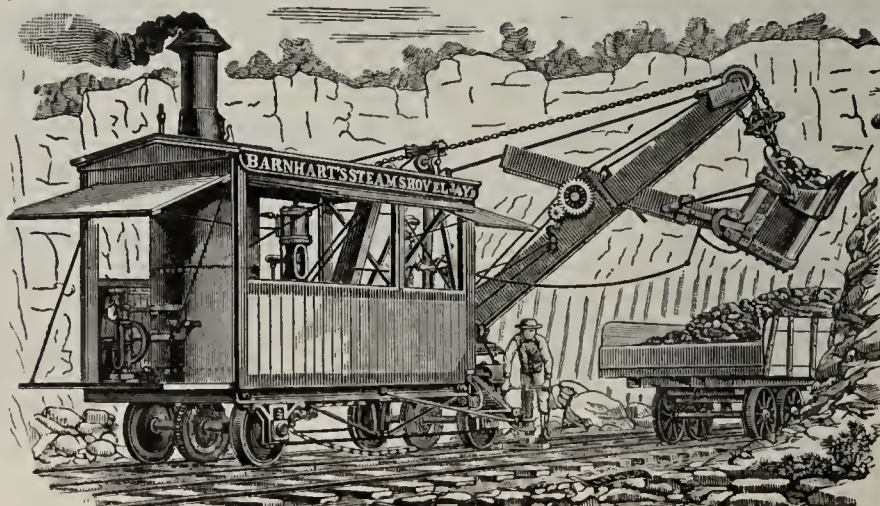
## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
MARION, . . . OHIO.



STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



# A "NEW HAVEN."

## After Three Years Hard Work.

NEW BRITAIN, CT., Dec. 21, 1892.

THE McLAGON FOUNDRY CO.

GENTLEMEN—I have just completed my third season's use of your machine, and I think I received even better satisfaction this year than the two previous years.

I made 42,000 first-class brick per day on an average of eight hours, running at the regular speed. I made, this season, in the neighborhood of 5,800,000 brick without a cent for repairs except replacing a few knives on the tempering shaft.

I heartily recommend your machine. It is an A No. 1 machine in every respect for making very nice brick.

Yours very truly,

M. H. DONNELLY.

For More Like the Above and Further  
Information Write to . . . . .

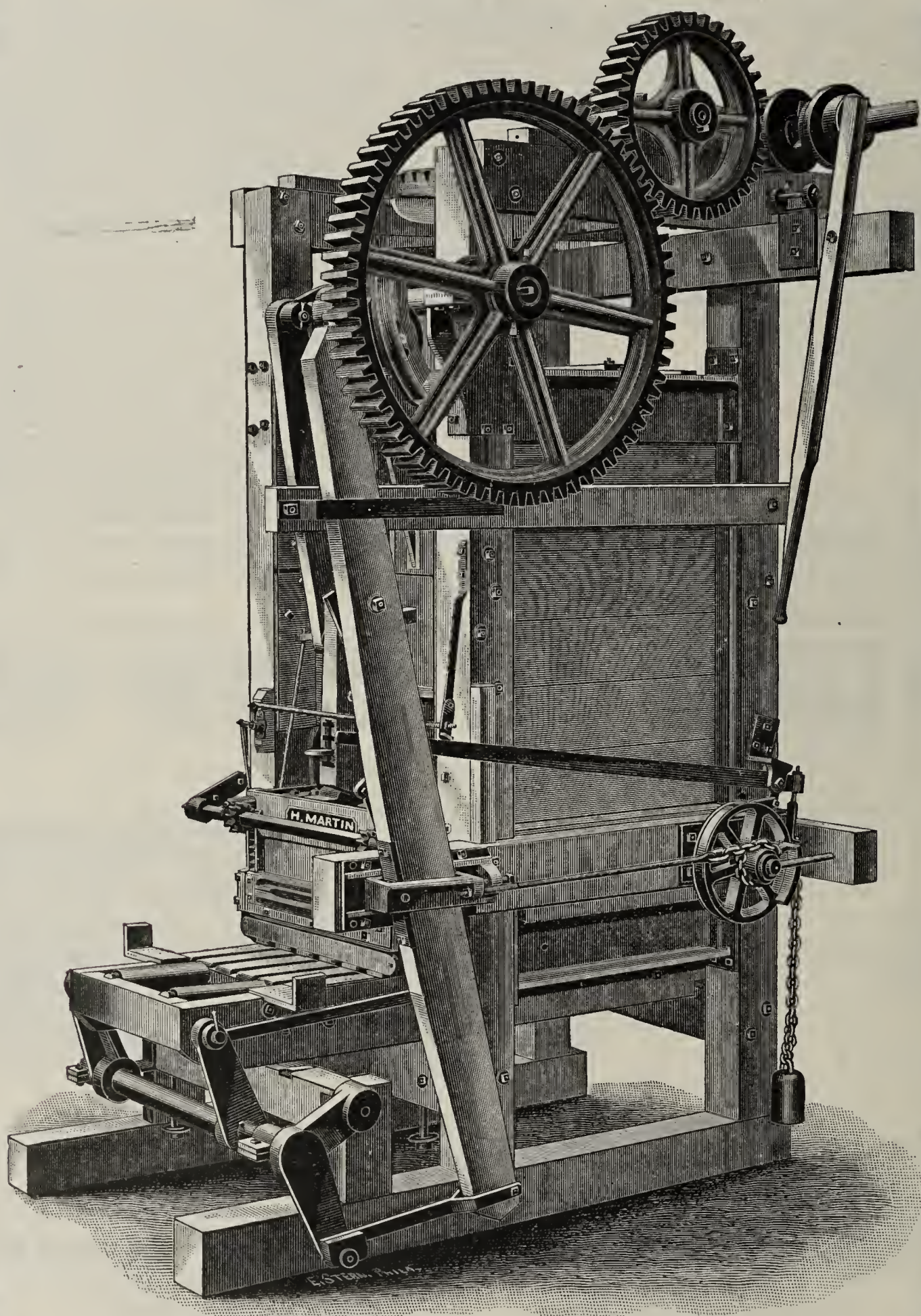
**The McLagon Foundry Co.,**

New Haven, Conn.



# "MARTIN'S" Latest Improved Steam Power BRICK MACHINE.

We Manufacture several Styles of **MARTIN MACHINES**. In this Style the bevel gears are dispensed with.



This Machine is Automatic Self-striking, is built for Strength and Durability. It has all Iron Rails, Iron Front and Iron Bottom.

"THIS IS THE MACHINE YOU ARE LOOKING FOR."

MANUFACTURED BY

THE HENRY MARTIN BRICK MACHINE M'F'G CO.,

Lancaster, Pa., U. S. A.



GO! GO! GO! GO! GO! GO! GO! GO! GO!

GO! GO! GO! GO! GO! GO! GO! GO! GO!

GO! GO! GO! GO! GO! GO! GO! GO! GO!

GO! GO! GO! GO! GO! GO! GO! GO! GO!

WILL YOU

Read the letter below?

Study it and the others we have presented and appreciate what they mean?

In justice to your own interests, not GO AND SEE the "Monarch in operation?"

Let this fact burn itself into your memory,—that we have a **WONDERFUL MACHINE**, surpassing all others in every requisite point, and that **YOU WILL ACKNOWLEDGE THIS** if you will only GO AND SEE IT.Remember that all we want is to get Brick Manufacturers to actually **SEE** it? They will do the rest.

Not heed this common-sense invitation?

Sit in the rocking-chair, and let the procession go by?



PITTSBURGH, PA., Jan. 31st, 1893.

THE WELLINGTON MACHINE CO.,

WELLINGTON, OHIO.

GENTLEMEN:—Your "Monarch" Machine has proven highly satisfactory to us. We firmly believe that it is the only machine made that could handle our clay in such a satisfactory manner. We have had quite an extended experience with several soft mud machines, and until we purchased the "Monarch" we could not make brick as we believed that they should be made. **WE CAN HANDLE THE CLAY TWICE AS STIFF; PUG IT IN A MUCH SUPERIOR MANNER, AND FILL ALL CORNERS, WITH ONE EIGHT-INCH BELT, WHERE FORMERLY TWO EIGHT-INCH BELTS WERE OVERWORKED,** and this with no increase of belt speed. We have thoroughly examined its mechanism even to the most minor details, and must say, that in our estimation it is the **ONLY SOFT MUD MACHINE** on the market to-day. We cheerfully and honestly recommend this Machine to all intending purchasers, feeling confident that it will give them the same satisfaction, that it is now giving us.

Yours respectfully

MCGRAW BROS.



YOU CAN

See the "Monarch" Machine, in operation this month at the winter yards of Simon Kline at Reading, Pa., and McGraw Bros., 34th and Liberty

Sts., Pittsburgh, Pa. If not located near enough to reach these winter yards write for the nearest one to you and go and examine it, and inspect the brick it has made, and talk with the man who ran it, and you can form a reliable opinion of its merits.

THE WELLINGTON MACHINE CO.,

WELLINGTON, OHIO.

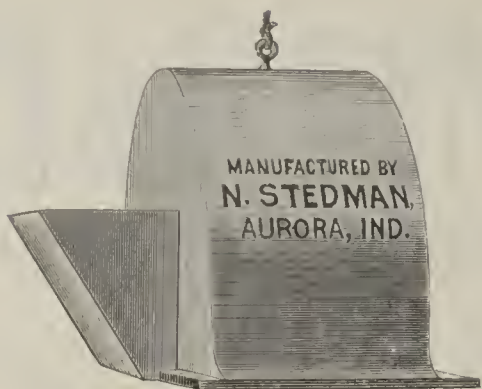
GO! GO! GO! GO! GO! GO! GO! GO! GO!

Watch this page next month. Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y. January, from Utica, N. Y.



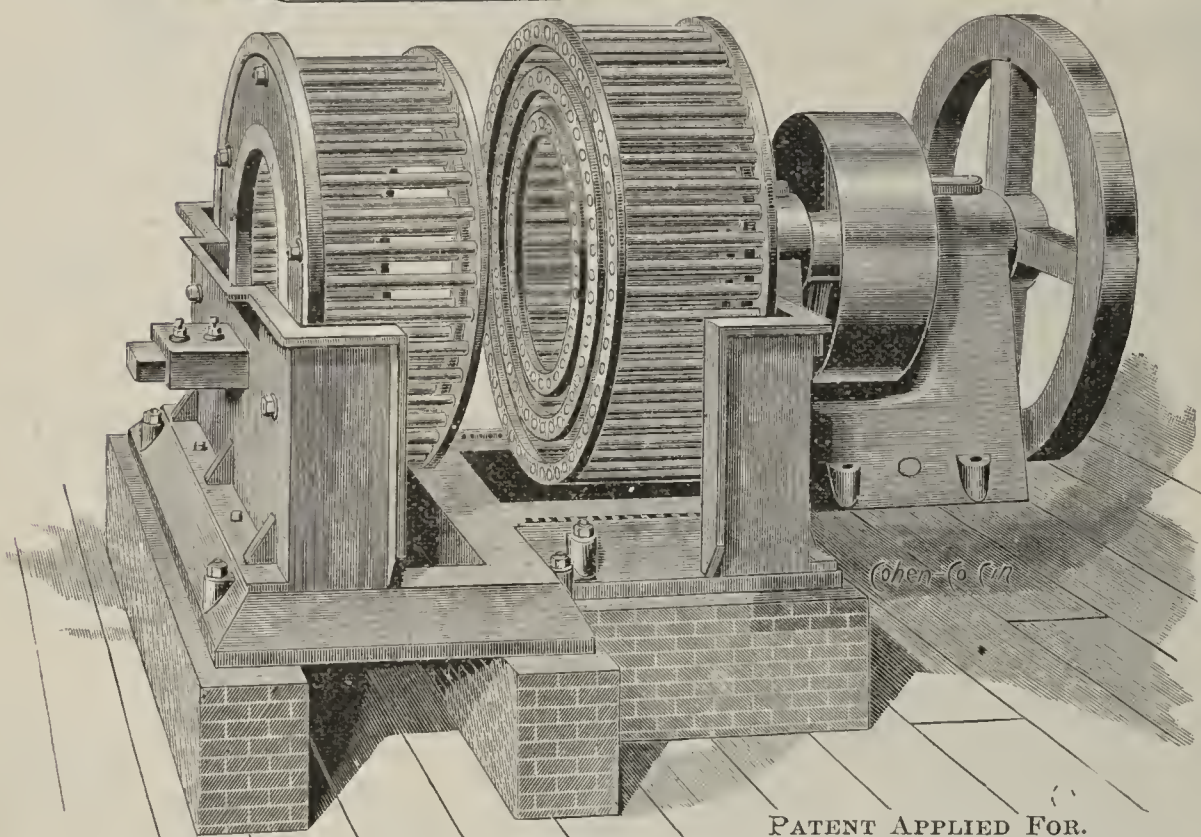
## Description.



This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

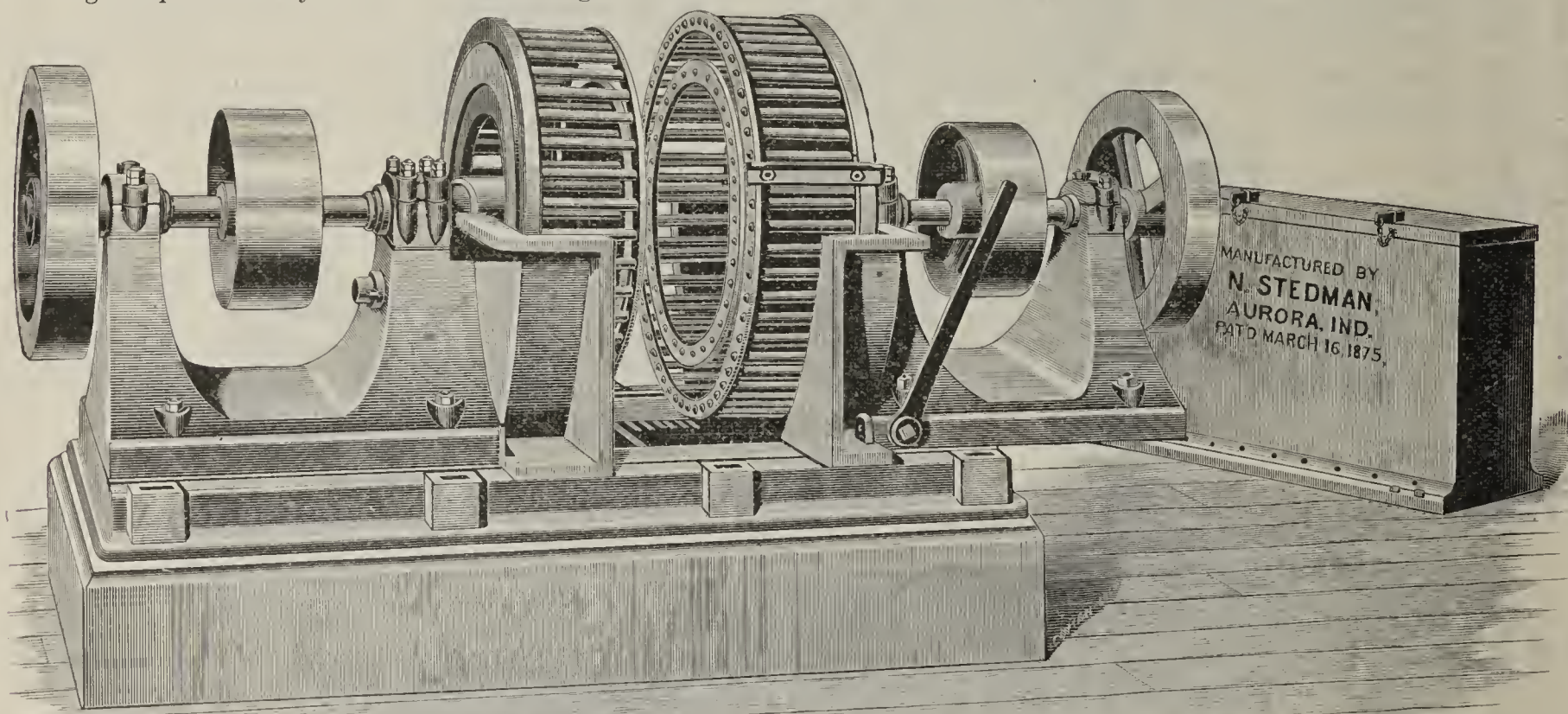
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

Mention the CLAY-WORKER.



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

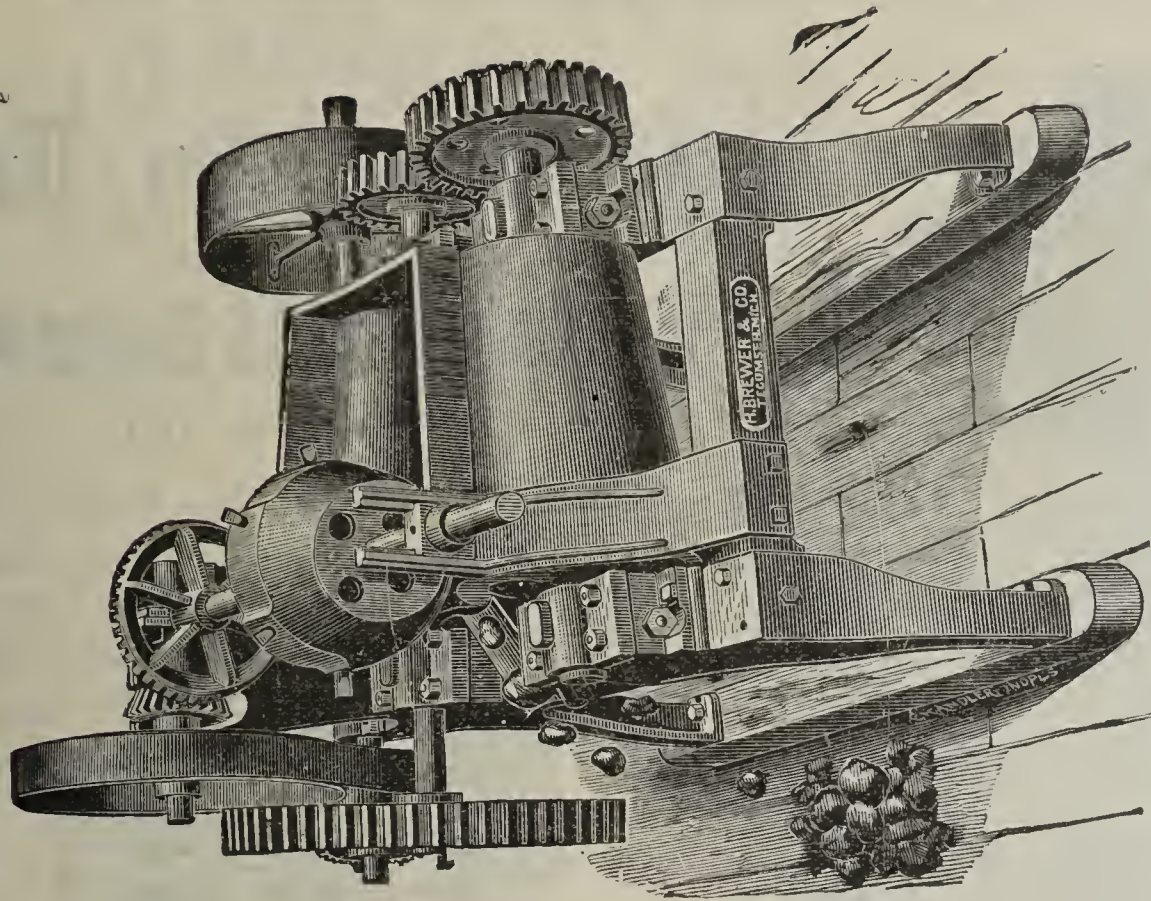
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

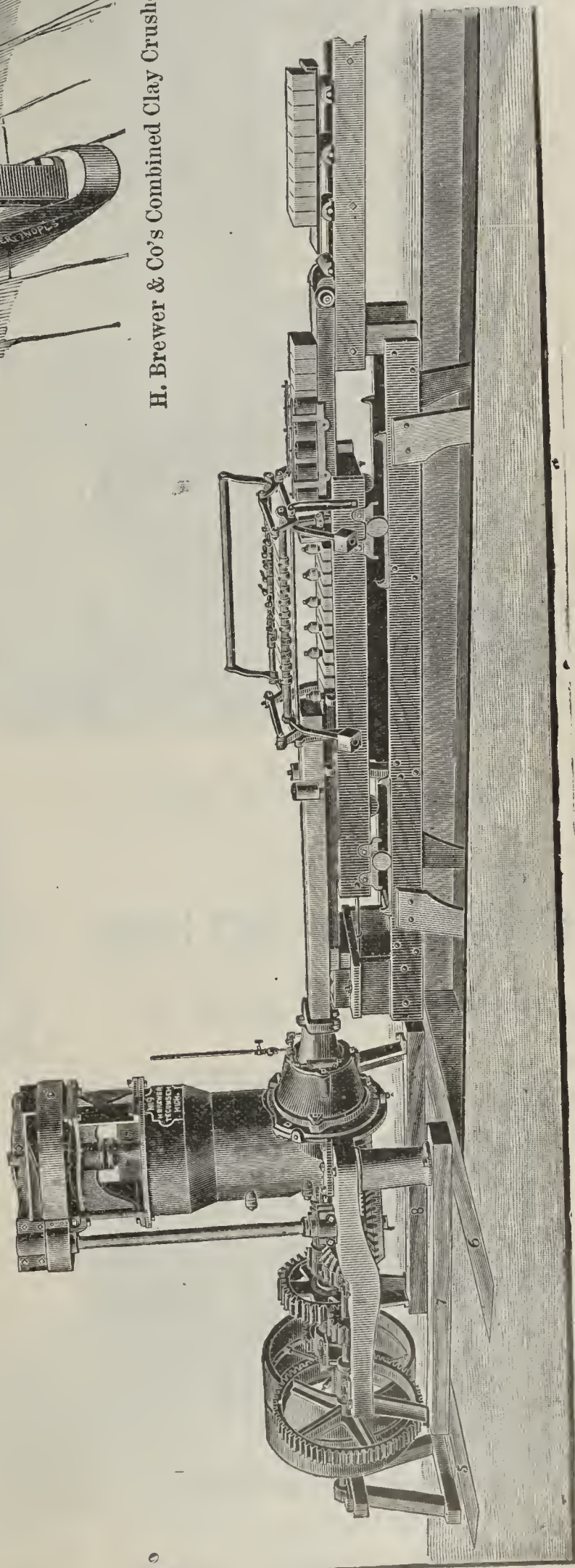
**H. BREWER & CO.,**  
**Tecumseh, Mich.**

[Mention the Clay-Worker.]

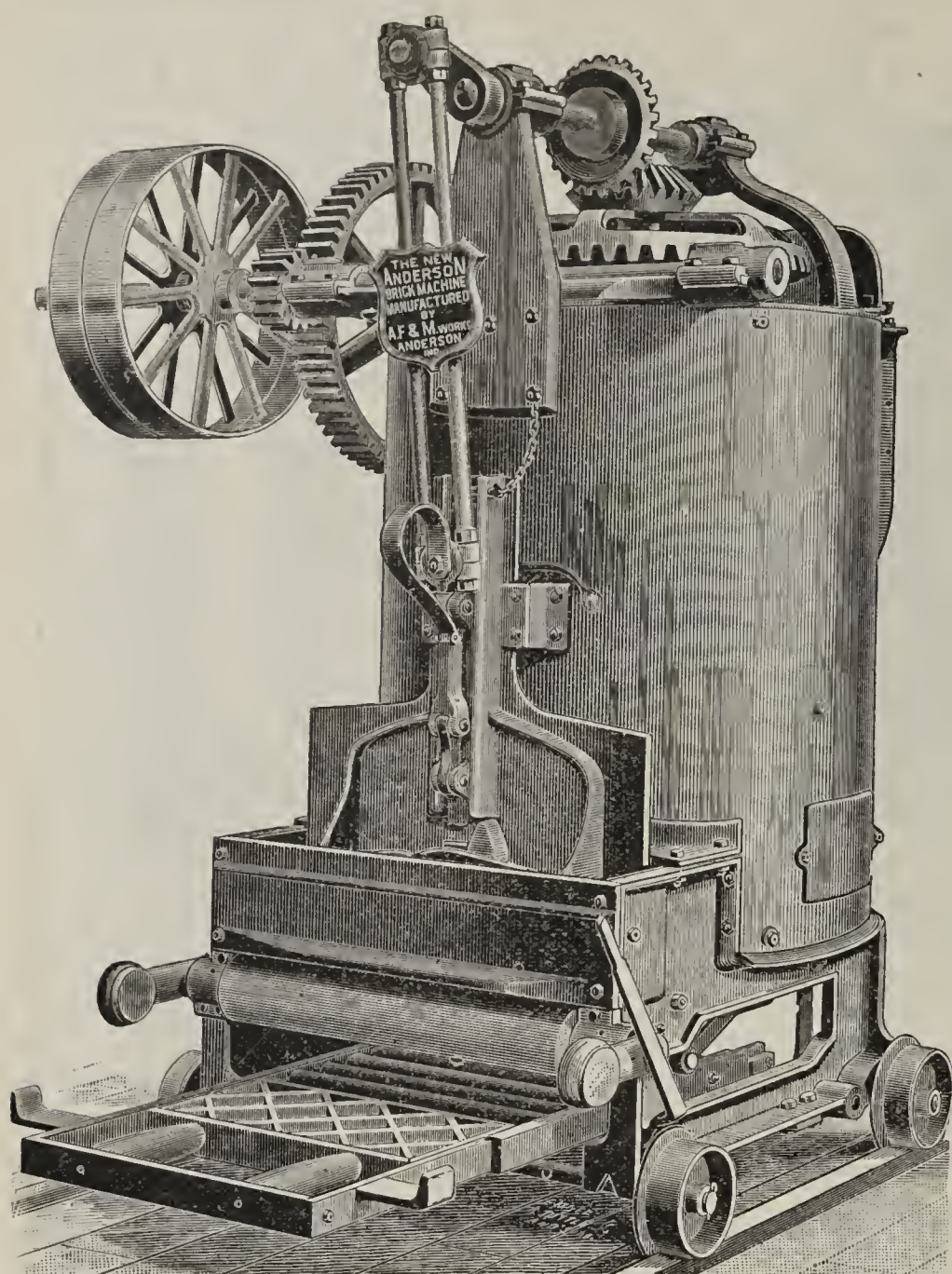


H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.







THE

## New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



DUBUQUE, IOWA, Oct. 29, 1892.

A. F. & M. WORKS.

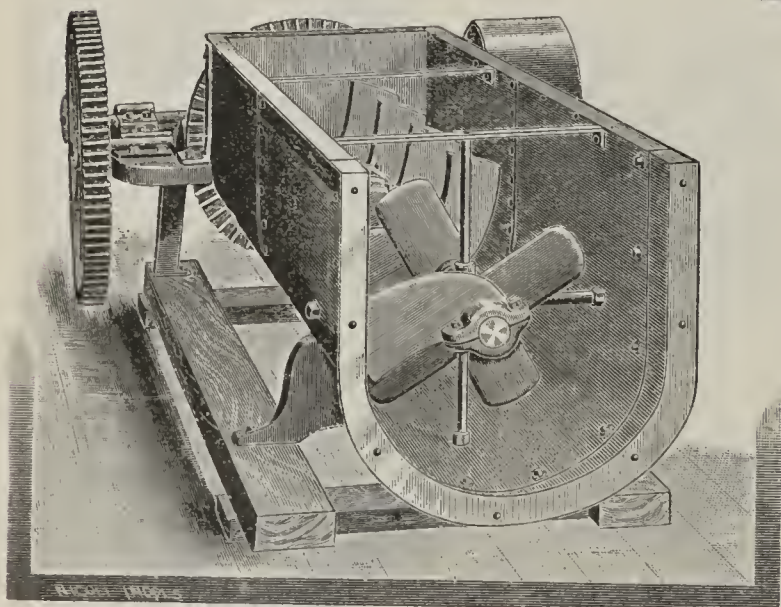
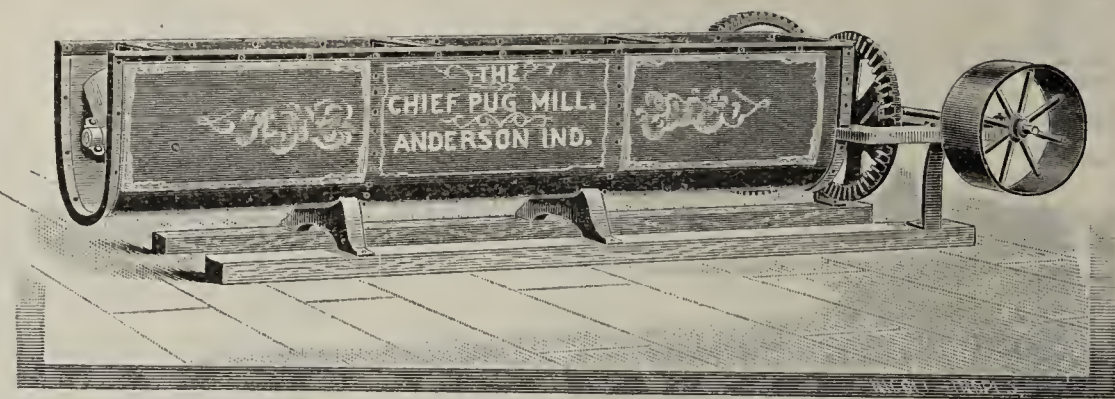
GENTLEMEN:—I have worked with the New Anderson Brick Machine and I have turned out 3,000,000 of good, square-edged brick. Before I had this Machine I was troubled right along. I have tried nearly all the machines now in operation and none were a success until I got a New Anderson, now I can depend on 30,000 good brick per day, and if any of you brother brickmakers want a machine, I would recommend the New Anderson Machine,

Yours truly,

A. HEIM, Proprietor.

JOHN HEIM, Gen'l M'g'r.

We also manufacture the  
NEW IMPROVED CHIEF BRICK MACHINE.



End View of Pug Mill.

PUG MILLS, . . .  
DISINTEGRATORS,  
. . . TRUCKS, . . .  
. . . BARROWS,  
AND ALL BRICKYARD SUPPLIES.

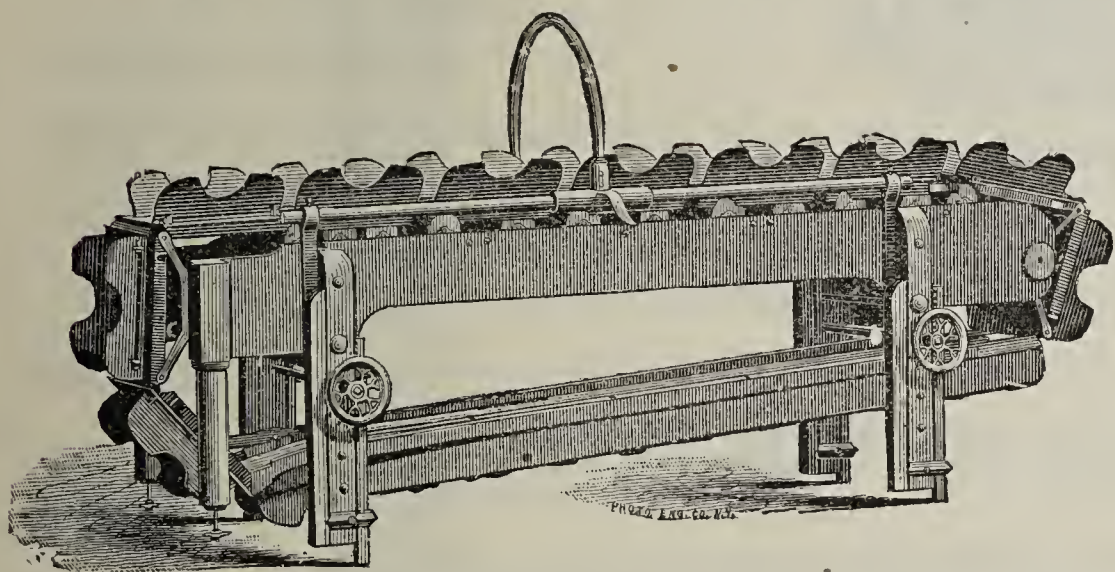
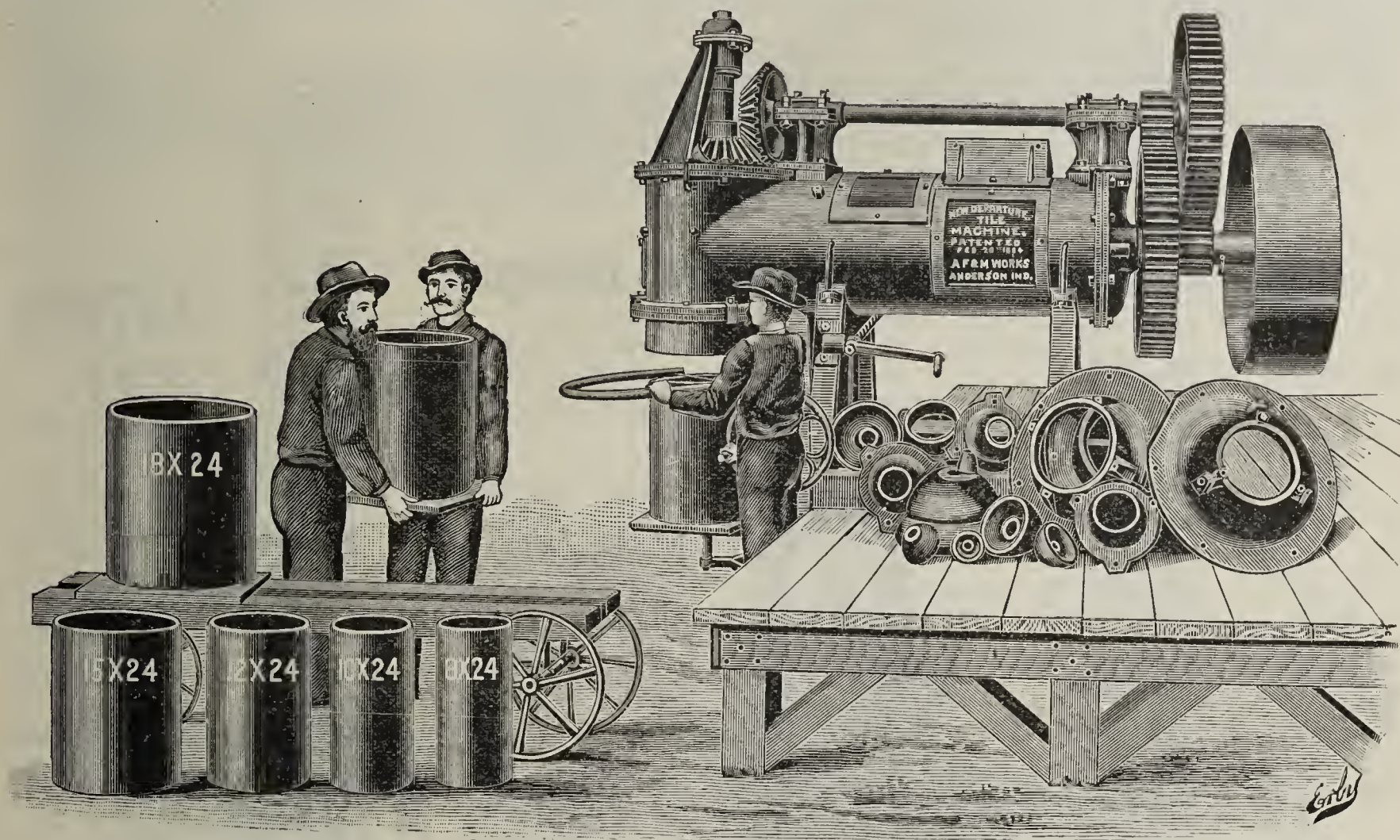
[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

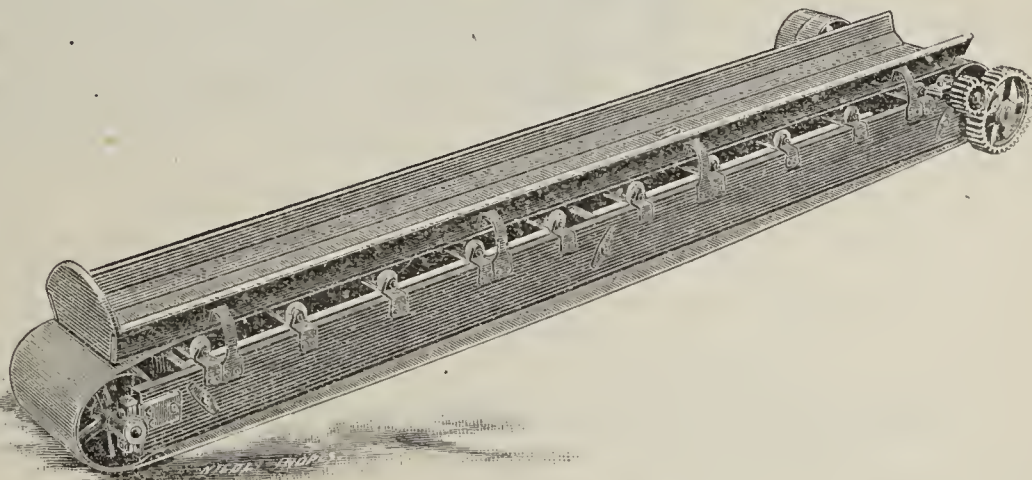
[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 20 in. in diameter in a manner that defies competition.

**Down Delivery for Large Tile.**

**Side Delivery for Small Tile.**

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



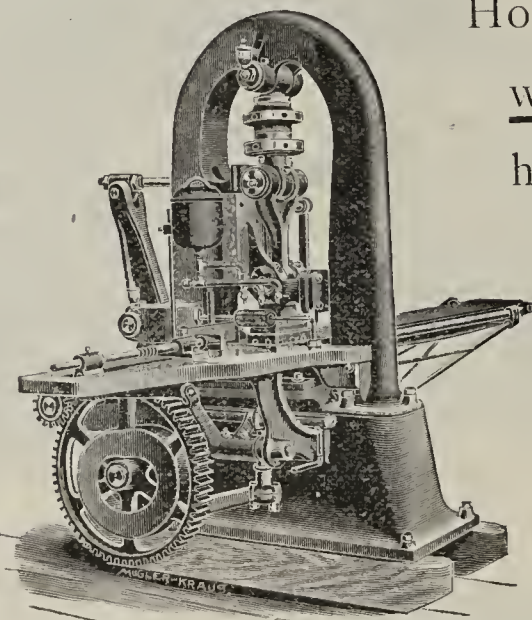
**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**



J.W. PENFIELD & SON. WILLOUGHBY, OHIO.

### So Many Good Things

Appear in the Convention report in this number that we will try not to take too much time.



Penfield Power Brick Press.

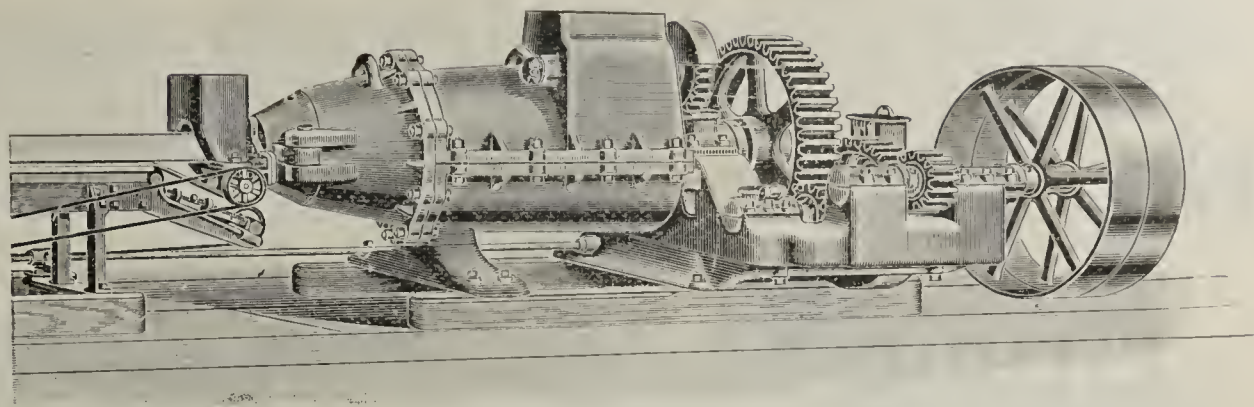
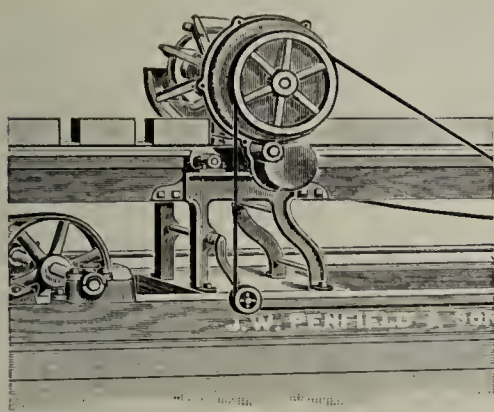
Its points of advantage and merit mean dollars in your pocket,—if you use it.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.

J.W. PENFIELD & SON. WILLOUGHBY, OHIO.

However, we  
would like to  
have you take  
time to send  
for full par-  
ticulars of  
our power  
brick press.





PENFIELD AUGER BRICK MACHINE, AUTOMATIC CUTTER, ETC.

## ANOTHER CONVENTION.

Conventions are a "good thing." Bound by the sacred ties of fellowship, we meet, and with inspiration warmed by congenial companionship offer our bit of experience, or profitably ponder o'er the experience of others.

And then, the ever-welcome Powwow, of individuality rare, and managed with unquestioned skill,—who could forget it?

We were pleased with the last convention ; so much so, that we have decided to have a little convention and powwow of our own in the CLAY-WORKER columns, and at our powwow leading brickmakers will respond to the toast,—

# "PENFIELD AUGER BRICK MACHINERY."

*The T. B. Townsend Brick & Contracting Co.*, of Zanesville, Ohio, a city famed for beautiful clay products speak first and say :

"The second machine has been in operation for one year ; not one cent's repairs has been expended on it ; apparently it is as good as the day we got it."

*McMahon, Porter & Co.*, New Cumberland, say :

"It has proven superior to what you represented."

*Onondaga Vitrified Brick Co.*, Syracuse, N. Y., say :

"In our opinion it is the best machine of the kind on the market."

Rankin & Wolfe, Tarkio, Mo.,—Buckstaff Bros. Mfg. Co., Lincoln, Neb.,—J. B. McGorisk, Des Moines, Iowa,—J. Lynch & Co., Carbon Hill, Ill.,—Sayre & Fisher Co., Sayreville, N. J.,—Weckler-Prussing Brick Co., Chicago.,—Portsmouth (O.) Paving Brick Co.,—R. N. Page, Aberdeen, N. C., and others repeat the above sentiments in in varied form and substantially affirm,—

**"SO SAY WE, ALL OF US."**

What do you think of our Convention ?       Send for our new catalogue.

**J. W. Penfield & Son, Willoughby. O., U. S. A.**



# No. 10 Upright Machine

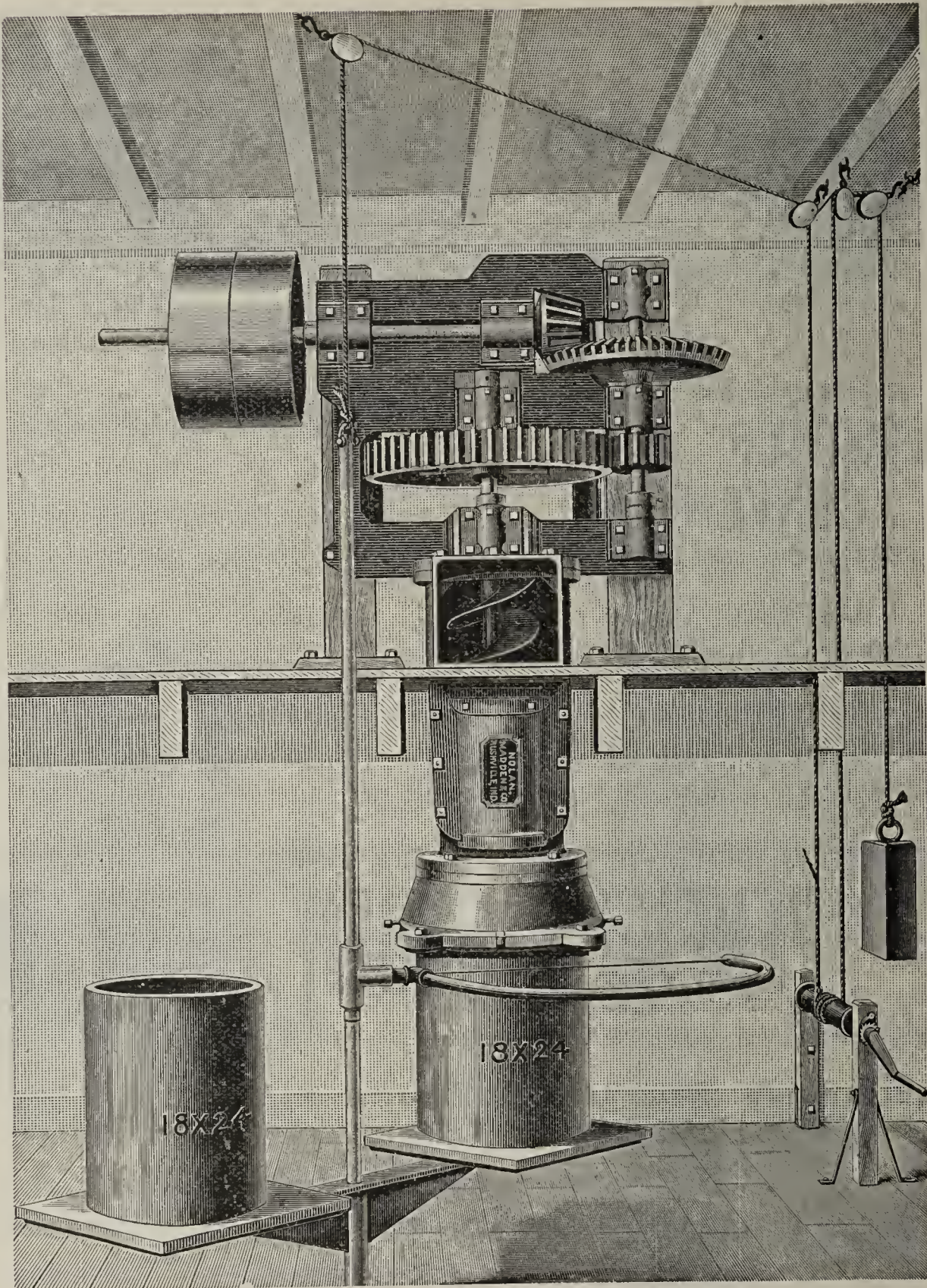
For the Manufacture

—OF THE—

## Larger Sizes of Tile

Including Tile from 10 to 20 Inches.

This Machine has been on the market for three years and has been a success beyond all expectations. It is made from the strongest pattern and built after the most improved style.



Any parties wishing to add a Machine for large tile to their factory will find this is the one that will give them the most and best work with the least power and no breakage. We have seven sizes of Horizontal Auger Machines for Tile, six sizes of Brick Machines with Side Cut Board Delivery Tables, and three sizes of soft clay Brick Machines. Also line of Crushers, Pug Mills, and the best Disintegrator in the market.

We will make it to your interest to write us before you buy and get our prices.

FOR PARTICULARS, ADDRESS,

# Nolan, Madden & Co.,

## RUSHILLE, IND.

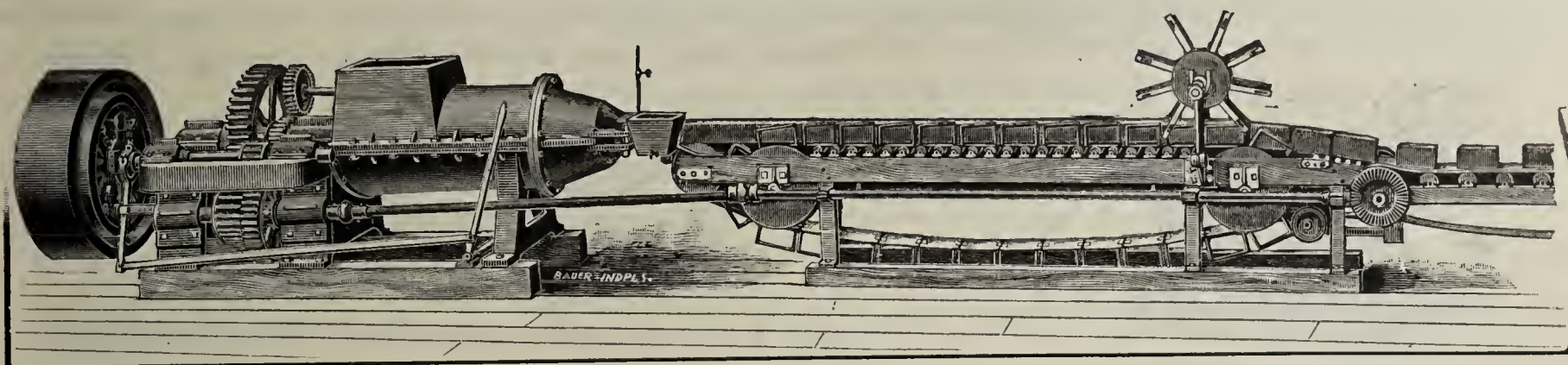
[Mention the Clay-Worker.]



The Best Results are  
Obtained by Using Our

# AUGER MACHINES

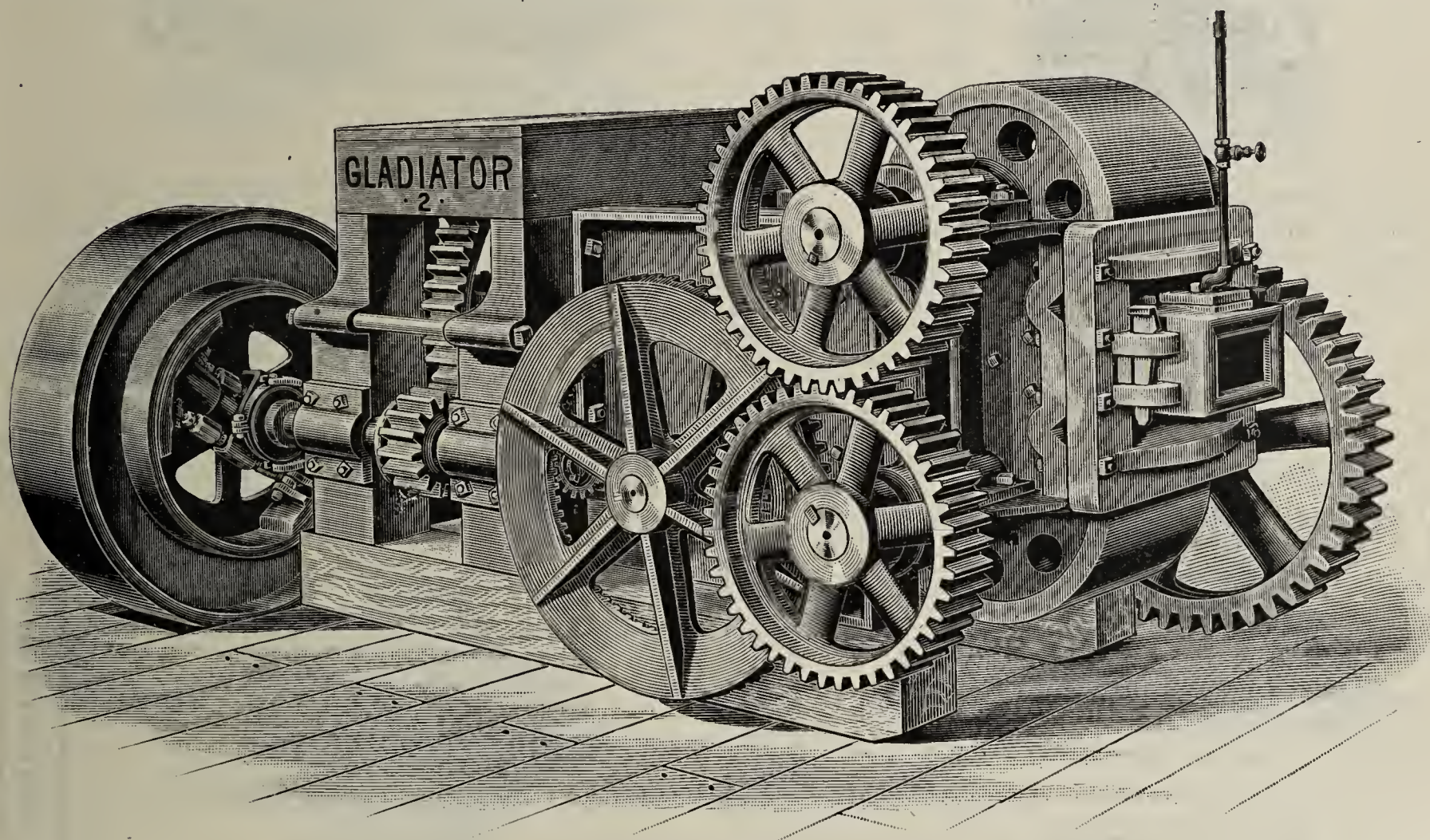
FOR END-CUT  
BRICKS.



The DECATUR with Automatic Cut-off

AND

Our Roller Delivery Machine for Side Cut Bricks.



THE GLADIATOR.

Full Factory Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,  
Decatur, Ill., U. S. A.

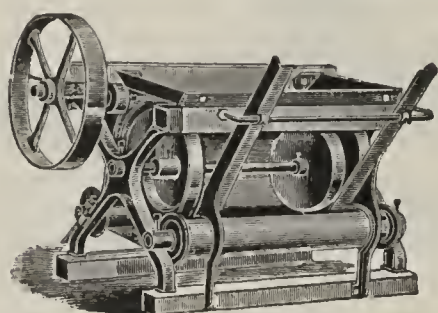
[Mention the Clay-Worker.]



# Brick - Making Machinery,

## AND BRICKYARD SUPPLIES. —

### THE POTTS MOULD SANDER.

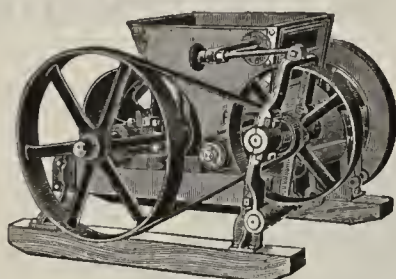


**Simple in Construction.  
Strong and Durable.**

It sands the moulds perfectly and will save from \$1.00 to \$1.50 per day.

Every machine guaranteed and shipped on trial.

### THE POTTS DISINTEGRATORS.



**Having Chilled Rolls**

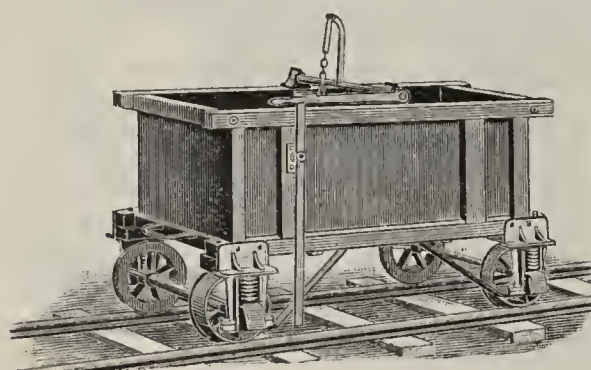
Are the **Best, Strongest, and most Durable** Made in 12 sizes. Having capacity from 15 to 150 M. brick per day.

You cannot afford to use any other.

### CLAY CARS.

**Three Styles.**

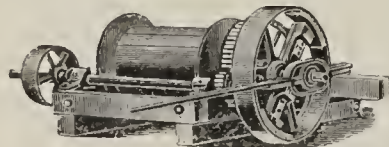
Side Dump.



Bottom Dump.

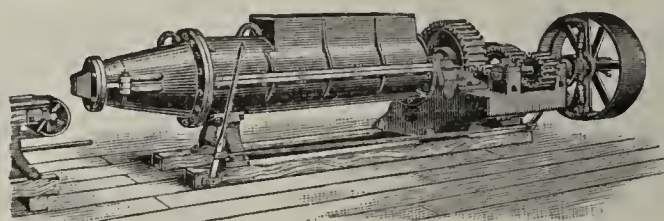
**Revolving Car.**

### WINDING DRUMS.



Made with Spur or Bevel Gear to suit location.

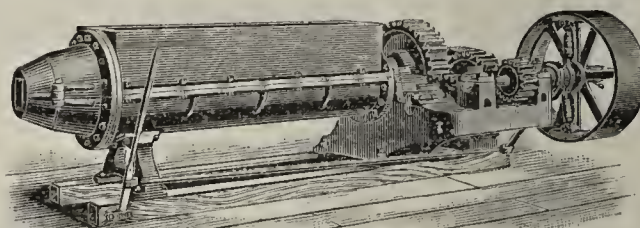
### Auger Machines and Automatic Cutting Tables.



● ● ● For the Manufacture of Paving Brick. ● ● ●

These machines are strong and well built, having all the latest improvements. They are without a doubt the best machine of the kind ever put on the market.

### OPEN TOP TAPER PUG MILLS.



These mills are built especially for tempering clay for the Auger mills.

They are strong and durable and will do hard service. We make the Auger mill and Pug mill in three sizes.

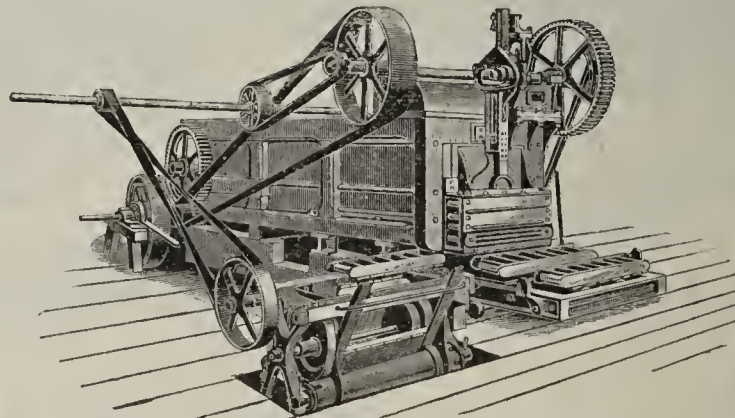
Guarantee them to do good work.

We claim our Horizontal Stock Brick Machine will make **more and better** brick, with less cost for labor and repairs, than any other machine on the market.

If you want a machine that will make **six perfect stock brick** in each mould, the Potts Horizontal is what you need. It has no equal for

### STRENGTH.

SIMPLICITY.



DURABILITY.

**QUANTITY AND QUALITY.**

Every machine is guaranteed to do as claimed for it and is shipped subject to trial.

If you are in need of Clayworking Machinery or Yard Supplies of any kind, we keep them in stock and can ship promptly. We will be pleased to give further information and prices.

**C. & A. POTTS & CO., Indianapolis, Ind.**





THE




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**1 X 32 = 32**


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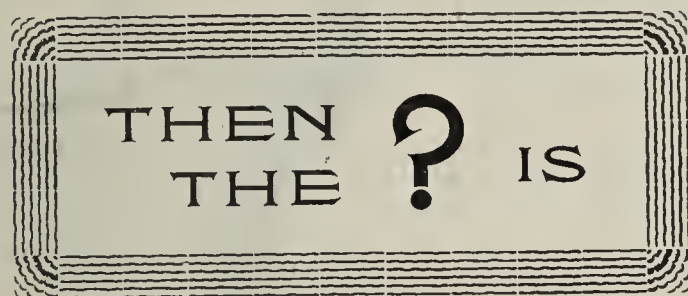


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 IS SOLVED
 

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By the above number of *Potts Horizontal Stock Brick Machines* being put into operation the past year, every machine being shipped on trial and everyone giving entire satisfaction. We have never had one of our machines fail to do the work, or to take one back. Every Machine built is working to-day.



Are you using a Machine that does not do your work, or gives you endless trouble by breaking—one that will not make clean, square brick?

---

 IF SO, WHY NOT
 

---

Purchase a *Potts Horizontal*? This machine will work the clay direct from the bank without the use of an extra Pug Mill. It has one-half more tempering capacity than any vertical machine and extra pug mill made. It has no light, complicated parts to wear or break. It will work the clay stiff, and fill a six-brick mould perfectly, without giving each mold a double press, as is done by the vertical machines.

The brick made have *clean, sharp corners*, and *smooth surfaces*. They are as straight and square as the molds they were made in.

You cannot afford to start your plant this year with machinery you know will not meet the demand made upon it. It will pay you to purchase a Potts Horizontal and start right. Every machine guaranteed to do as claimed for it.

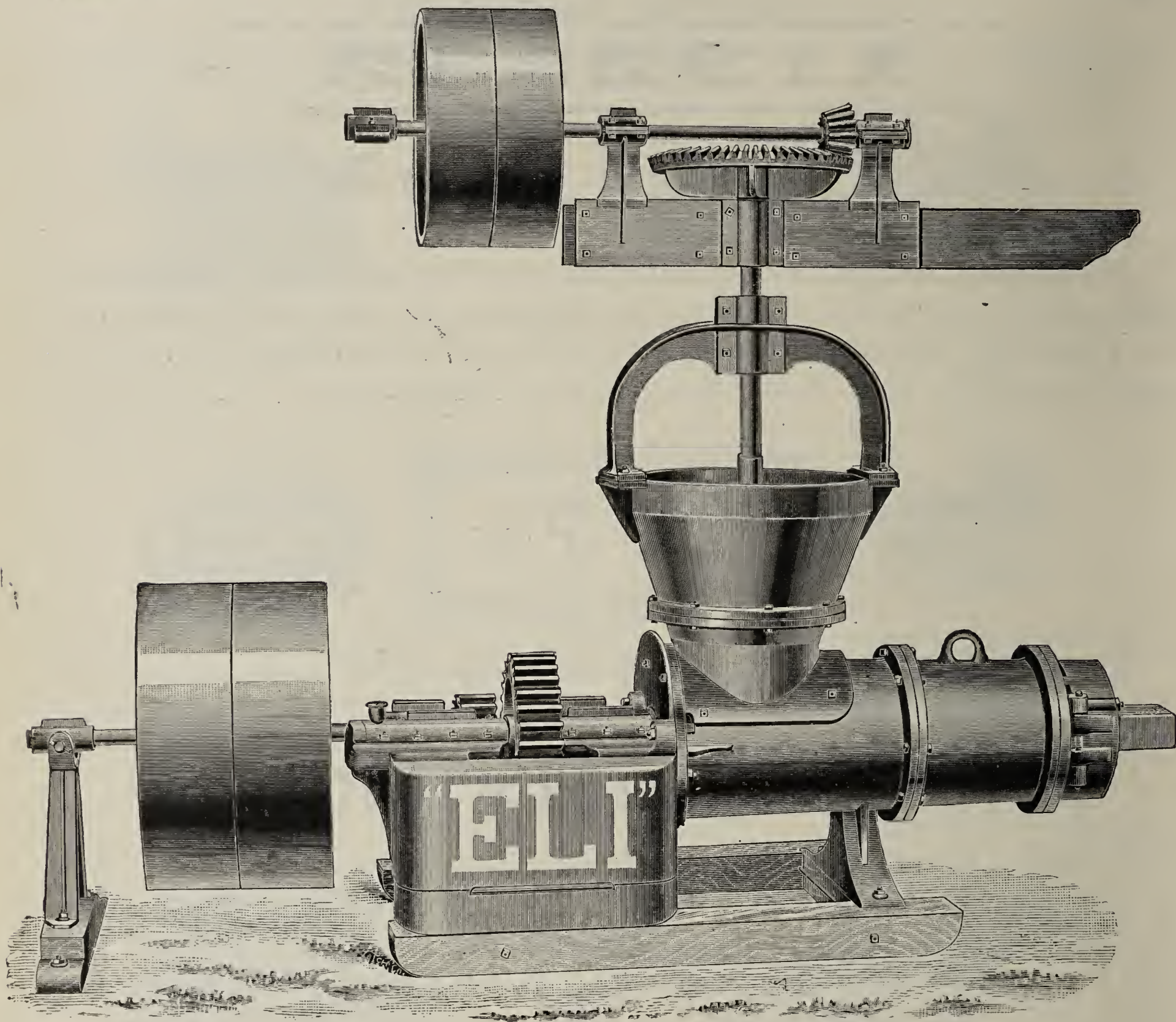
## C. & A. POTTS & CO.,

414 and 428 W. Washington St.,

INDIANAPOLIS, IND.



# THIS IS OUR "GET THERE" MACHINE.



**M**AIN Frame with bearings cast solid. Tub in two parts, each cast solid. Can furnish it with taper and Auger if desired. Safety Hinged Nose Piece. Upright Pug Mill is extra large with Knife Shaft any length. You can temper and pug clay better, get a stronger feed, larger output and do better work, by using "Eli" with Upright Pug Mill than is possible with any other Auger Machine with closed Pug Mill.

Study this well! Think of the points and write to us for full description and price.

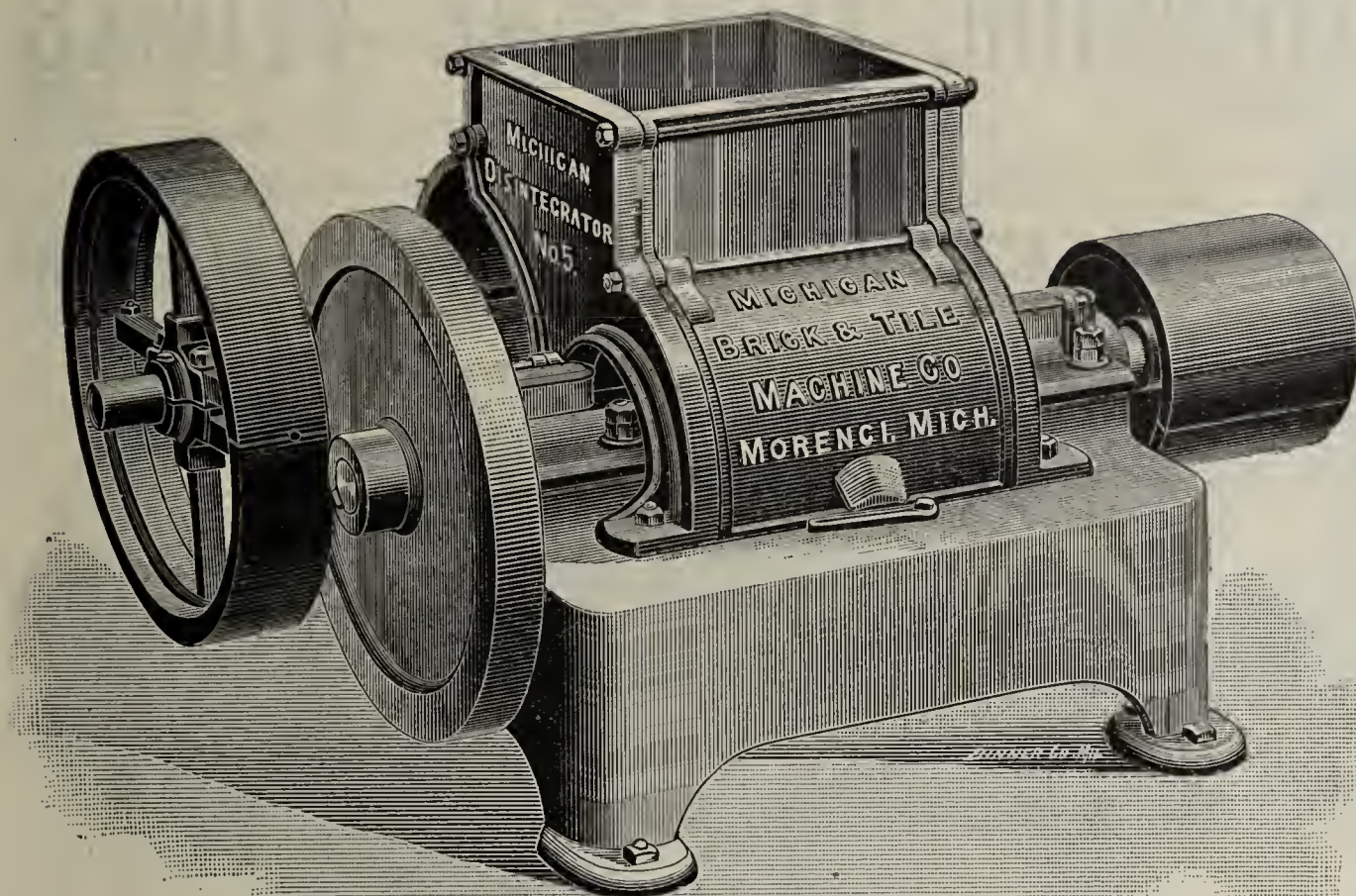
**Michigan Brick & Tile Machine Co.,**

[Mention the Clay-Worker.]

**MORENCI, MICH.**



# MICHIGAN ♦ DISINTEGRATOR



G. S. DORNEY.



*Better Than  
the Best.*

## POINTERS:

Main Frame with bearings for Fast Roll cast solid. Speed of Fast Roll, 1,000.

Knives of the best tempered steel and very large, held in planed recess by planed and bolted key, running the entire length of knives.

All bearings extra long. Outer bearing to Fast Roll at Pulley end.

Made in sizes with capacity up to 100,000 per day.

The strongest, most durable, and with the high speed of the Fast Roll does better and more work than any other on the market.



C. C. HARRIS.

✻ DORNEY & HARRIS, ✻

MANUFACTURERS OF

Drain Tile and Large Pipe, Fire Brick, Common Brick, Flue Lining, Etc.

OFFICE: { Opposite Court House.  
City Office Phone 135.  
Factory Phone 197.

WORKS ON T. C. &amp; C. R. R.

FINDLAY, OHIO, Dec. 24th, 1892.

Michigan Brick & Tile Machine Co., Morenci, Mich.

DEAR SIR:—In reply to yours of the 23rd, inquiring as to how we are getting along with the No. 5 Disintegrator we purchased of you some time ago, will say we have been doing our work with it, very satisfactorily and we figure that we make enough better quality of goods to pay the price you ask, once a month over the smooth Roll Crusher we have been running. We have been running frozen lumps through it for several days past and have been making 15,000 4-inch tile for a day's work, and it seems to do its work with scarcely any effort on its part and runs very light and steady, and we see nothing to get out of repair. Trusting you will have a good trade, we remain

Truly Yours,

DORNEY &amp; HARRIS.



SOMETHING OLD.

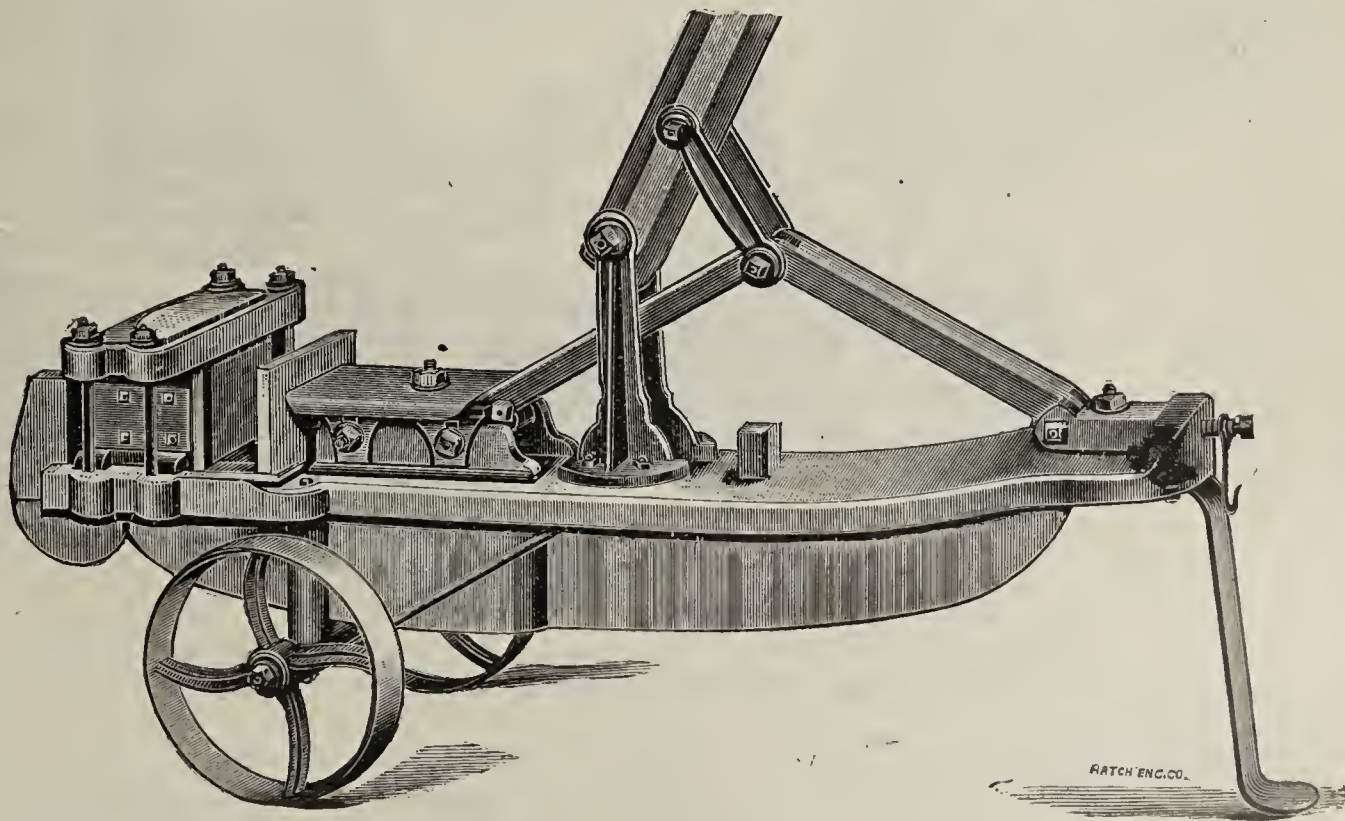
“Little Giant” Re-press

Patented 1870.

We have been making this Press for twenty-two years and sell it now as during the past, fully guaranteed. Capacity, 6,000 brick per day.

For perfect work it has no superior.

Price reasonable.



Send for Our New Catalogue and Price List.

MICHIGAN BRICK & TILE MACHINE CO., Morenci, Lenawee Co., Mich.

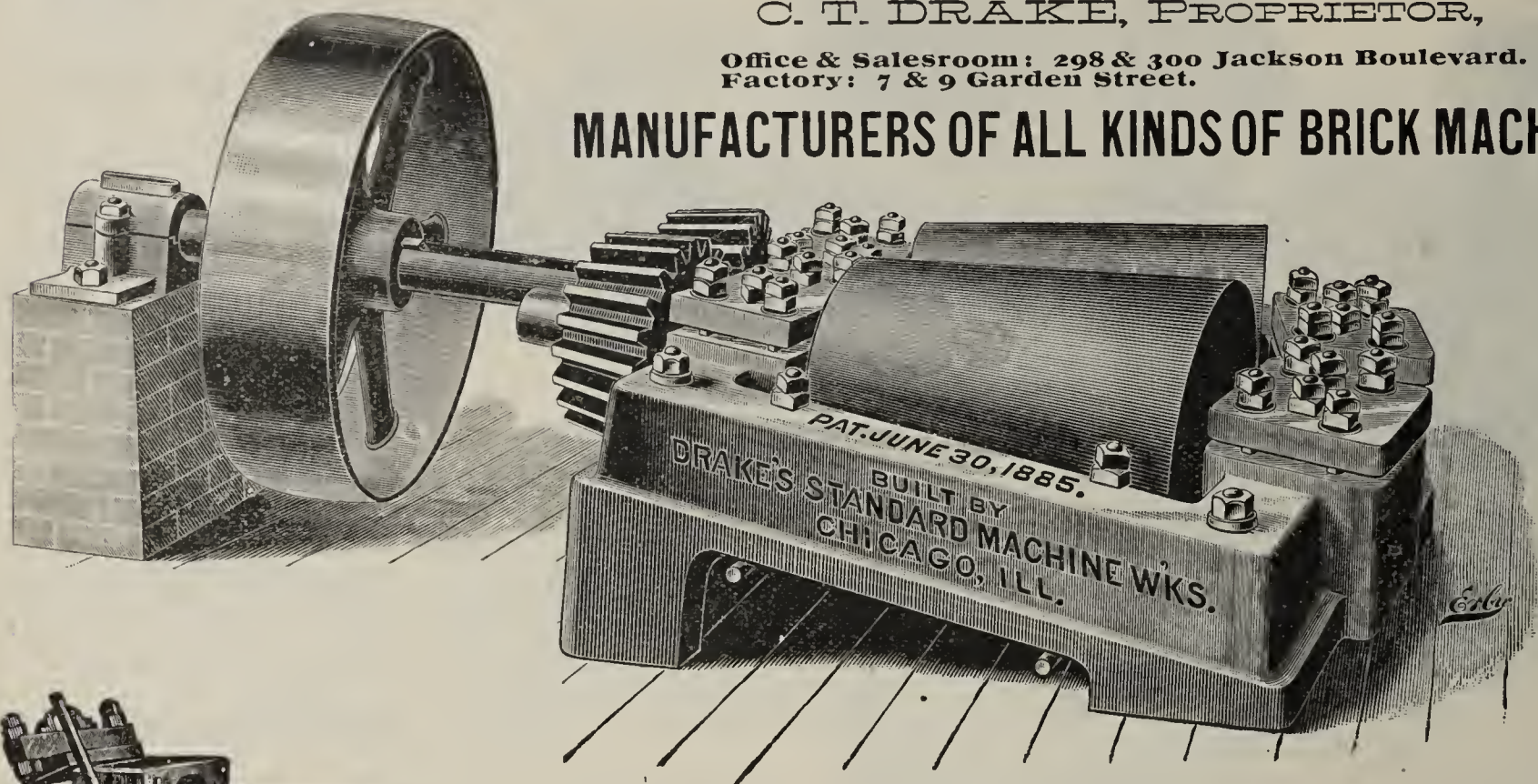


# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY

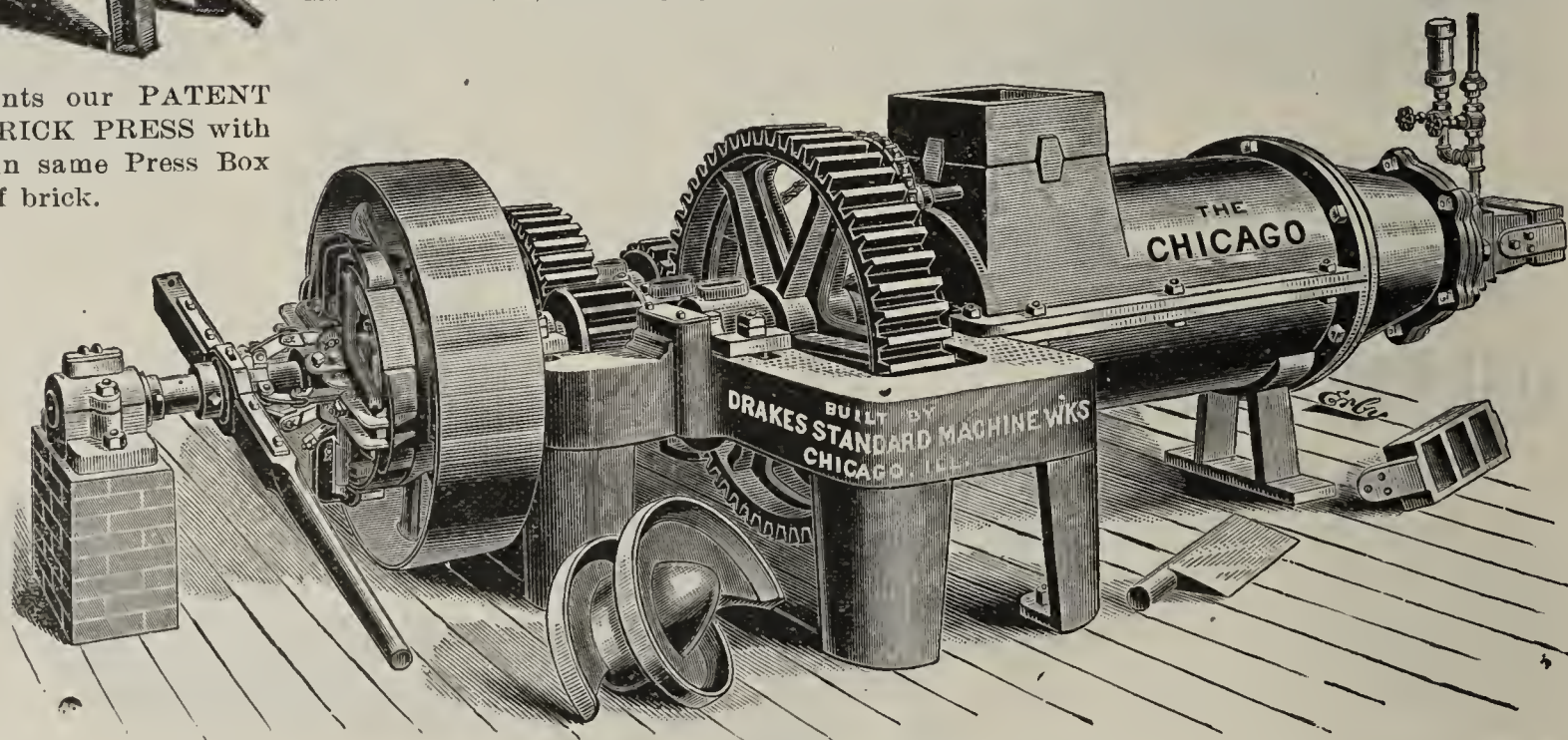


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 6 Crushers; Hayt & Alsip Co. is running 4 Crushers; Purington, Kimbell & Brick Co. is running 8 Crushers; May, Purington & Bonner B. Co. is running 4 Crushers; J. B. Legnard is running 4 Crushers; Weekler Brick Co. is running 1 Crusher; Adam J. Weekler is running 1 Crusher; Weckler Prussing Brick Co. is running 1 Crusher; Chicago Brick Co. is running 3 Crushers; Union Brick Co. is running 2 Crushers; M. Myers is running 2 Crushers; Wahl Bros. is running 2 Crushers; Pullman Brick Co. is running 2 Crushers; Fred Zapel is running 1 Crusher; Myers & Toll is running 2 Crushers; Harms & Schlake Brick Co. is running 1 Crusher; L. Wehrheim & Son is running 1 Crusher; Alexander Burke is running 1 Crusher; John Sexton is running 1 Crusher; John Busse, Jr., & Co. is running 1 Crusher; Star Brick Co. is running 1 Crusher; John Busse is running 1 Crusher.

**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

This cut represents our PATENT RED and FIRE BRICK PRESS with change of liners in same Press Box for different style of brick.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 40,000 brick per day. Surpassed by none.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, ETC., ETC.

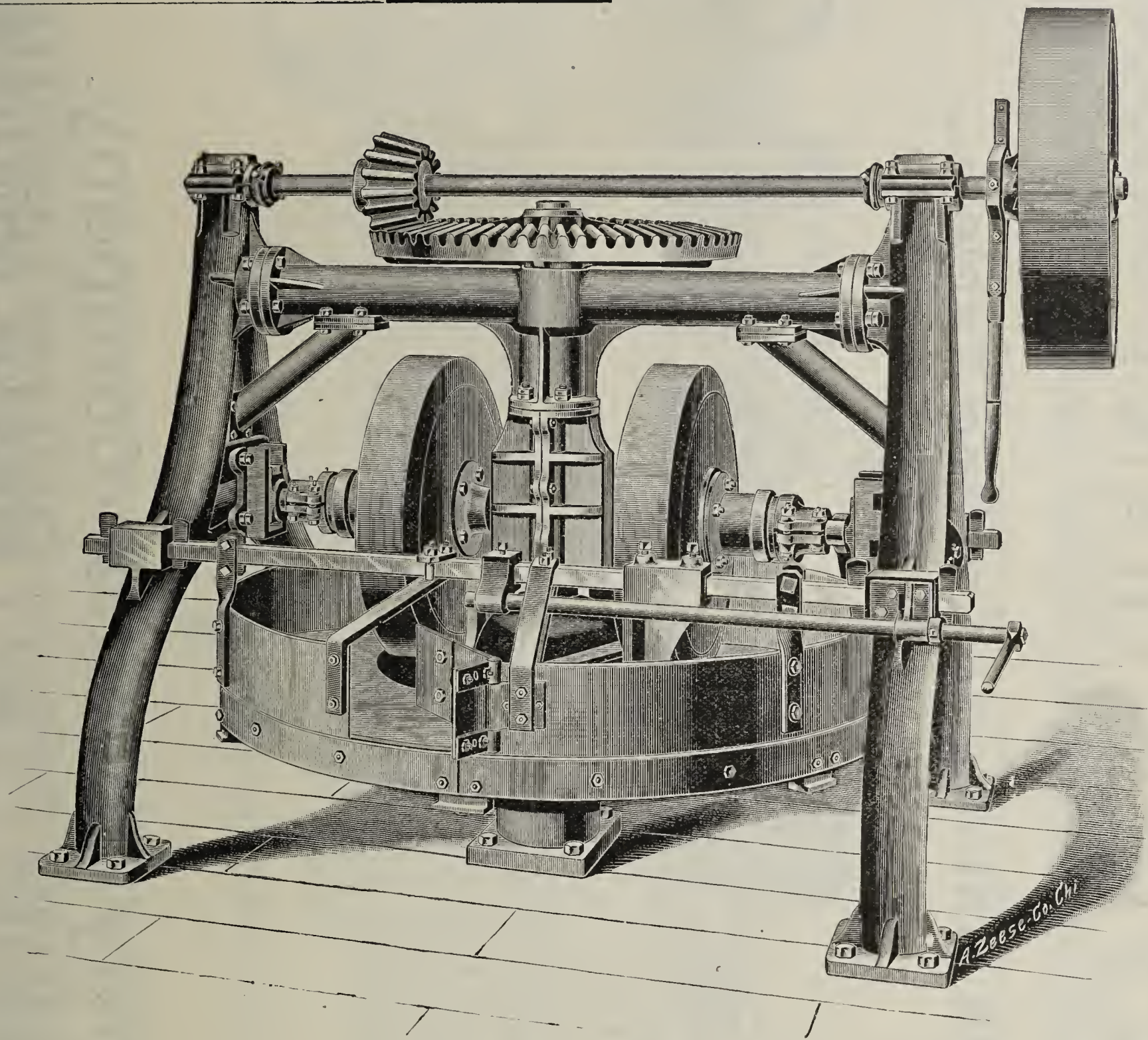
Send for circular of our GRANULATOR, it is the leader in Chicago, so says: Alsip Brick Co., Hayt & Alsip Co., May, Purington & Bonner Brick Co., Kimbell Brick Co., Purington-Kimbell Brick Co., and others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED.**



# WET PANS.



WE manufacture these machines in three sizes, i. e. **7**, **8** and **9 foot** diameter. They have given entire satisfaction wherever used, and for the treatment of clays under the wet pan process you can get none better. Our Dry Pans are also made in **7**, **8** and **9 foot sizes**.

## The Frey-Sheckler Co.,

Bucyrus, Ohio,

U. S. A.

Manufacturers of . . .

••• BRICK and TILE MACHINES, DRY and WET PANS,  
PUG MILLS, ELEVATORS, RE-PRESSES, WINDING  
DRUMS, CRUSHERS, Etc., Etc.

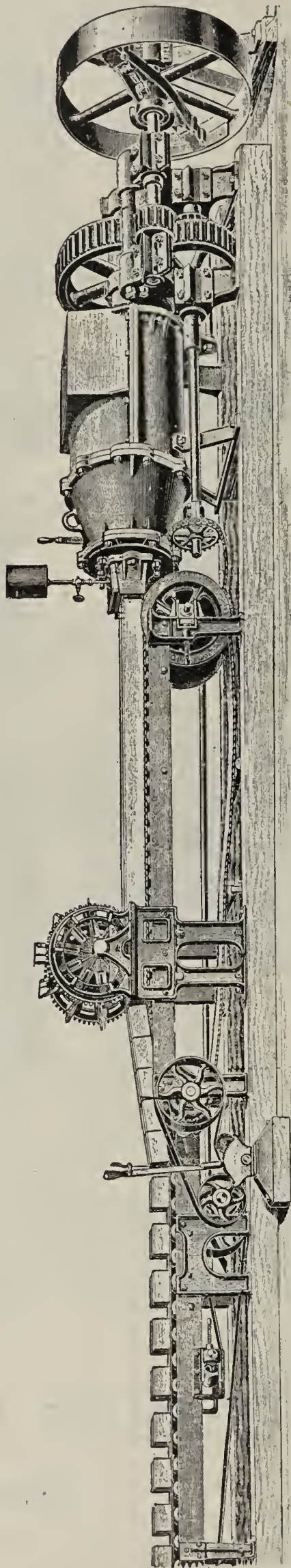


— SEND FOR 1893 CATALOGUE. —



# No. 1 BUCYRUS GIANT BRICK MACHINE

With Automatic Cutting Table.



THE output by various companies on this machine is astonishing. In connection with our Automatic Cutting Table its output is only limited by the amount of clay put into it. If you have not seen it in operation, it will surprise and interest you.

## The Frey-Sheckler Company,

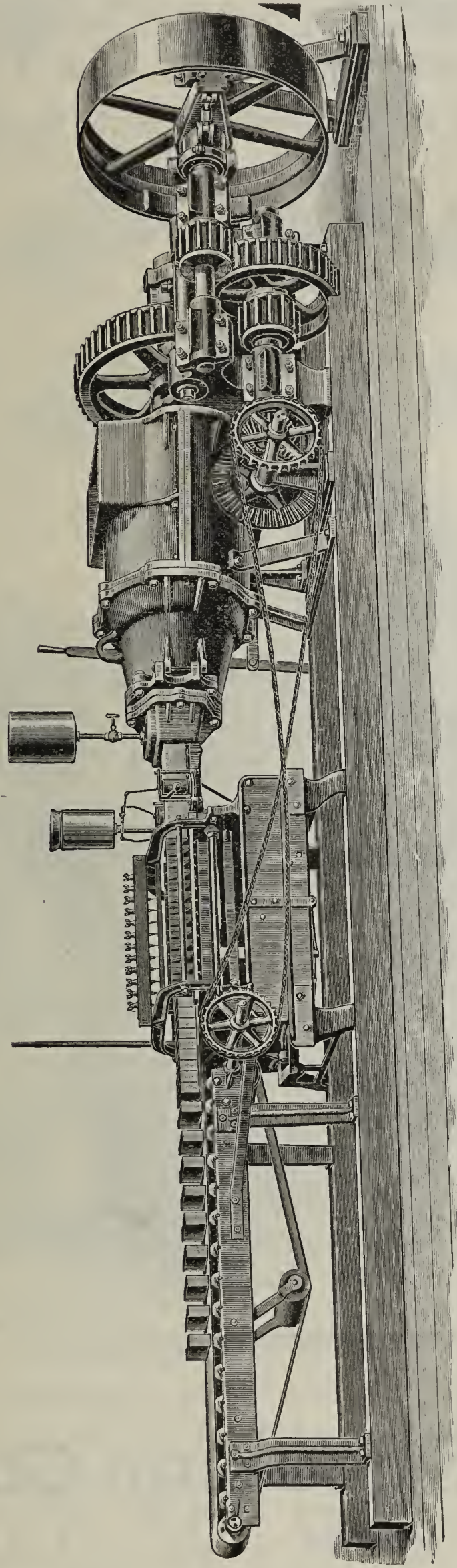
Bucyrus, Ohio, U. S. A.

Send for 1893 CATALOGUE.



# NO. 2 BUCYRUS GIANT BRICK MACHINE

With Wellsville Table.



FOR a capacity of 30,000 to 40,000 side-cut brick daily, you can make no mistake in putting in one of these outfits. The No. 2 Giant is an exact duplicate of our No. 1 Giant built on a smaller scale.

The Wellsville Cutting Table is positively without an equal for side-cut brick. Built entirely on new principles.

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## The FREY-SHECKLER COMPANY,

Bucyrus, Ohio, U. S. A.

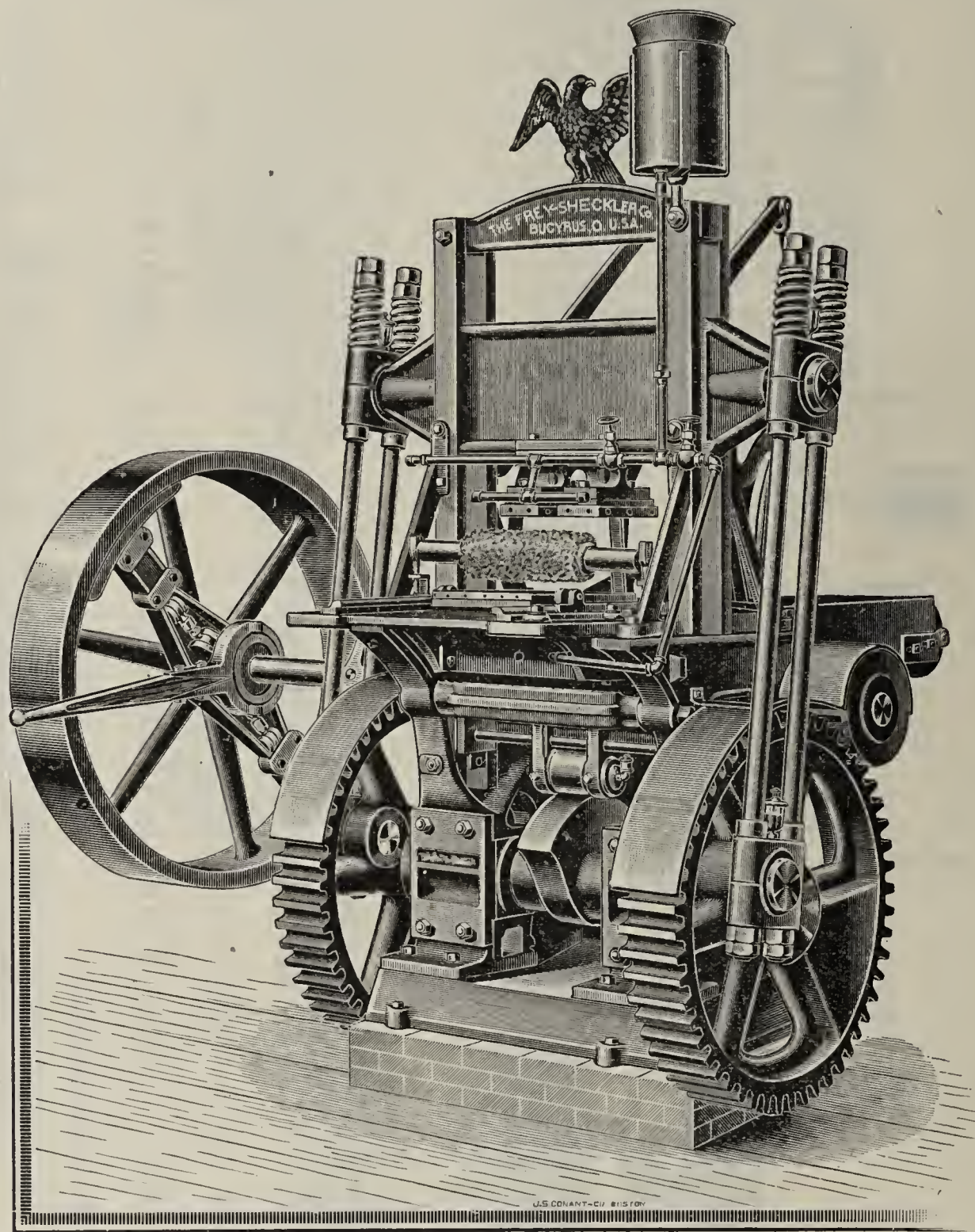
Send for 1893 Catalogue.



# OUR RE-PRESS.



The **BEST** on the market. Do not buy until you investigate the merits of this machine.



## The Frey-Sheckler Co.,

MANUFACTURERS,

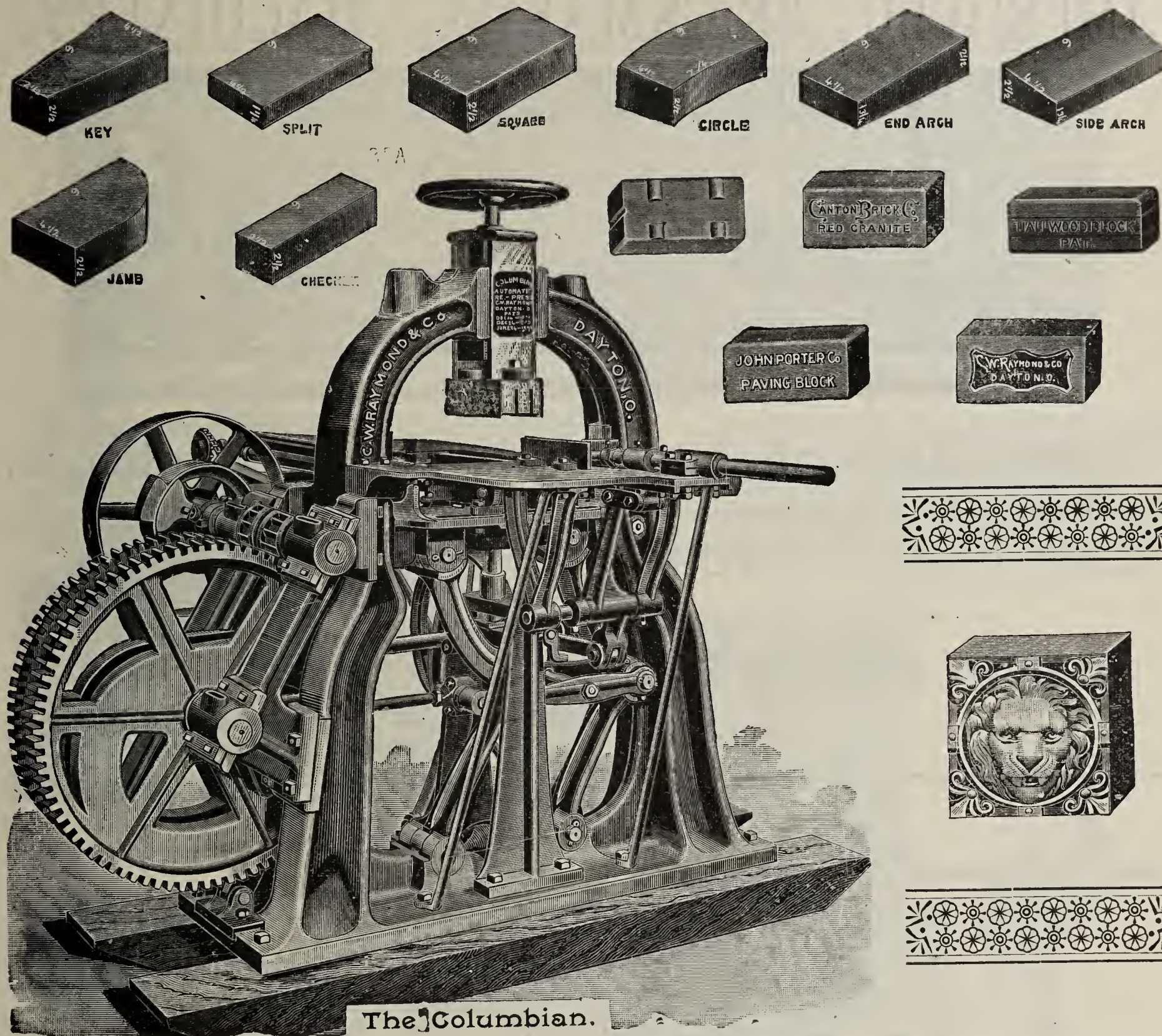
Send for 1893 Catalogue.

Bucyrus, Ohio, U. S. A.



# The COLUMBIAN.

❖❖ The One Press Will Press Them All. ❖❖



**"That Tired Feeling"** which a brickmaker experiences! when he has invested \$600 in an experimental re-press and \$2,580.32 in repairs can be entirely obviated by purchasing

**== A COLUMBIAN, ==**

The only press that made a record of its own, hence, the only one that offers a secure investment for a practical brickmaker.

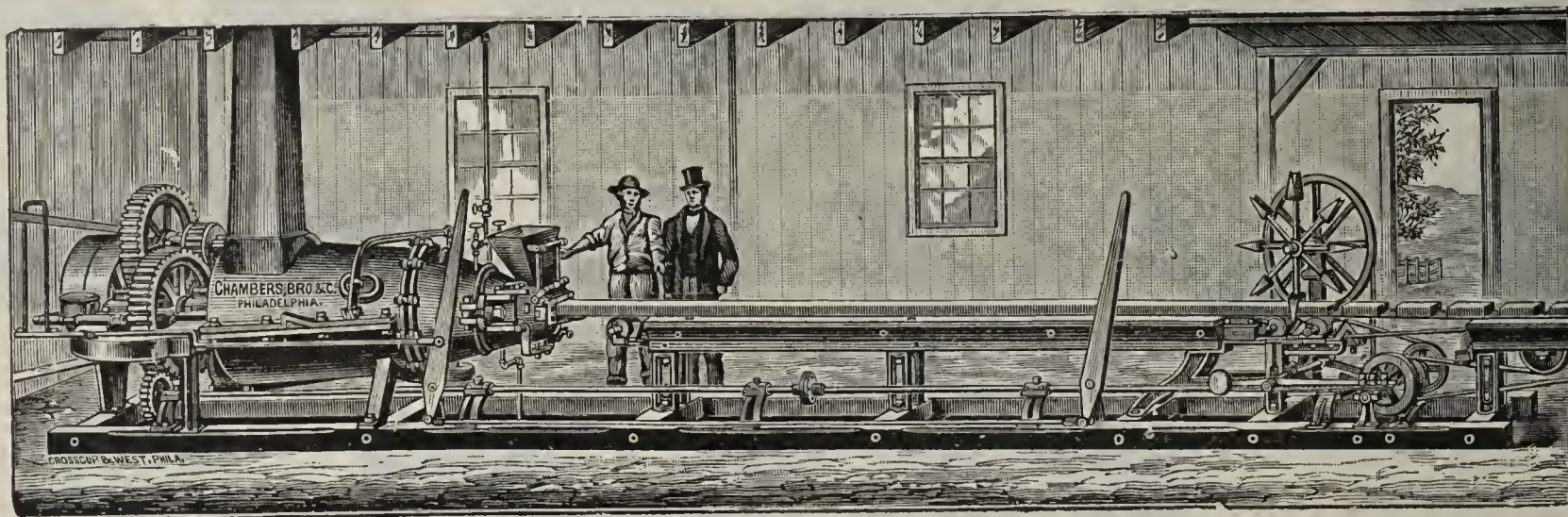
**Manufactured by C. W. Raymond & Co.,**  
Dayton, Ohio.

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS Co.,

FIFTY-SECOND ST., BELOW LANCASTER AVE.,  
**PHILADELPHIA, PA.**  
**IMPROVED BRICKMAKING MACHINERY.**



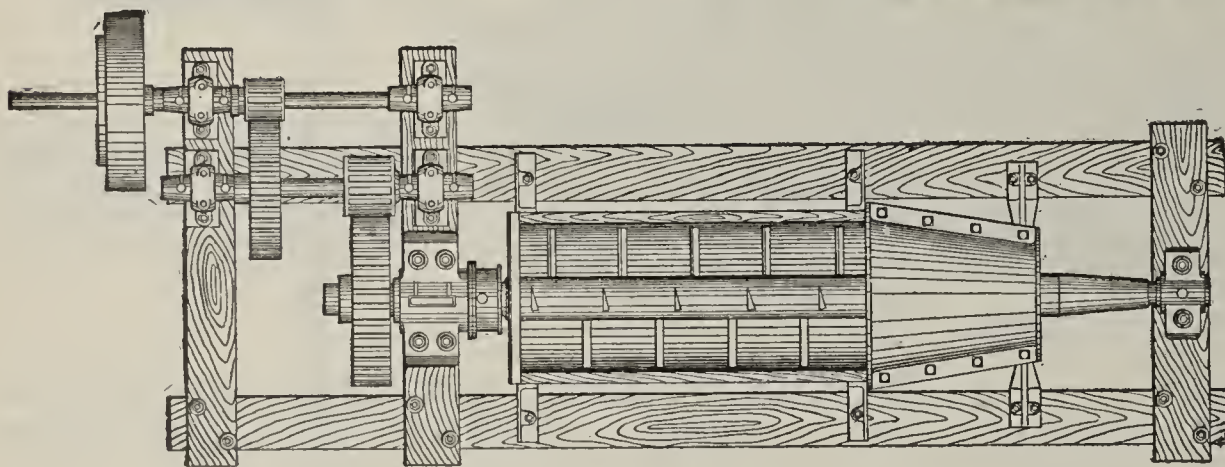
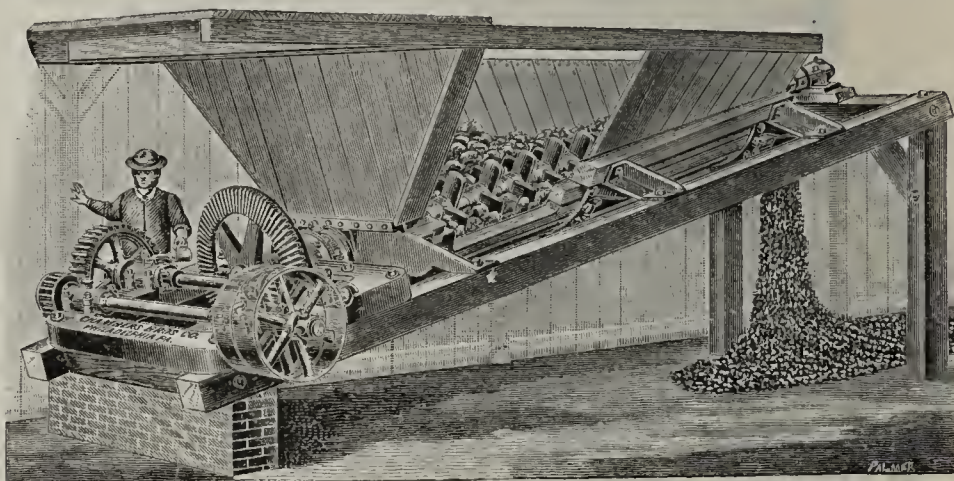
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
 PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS,  
 CRUSHING ROLLERS,  
 CLAY ELEVATORS.

Kiln Castings of All Descriptions.



## CHAMBERS BROTHERS Co.,

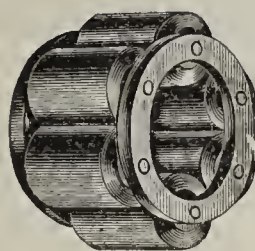
FIFTY-SECOND ST., BELOW LANCASTER AVE.,

PHILADELPHIA, PA.

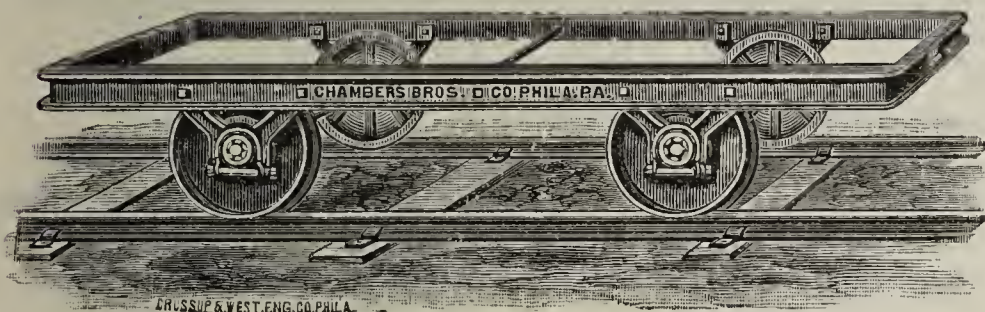
## Improved Tunnel Dryers For Common Brick

Cars and Complete Equipment for Artificial Dryers of all Kinds.

## STEEL PALLETS.



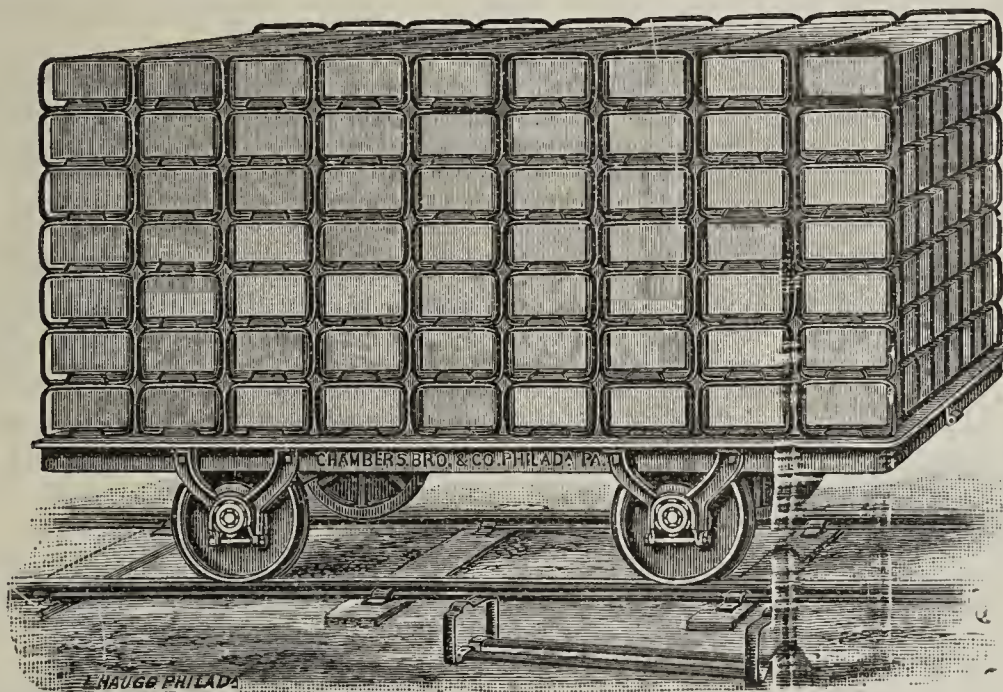
The Anti-friction Cage Roller Bearing used on our Cars.



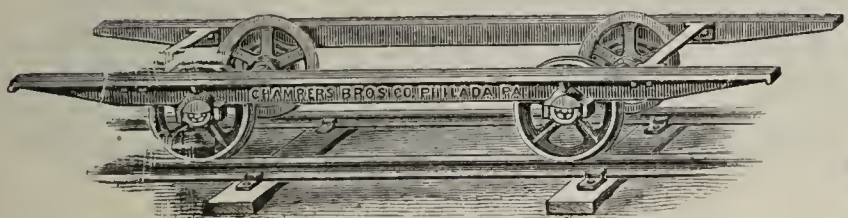
(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)



Car loaded with 63 pallets and 504 Chambers' Machine Brick.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

[Mention the Clay Worker]



## "STILL THERE'S MORE TO FOLLOW."

BESSEMER, ALA., May 28th, 1892.

MESSRS. E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:—Yours of the 25th at hand. We are now making Pavers and Fire Brick on your machine with best results. We can make better and cheaper Fire Brick than by hand, and are under obligations to you for this result.

Yours truly,  
BESSEMER FIRE BRICK CO.,  
GEORGE E. CARLYLE, Supt.

---

GRANVILLE STATION, WIS., Nov. 11, 1892.

E. M. FREESE & Co.,  
GALION, O.

GENTLEMEN:—In reply to your favor of the 19th inst., would say as to the machine received from you that it is giving first-class satisfaction. We have made 3500 brick per hour, and think that we can safely make 4500 per hour, and find the brick first-class, merchantable brick; in fact, superior to any brick we have heretofore made on different machines. Our expectation is to increase our plant by next Spring and will then place our order for another machine.

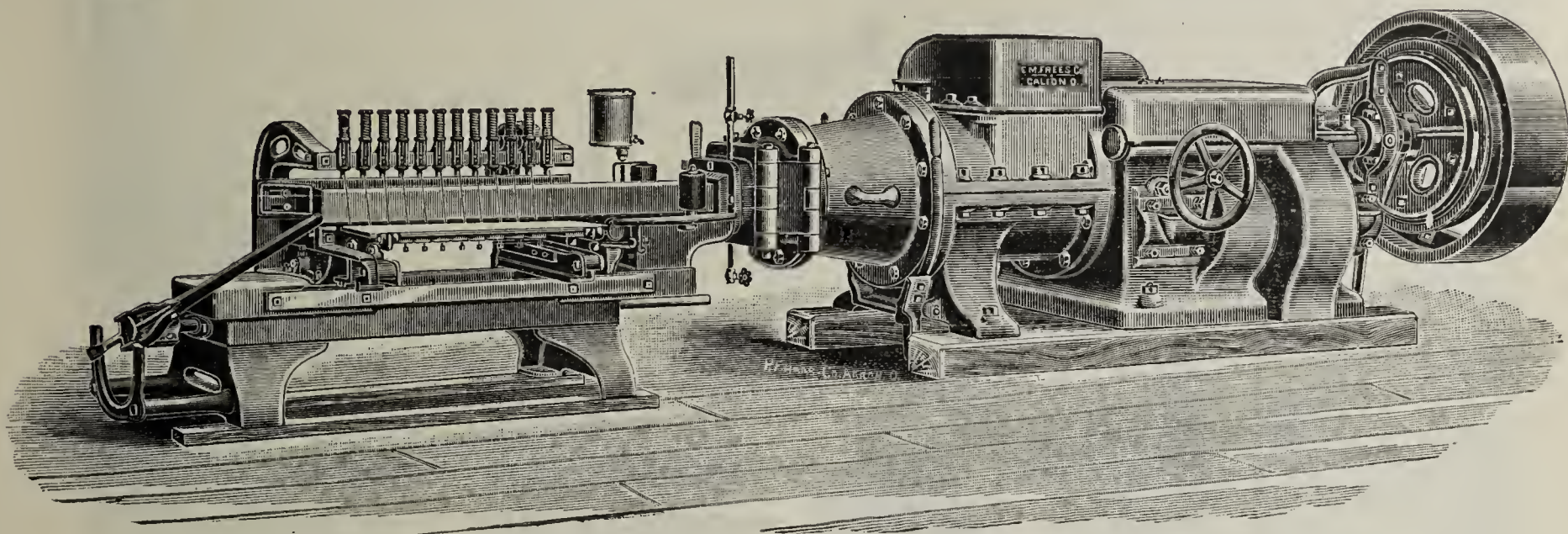
Yours truly,  
MILWAUKEE TILE & TERRA COTTA Co.

E. M. FREESE & CO.,  
GALION, OHIO.



## ✧ THE COST REDUCED! ✧

By the use of our Improved Machinery, the cost of producing the best quality of Paving, Building and Fire Brick is greatly reduced.



### The "Mammoth Junior."

NEWEST PATTERN. LATEST DESIGN.

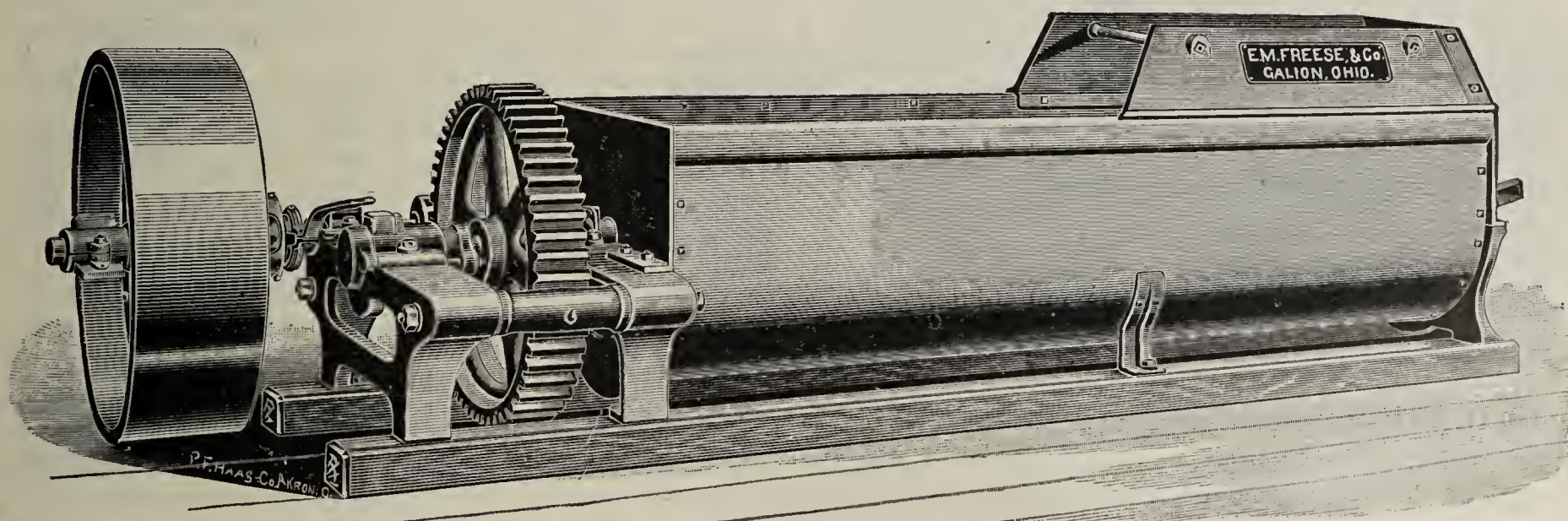
MONEY SAVING. MONEY EARNING.

✧ Brick as fast as you want them, and in form and texture to suit you. ✧

We would like to tell you all about the innumerable special points in which this Machine has the advantage, and will do so if you are sufficiently interested to write us.

Our address is,

**E. M. FREESE & CO., GALION, OHIO.**

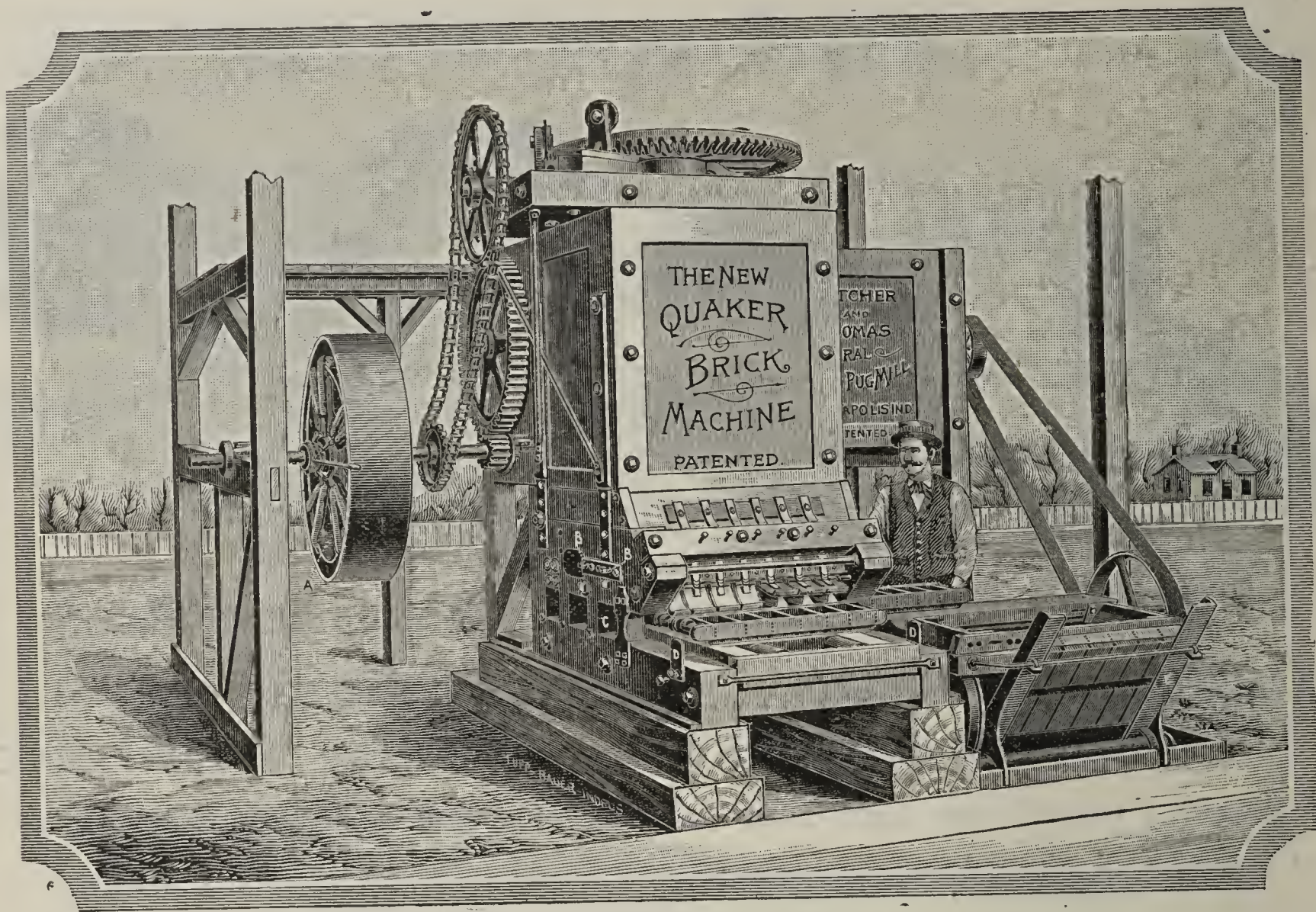


### No. 1 Pug Mill.

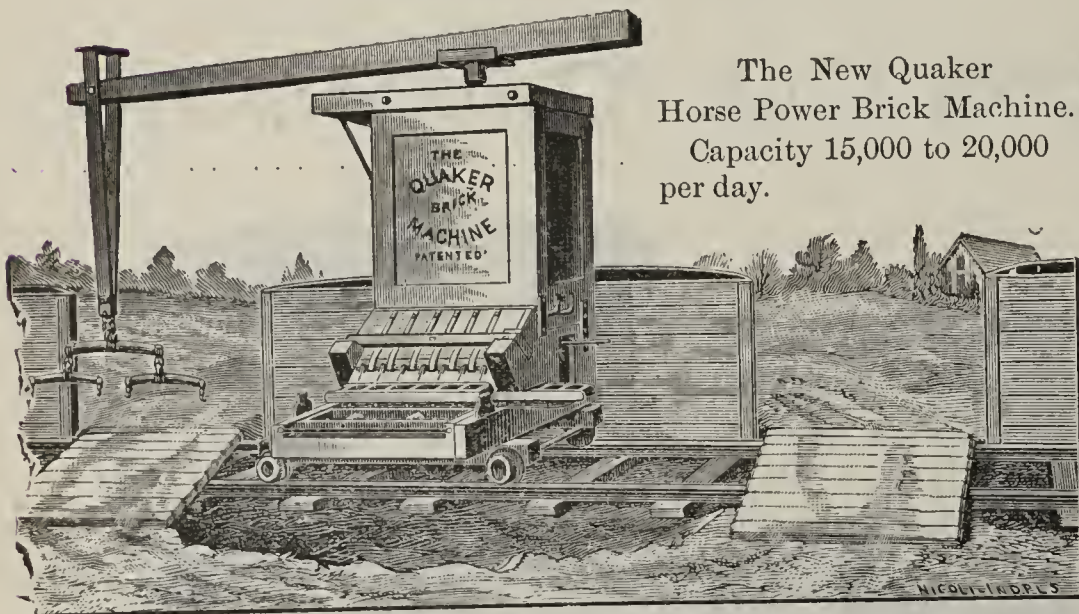
We build a variety of sizes and styles of Pug Mills to meet your requirements.



FLETCHER & THOMAS, INDIANAPOLIS, IND.  
 —MANUFACTURERS AND DEALERS IN—  
 BRICK MACHINERY AND BRICKMAKERS' SUPPLIES.



The New Quaker Extra Heavy Brick Machine. Pug Mill, etc., Complete. Capacity, 50,000 per day.



The New Quaker  
 Horse Power Brick Machine.  
 Capacity 15,000 to 20,000  
 per day.

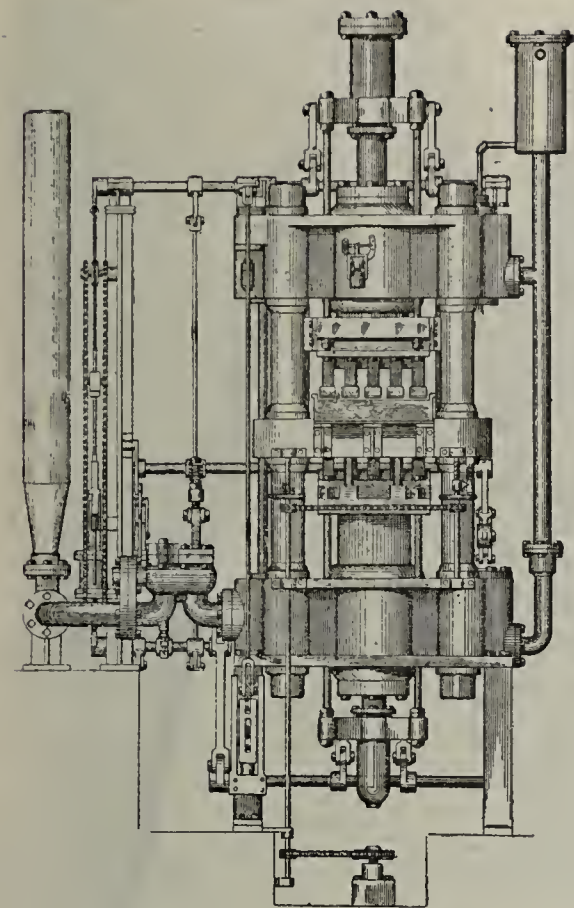
If you want a machine for good practical every day work that has no complicated traps and triggers about it to get out of order, one that any person of ordinary judgment can full understand and operate, and one that is the most reasonable in price of any first-class brick machine made, then get the **NEW QUAKER**. Do not purchase elsewhere until you have seen our catalogue and prices.

We make a specialty of completely equipping yards both large and small, sending a man to set up and start everything where desired. Also furnish Engines, Boilers, Shafting, Belting, etc., etc., and keep constantly on hand Moulds, Barrows, Kiln Doors and Frames, Kiln Grates and all Brickyard Supplies.

Send for catalogue. Correspondence solicited.

FLETCHER & THOMAS, - - Indianapolis, Ind

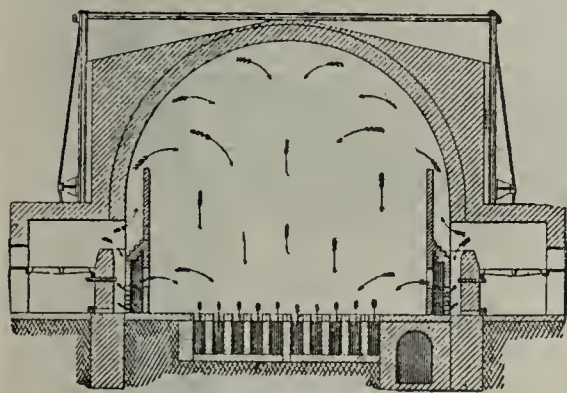




VERTICAL SECTION.

FRONT VIEW.

REAR VIEW.



# THE KOCH Perfection Hydraulic Brick Press

AND

## The Grath DOUBLE Down Draft Kiln

||| SUPERIOR TO ALL OTHERS. |||

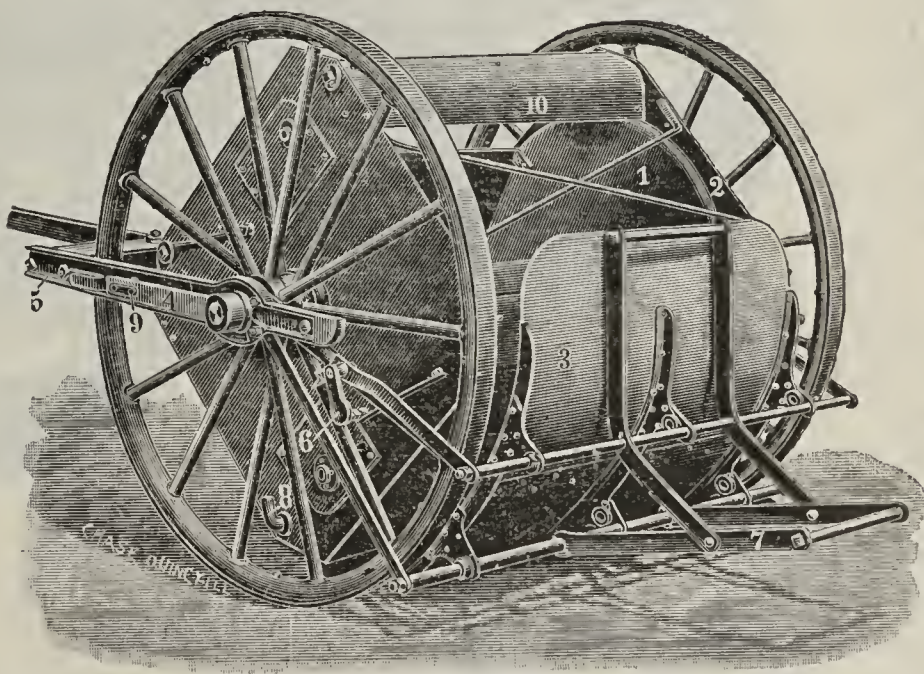
Our Press, Kilns, Gatherers and Disintegrator are in use at the American Hydraulic Press Brick Company's Yards, Collinsville, Ill., who are turning out the finest quality of Press Brick made in the history of Brickmaking.

Brick free from granulation and hard and smooth as polished granite.

## THE QUINCY CLAY GATHERER

For gathering and shedding dry clay it is unequalled. It is self-loading and unloading. It is the cheapest and most approved Clay Gatherer. Gathering clay by this method dispenses with shovelers and avoids strikes.

No brickyard complete without the Quincy Clay Gatherer.



We are General Agents for the ROSS CLAY PULVERIZER. Grinds more clay than all other mills. Will not clog or get out of order. Guaranteed in all particulars.

Manufacturers of the BEST BLACK COLOR for Brown, Gray and Mottled Brick, of the best quality.

# ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.

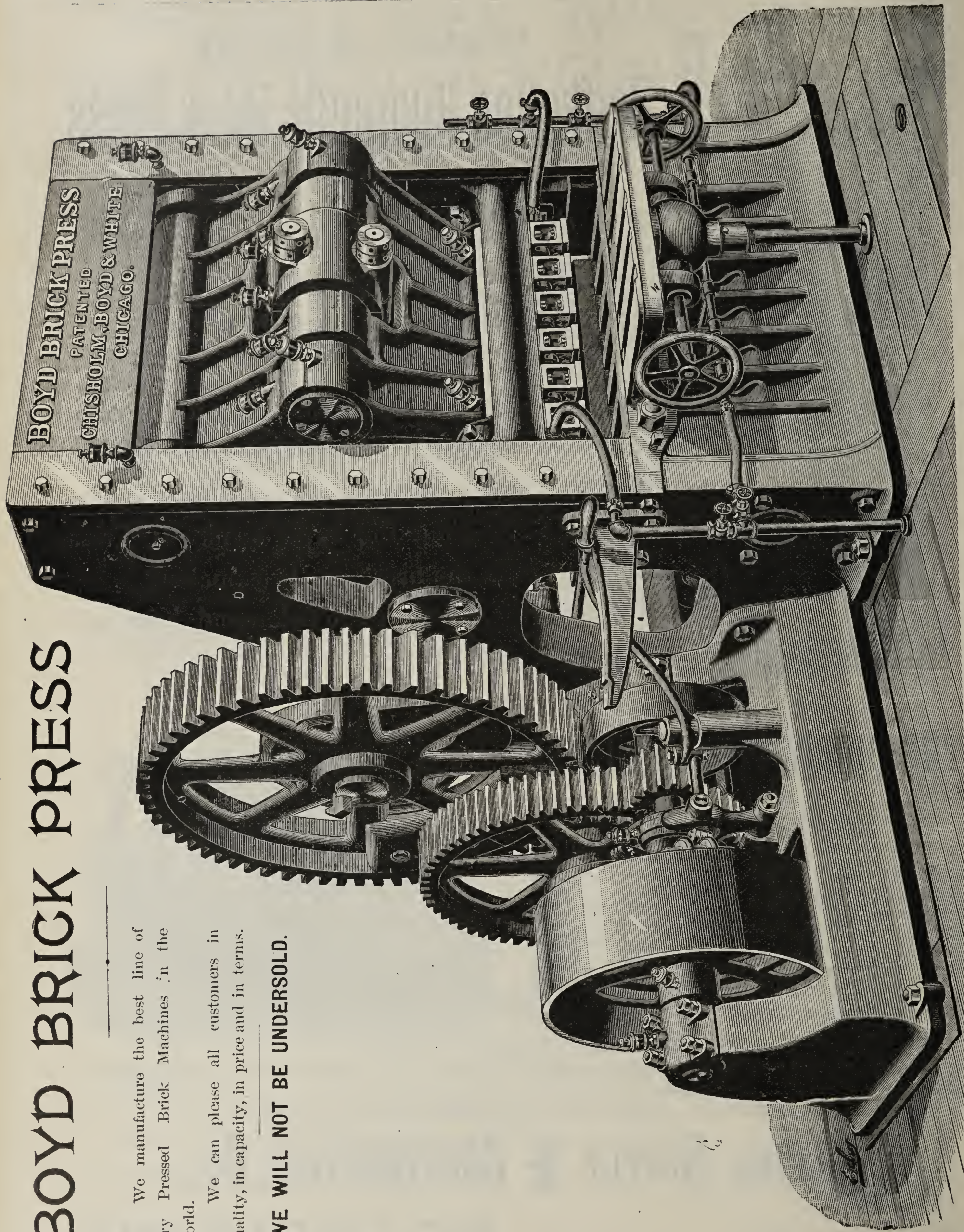


# BOYD BRICK PRESS

We manufacture the best line of Dry Pressed Brick Machines in the world.

We can please all customers in quality, in capacity, in price and in terms.

**WE WILL NOT BE UNDERSOLD.**



ADDRESS Chisholm, Boyd & White, Monon Block, CHICAGO.



### A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing the Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be our own in case of failure. Why experiment when you can have a sure thing.

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

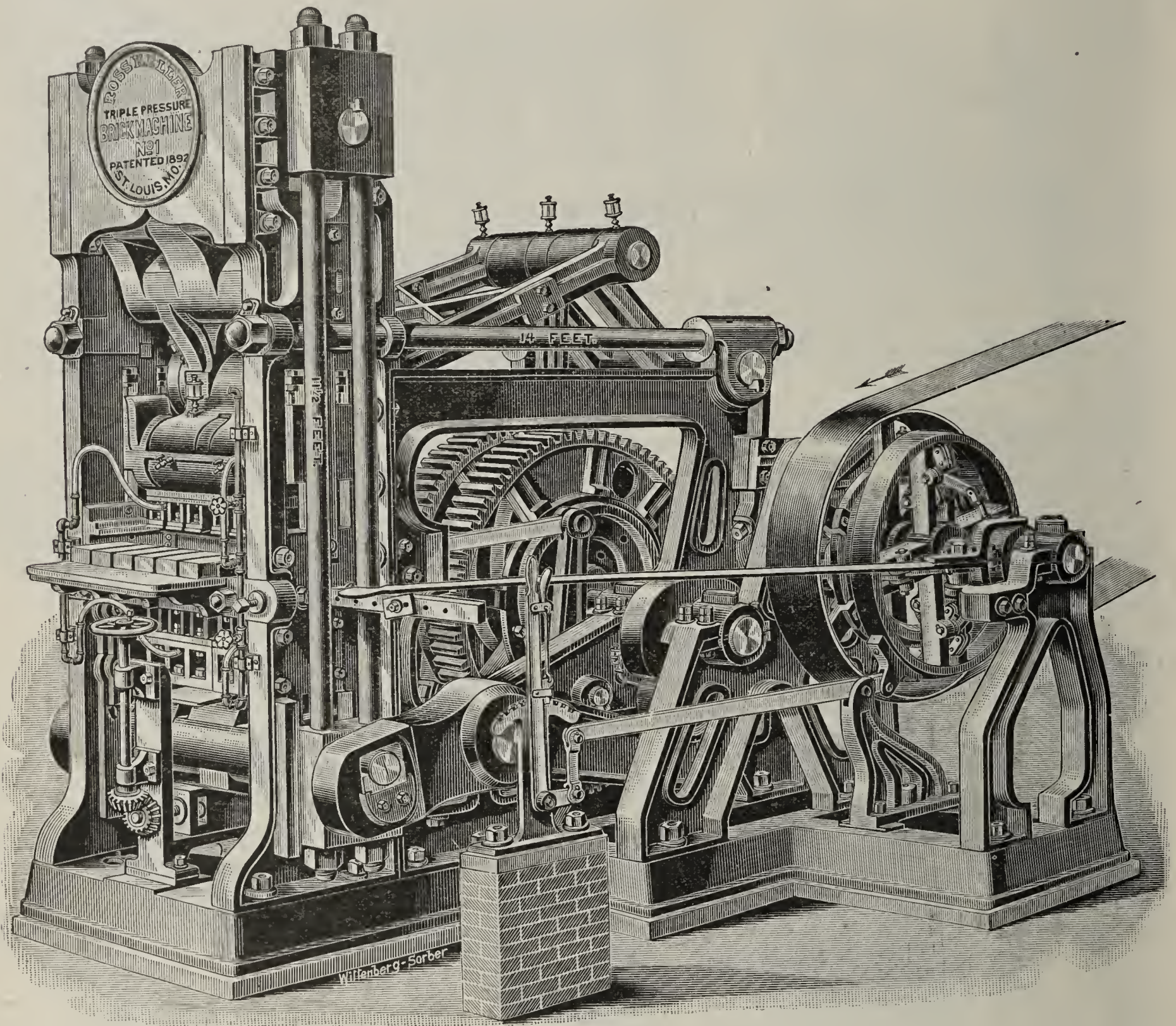
CHICAGO.



# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 68,000 pounds, Capacity 35,000 pressed brick per day.*

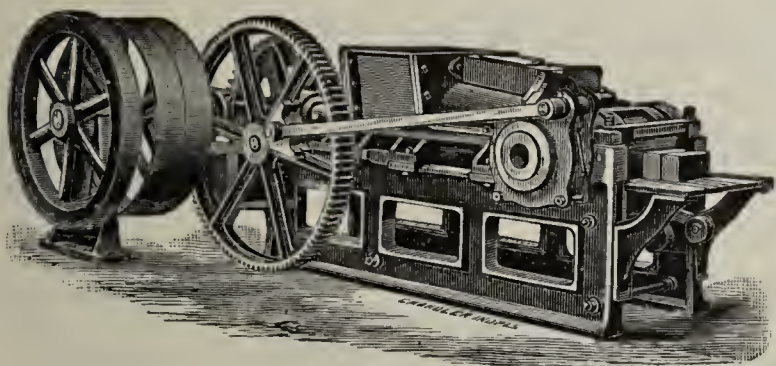


**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

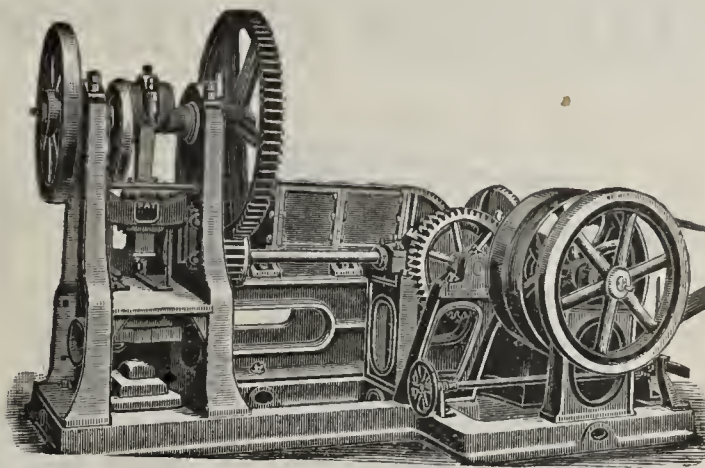
For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**  
*Room 207 Laclede Building, ST. Louis, MO., U. S. A.*

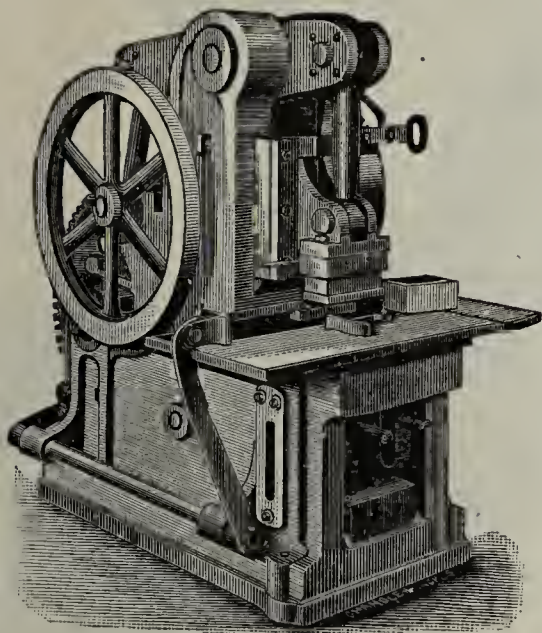




IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK & TILE PRESSING MACHINE

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building **BRICK**

and the best and most economical  
kiln in which to burn them.

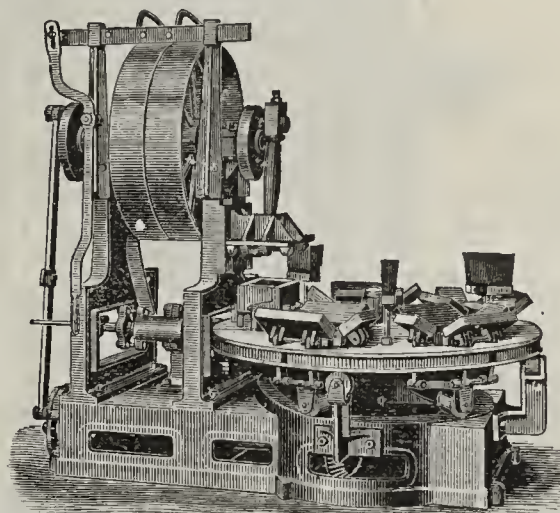
We are prepared to furnish complete  
equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

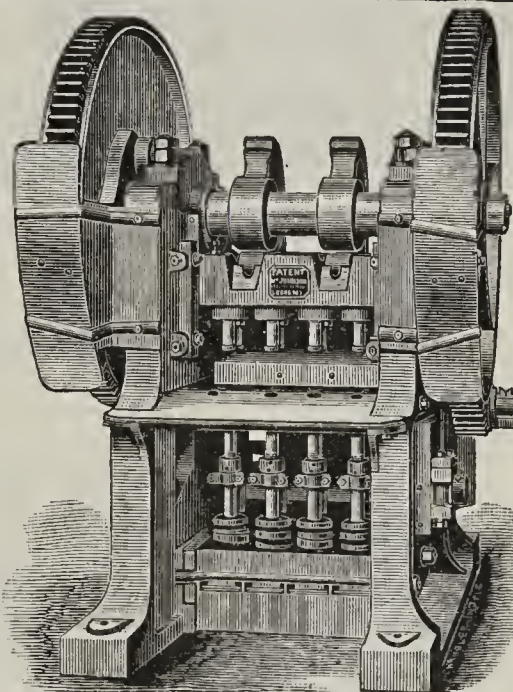
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

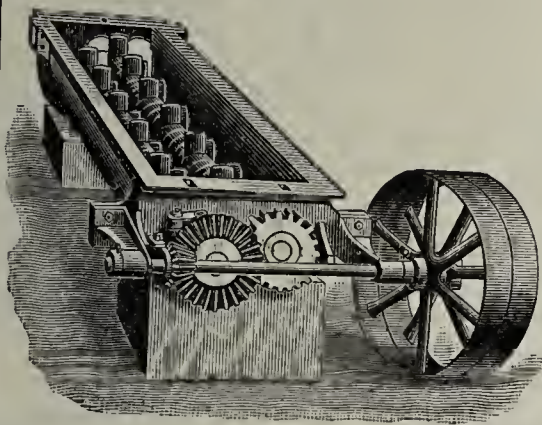
BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



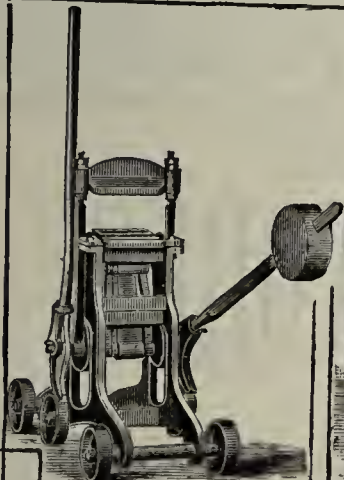
PAT. STEAM SAND-FACED PRESSING MACHINE



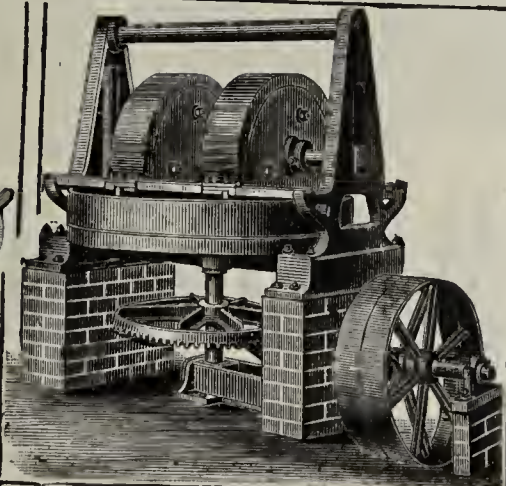
THE UNIVERSAL BRICK MACHINE



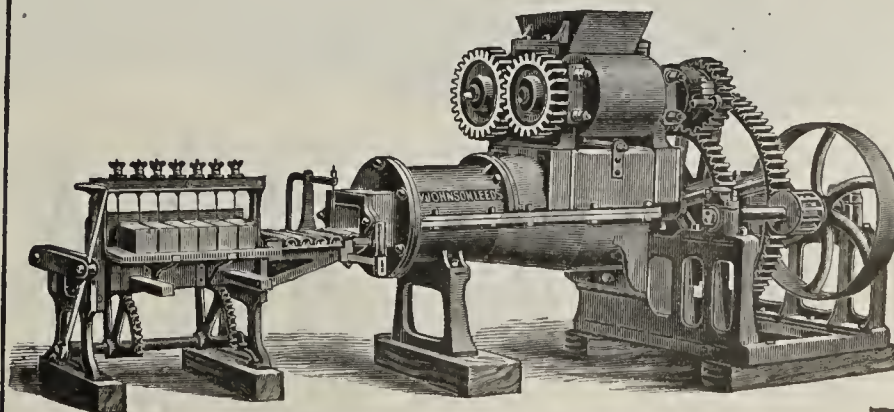
DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER



HAND LEVER BRICK PRESS



PERFORATED EDGE RUNNER CLAY GRINDER



COMBINATION PUG MILL BRICK & TILE MACHINE



ESTABLISHED 1854.

# St. Louis Iron & Machine Works

Iron Founders and Builders of Heavy Machinery.

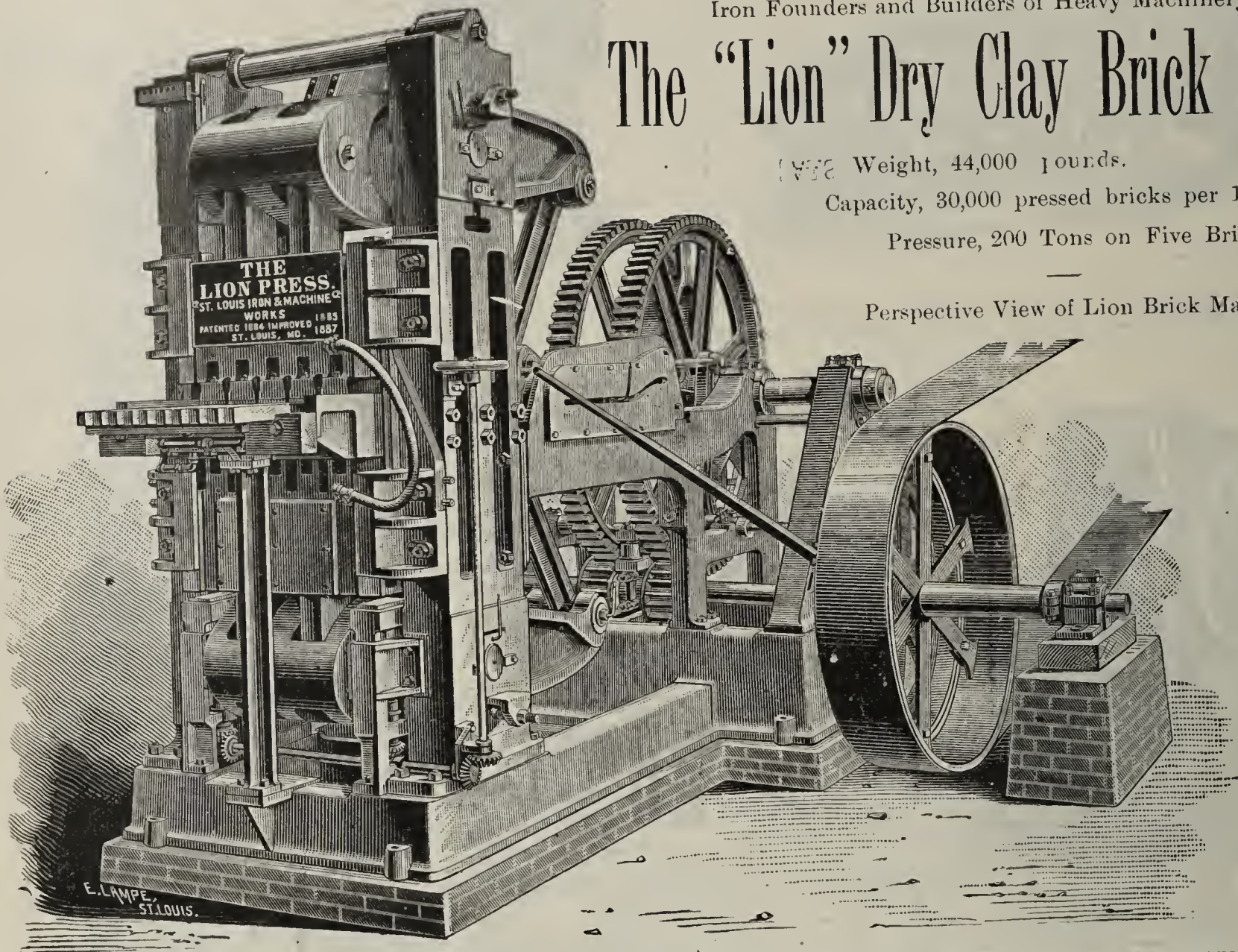
## The "Lion" Dry Clay Brick Press.

Net Weight, 44,000 pounds.

Capacity, 30,000 pressed bricks per 10 hours.

Pressure, 200 Tons on Five Bricks.

Perspective View of Lion Brick Machine.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—30,000 capacity and 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

# ST. LOUIS IRON & MACHINE WORKS,

Main Street and Choteau Ave., St. Louis, Mo.

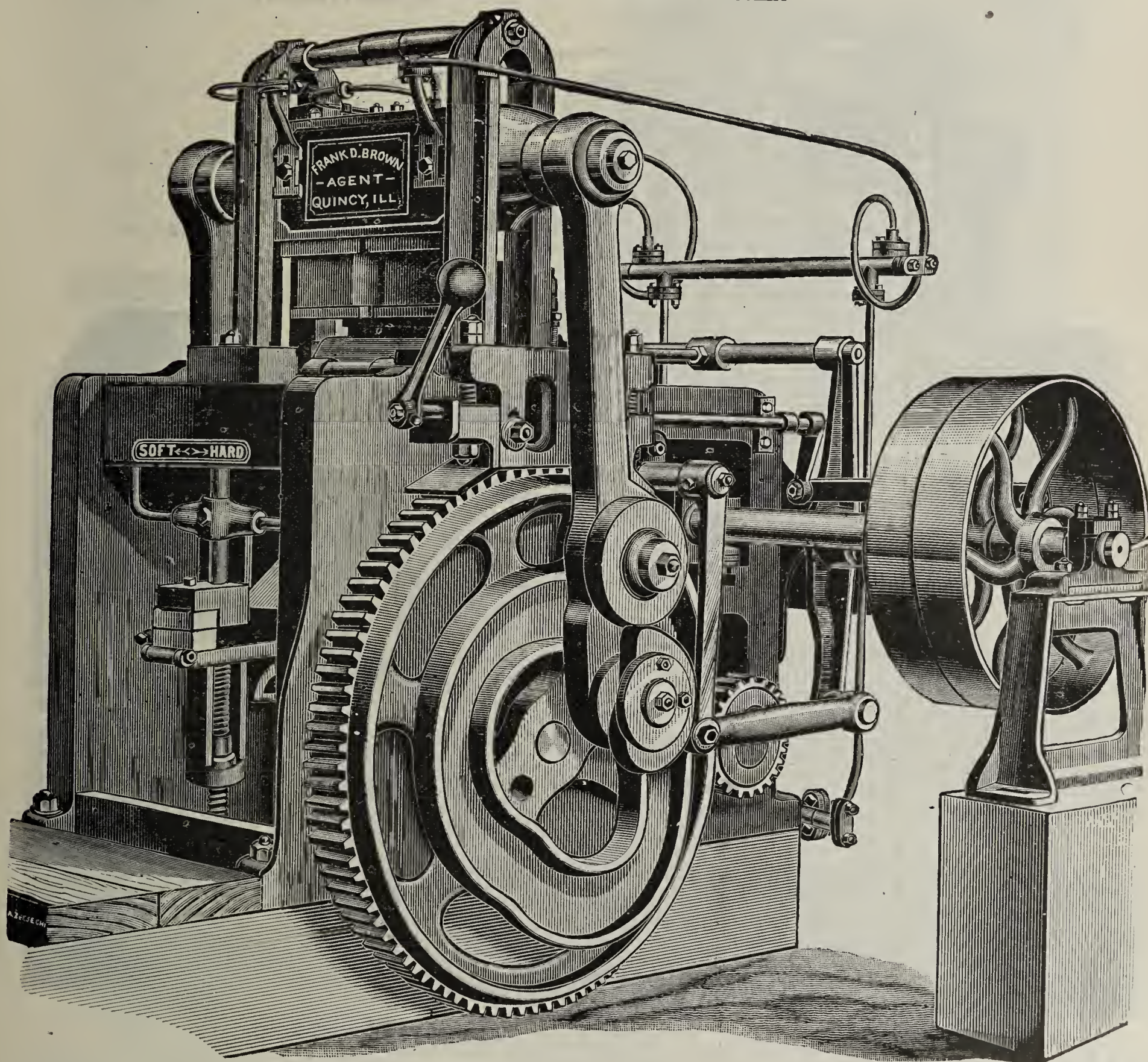


# Whittaker Press Brick Machine

Works Clay Semi-plastic, Semi-dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



Clay sent freight prepaid will be pulverized, pressed and burned free of charge.

**FRANK D. BROWN, Sole Owner and Agent,**

For Territory East of Mississippi River,  
Except Minnesota and Wisconsin.



**QUINCY, ILL.**

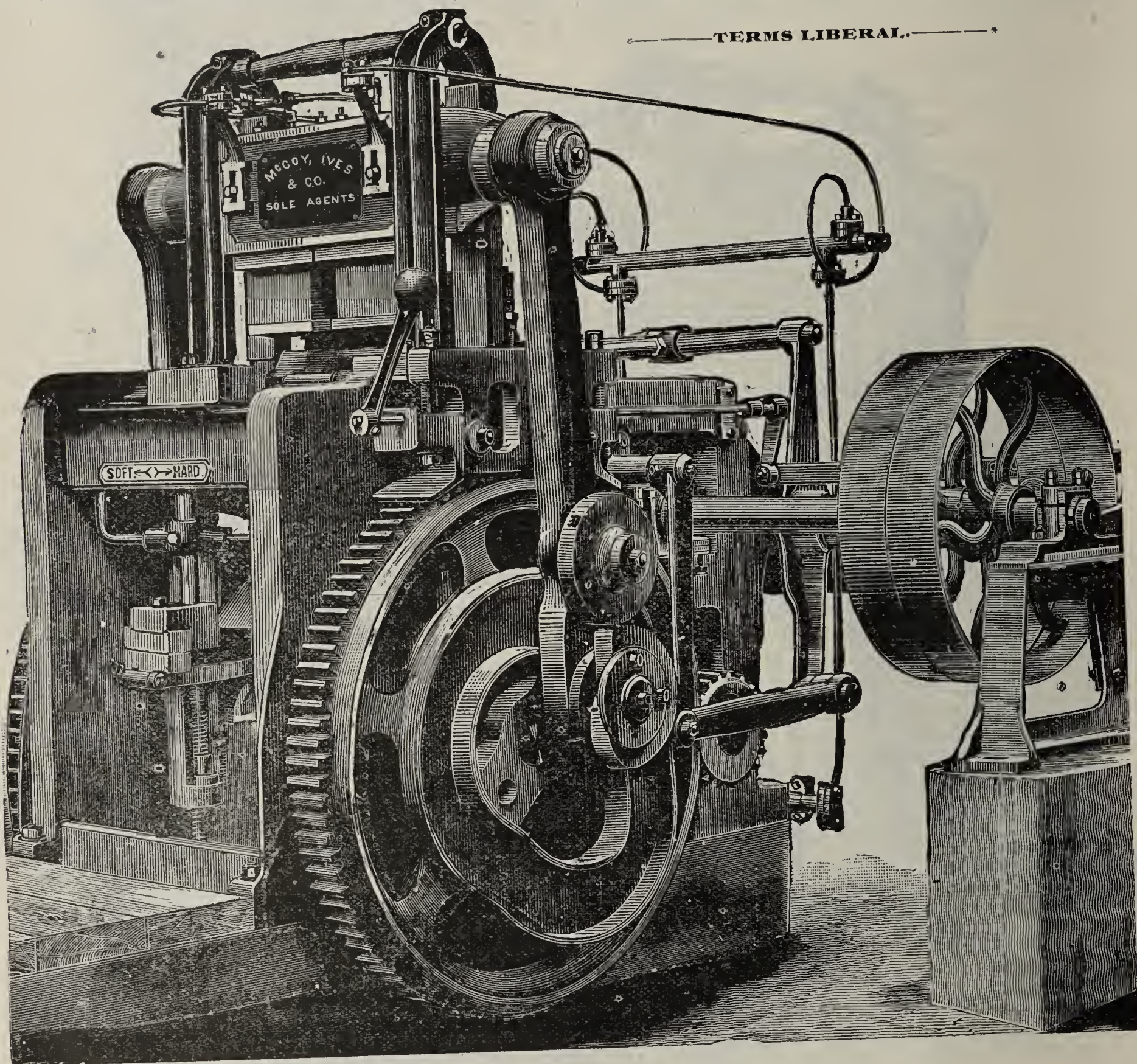


# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



WE now have a new Improved FOUR MOULD WHITTAKER. This machine will fill a long felt want to the many who are now manufacturing brick by the Dry or Semi-Dry process, and will prove a boon to one and all contemplating the manufacture of brick.

Clay sent to us at St. Louis (freight prepaid) will be carefully tested, free of charge.

## IVES & LEONHARDT,

ST. LOUIS, MO., U. S. A.

Mention the CLAY-WORKER.



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

Refer to . . .

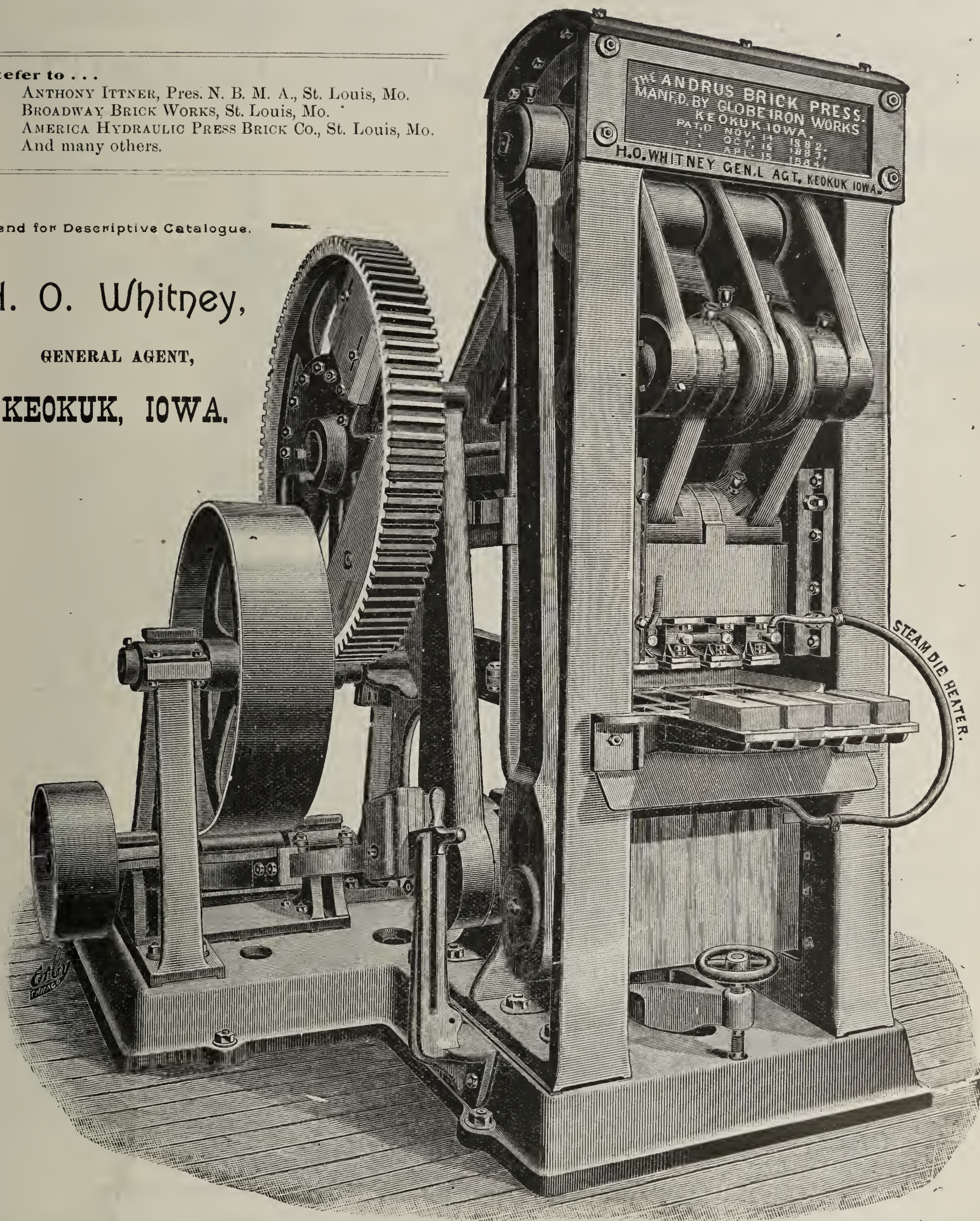
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

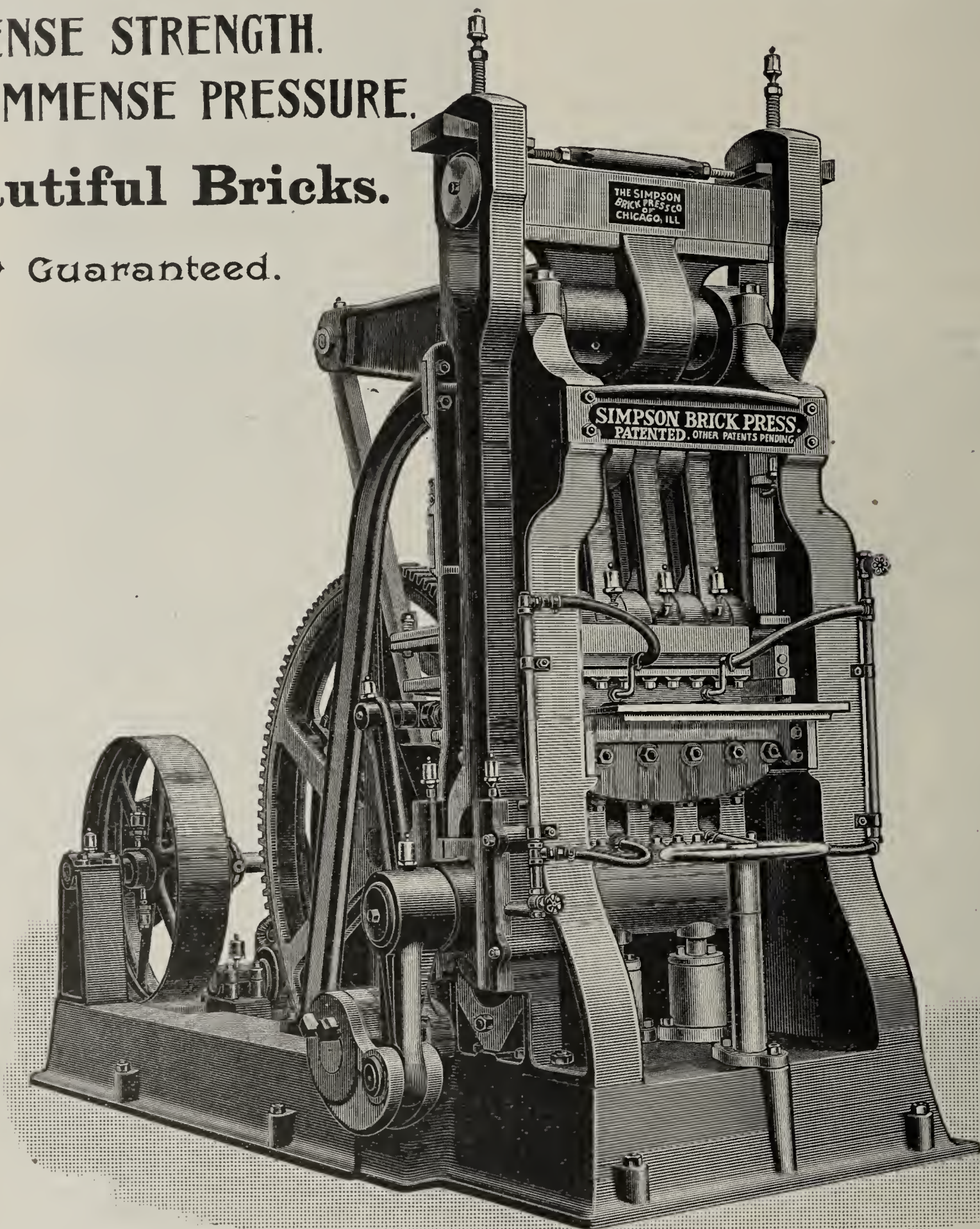
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

Beautiful Bricks.

Fully Guaranteed.



APPLY TO  
**THE SIMPSON BRICK PRESS CO.,**  
 Room 210, 87 89 and Wash, St., Chicago, Ill.

Agent for the South, **D. B. DRUMMOND,**  
 313 Commercial Bld'g, St. Louis, Mo.  
 Agents for Canada, **WATEROUS ENGINE WORKS CO.,**  
 Brantford, Canada.





# See the SIMPSON PRESS.

READ WHAT A USER THINKS OF IT.

O. W. McFARLAND, President.  
CHAS. BRANAHL, SR., Vice-President  
R. F. KILGEN, Sec'y and Treas., 112 N. 8th Street.  
M. J. REILLY, Superintendent.

TELEPHONE 2934.

COTE BRILLIANT PRESSED BRICK CO.

OFFICE, 5216 ST. LOUIS AVENUE

St. Louis, Mo. Sept 3<sup>rd</sup> 1892

Messrs Simpson Brick Press Co.  
Chicago

Gentlemen  
After using your Dry Press  
Brick machine for about 16 months we are  
thoroughly convinced that it is the very  
best machine in market to-day. And we would  
not exchange for any other machine known.  
We average 20,000 brick per day of 10 hours  
when making common brick - And when making stock  
brick we average 17 to 18,000. Our Repair bills have  
been a little less than \$14<sup>00</sup> per month. And we have  
not lost 3 consecutive hours at any one time  
since we started, on account of the machines.

We began with one machine in April 1891.  
So well did we like it that we put in another  
in July 1891. And our confidence was so  
great and satisfaction so complete, we put  
in another in April 1892. And if we are  
ever in need of more machines. The  
"Simpson" is our choice. We would not  
buy any other.

Sincerely, Yours

Cote Brilliant Pressed Brick Co M J Reilly



# MORRISON'S

## IMPROVED KILNS

### FOR BURNING CLAY WARES.

DAILY PRODUCT OF OUR KILNS IN UNITED STATES---ONE MILLION BRICKS.

Especially adapted to burning paving, repressed, ornamental and common bricks.

\* \* PATENTED IN UNITED STATES AND CANADA. \* \*

SUCCESSFUL.



DURABLE.

Pressed bricks burned without fire marks, of uniform color. Arch bricks all fronts or pavers

———— AND NONE DAMAGED. —————

Coal screenings preferred for fuel. Will burn either wood or coal. One fireman for two hundred thousand bricks.

  THE  ONLY  KILN  

That regulates the temperature of heat, and directs its course by a system of air drafts, giving complete control of the degree of heat, as well as its manipulation. This system we have covered by letters patent. Parties using these air drafts are liable to prosecution for infringement.

For descriptive circulars, prices, terms, etc., address us, stating what you want.

## R. B. MORRISON & CO.,

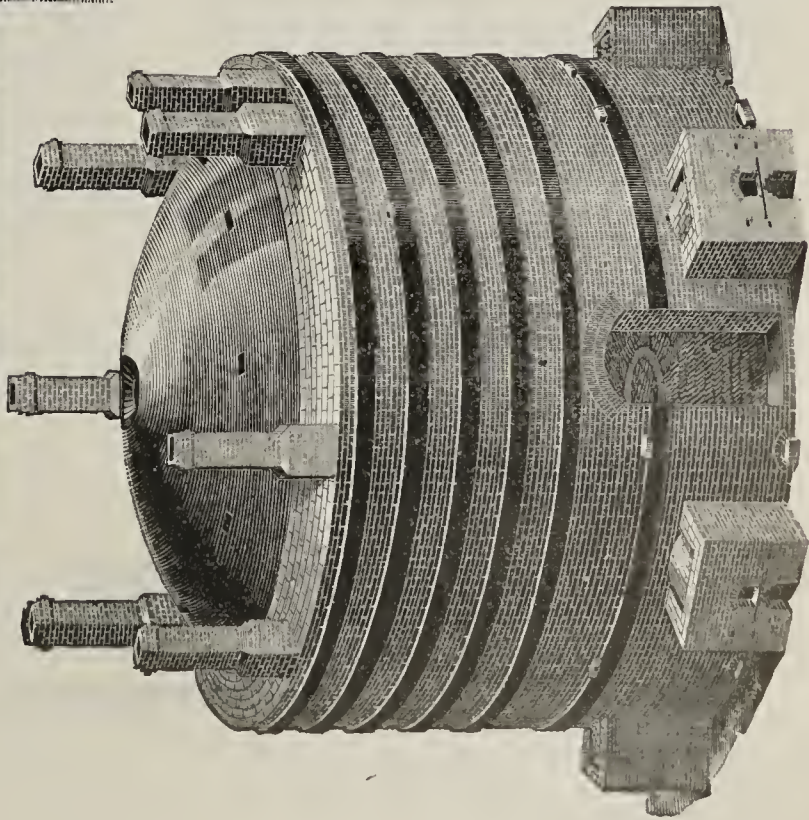
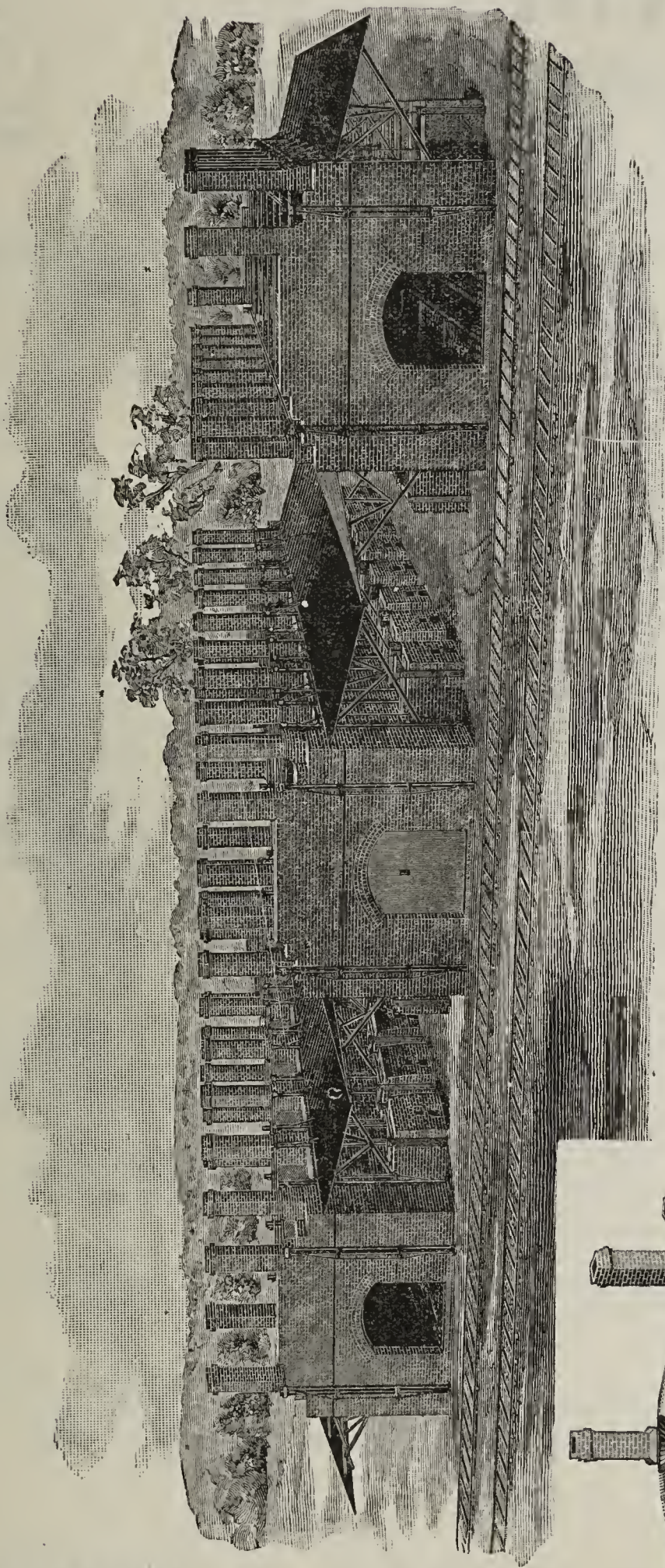
PROPRIETORS,

Box 335,

ROME, GEORGIA.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of **large capacity** on account of **economy** in cost of construction and **space** occupied on the plant; while the Round Kiln is better adapted to plants of **small capacity**, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a **reputation for burning all hard and uniform**. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.





# SERCOMBE'S PATENT CHAMBER KILN.



**SPECIALTIES:—Perfect Control of the Fire. Perfect Combustion. Perfect Results and Perfect Economy in Erection and Operating.**

November 22, 1892.

## To American Brickmakers:

We respectfully request your attention to the following particulars of our "Patent Perfect Kiln." Naturally you may desire to see the same in operation before deciding to erect one of them. We therefore take pleasure in informing you that our Mr. Sercombe has left England for the purpose of operating the kiln erected by Messrs. The Ostrander Fire Brick Company, Fords, N. J., and he will be pleased to exhibit the same to you when ready for inspection; will you kindly communicate with him on the matter at your convenience, and we trust that business will result.

The kiln has proved a grand success in England, as may be judged by the testimonials we have received and the references we can give, and large numbers of kilns are being erected or converted to our system in various countries.

We get what has never before been obtainable in any Chamber kiln, viz.: (1) PERFECT CONTROL OF THE FIRE; (2) PERFECT COMBUSTION; (3) PERFECT RESULTS; and (4) PERFECT ECONOMY IN ERECTION AND OPERATING.

We can burn ordinary bricks (all hard) with 2-cwt dust coal to the 1000, and we have lately—as a test—burnt for Messrs Martin Bros., Ltd., of Plymouth, a Chamber of the most refractory Fire Bricks in the world, with 3½-cwt., the same goods requiring 15-cwt. rubble in down draft kilns. The proprietors were so well pleased with the result that they immediately gave us an order for a big kiln, and intimated their intention of erecting four more of them later on.

The cost of erecting the various sizes will differ, according to cost of materials and labor in the different districts. We give approximate estimates below:

### FOR A NUMBER 1 KILN,

Containing 14 chambers, each chamber being 13x14x8, and holding about 11,000 bricks, 9x4½x2½ when burnt, and turning out from 30,000 to 75,000 per week, according to the supply of bricks and requirements.

49,000 for 98 feet chimney stack.

209,000 for kiln.

20 tons of lime.

4 tons of castings.

Sand and rubble.

Labor in England varies from \$1,000 to \$1,250. (Calculated at from 12 to 18 cents for masons and 8 to 12 cents for laborers.)

License fee, \$625. payable half down.

### FOR A NUMBER 2 KILN,

Fourteen chambers, 16x17x10, each holding about 22,000 bricks, and turning out from 40,000 to 110,000 weekly.

49,000 for 98-foot chimney stack.

370,000 for kiln.

30 tons of lime.

5 tons of castings.

Sand and rubble.

Labor in England \$1,500 to \$1,750.

License fee \$875, payable half down.

### FOR A NUMBER 3 KILN,

Sixteen chambers, 16x17x10, 22,000 capacity, and turning out from 60,000 to 130,000 weekly.

60,000 for 112-foot chimney stack.

425,000 for kiln.

35 tons of lime.

5½ tons of castings.

Sand and rubble.

Labor in England \$1,750 to \$2,000.

License fee, \$1,000, payable half down.

FOR A NUMBER 4 KILN, double the capacity of a No. 2, the cost would be nearly double No. 2, and the fee would be \$1,750. payable half down. Only two burners are required for this kiln, same as for the others.

Correspondence solicited.

## SERCOMBE, OSMAN & WARREN,

Exmouth, England.

Mention the CLAY-WORKER.



# HOFFMANN KILNS.

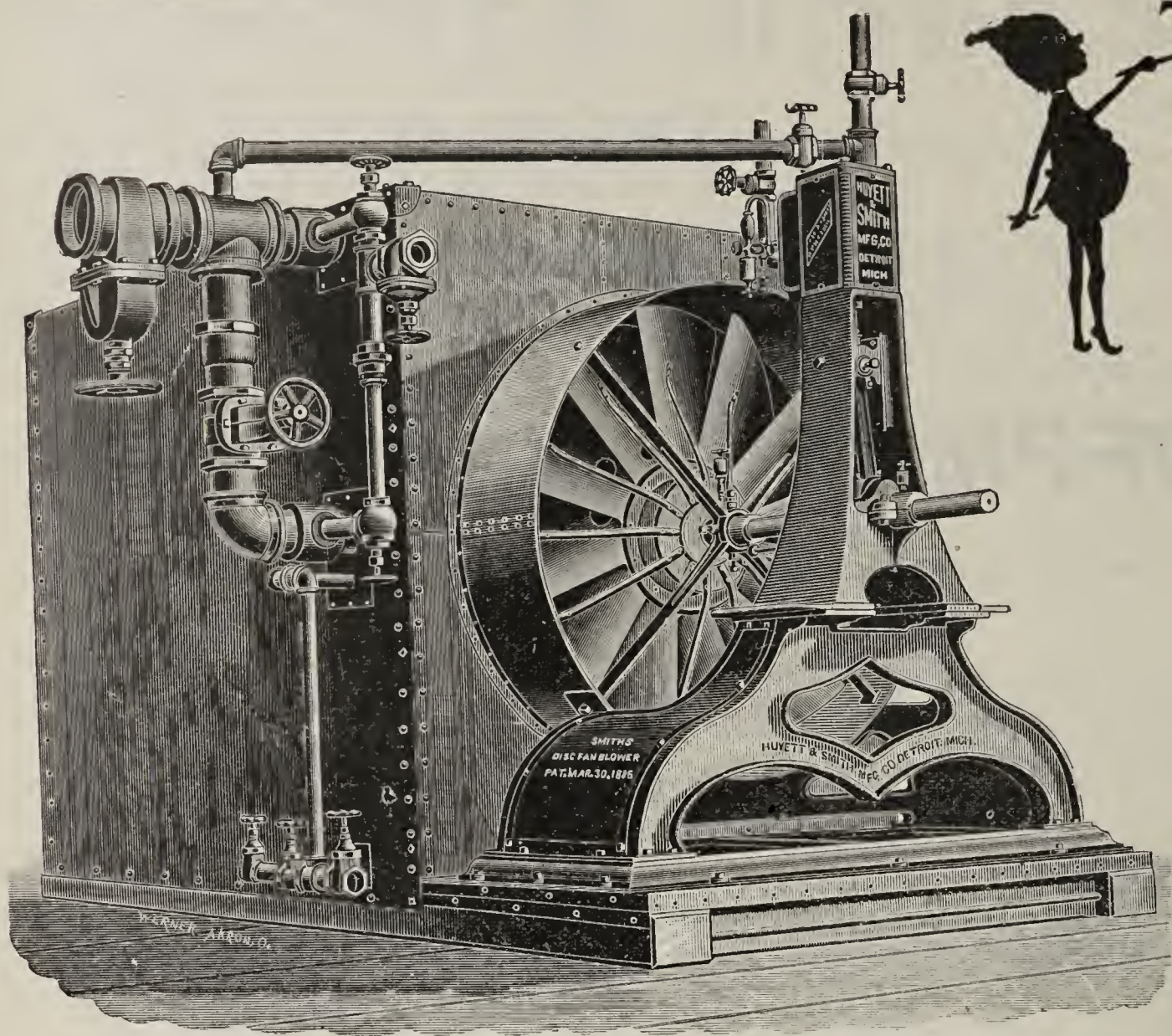
## Plans for Building Genuine

HOFFMAN KILNS with all late improvements are furnished, at low rates, by the inventor, Fred Hoffman, 7 Kessels St., Berlin, Germany. ∴ ∴ ∴ ∴

Brickmakers who intend to erect Hoffman Kilns should state how many brick they want to burn in the Kiln per season, also, size of brick and kind of fuel used, coal or wood?

FRED HOFFMANN,  
7 Kessels Street, Berlin, Germany.





THE  
National  
Brick  
Convention  
Has  
Adjourned.



Not much was said on the subject of *Artificial Brick Drying* but the undercurrent sentiment of the Convention was decidedly in favor of the

## SMITH HOT BLAST DRYER

And hundreds of the attendants went home with the following memorandum in their pocket :



For Estimates, and Plans those who  
have not already done so should  
write to

Jan'y 24.

Bought Ordered a Hot  
Blast Drying Apparatus  
of the Huyett & Smith  
Mfg. Co. to be  
shipped at once -

NEW YORK.  
CHICAGO.  
BOSTON.

The Huyett Smith Mfg. Co.,

DETROIT, MICH.



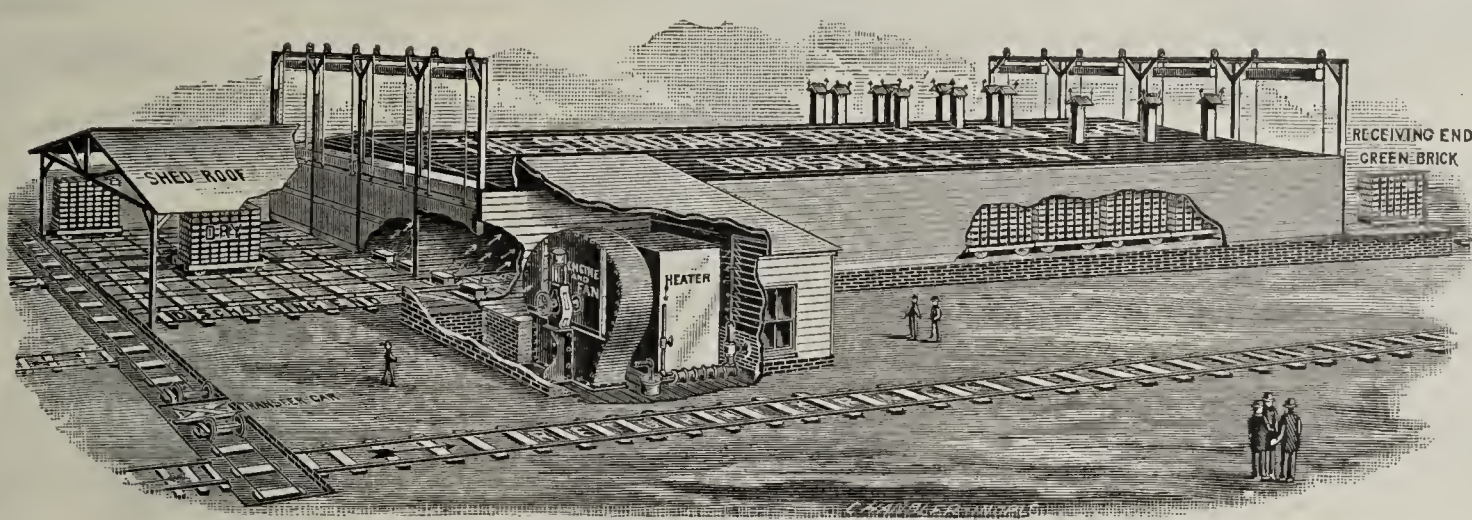
## NOTICE TO THE CRAFT.



# THE STANDARD

## PATENT

# Forced Draft Brick Drier



⇒ Still Maintains the Lead ⇐

As the most practical, reliable and efficient DRIER for all kinds of Brick, Tile, Terra Cotta, etc. :: :: ::

P  
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S.



1. IT IS the only drier susceptible of perfect regulation.
2. IT IS the only drier in which the elements of drying are under perfect control.
3. IT IS the only drier in which conditions can be changed so that ALL CLAY PRODUCTS can be successfully and economically dried.
4. IT IS so arranged that ventilation is perfect, and water-smoke may be removed at will.

Address .....

THE STANDARD DRY KILN CO., Office & Salesrooms:  
923 and 925 West Main Street, Louisville, Ky.



# THE BEST DRYER FOR PAVING BRICK.



DRYERS OF THE ROYAL BRICK COMPANY, CANTON, O., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

J. E. WALSER, Pres't.

OTTO GIESSNER, Sec'y and Treas.

## THE ROYAL BRICK COMPANY,

MANUFACTURERS OF

The Iron Rock Street Pavers,  
Royal Building, Fire and Sidewalk Brick.

IRON CLAD DRYER CO.,  
CHICAGO, ILL.

CANTON, O., Jan. 5, 1893.

GENTLEMEN:—Replying to yours in regard to efficiency of your Dryers, will say, that we started in October, 1890 with one of your five track dryers making then from 25,000 to 30,000 bricks.

Increasing our plant, we naturally needed more drying capacity—after investigating into the merits of other Dryers, we found that we had the best system and ordered another five track from you in July, 1891. With these two Dryers, we could easy dry 50,000 of our large pavers in twenty-four hours. Still increasing our capacity, we ordered number three of you, and are glad to say that we have never had any trouble with your Dryers—we are pleased with them and wish you continued success.

Yours truly,

ROYAL BRICK CO.,  
OTTO GIESSEN, Sec'y.



[See cut of Dryer on last cover page.]



# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., FEBRUARY, 1893.

No. 2

Written for the Clay-Worker.

## DECORATIVE BRICK WORK.

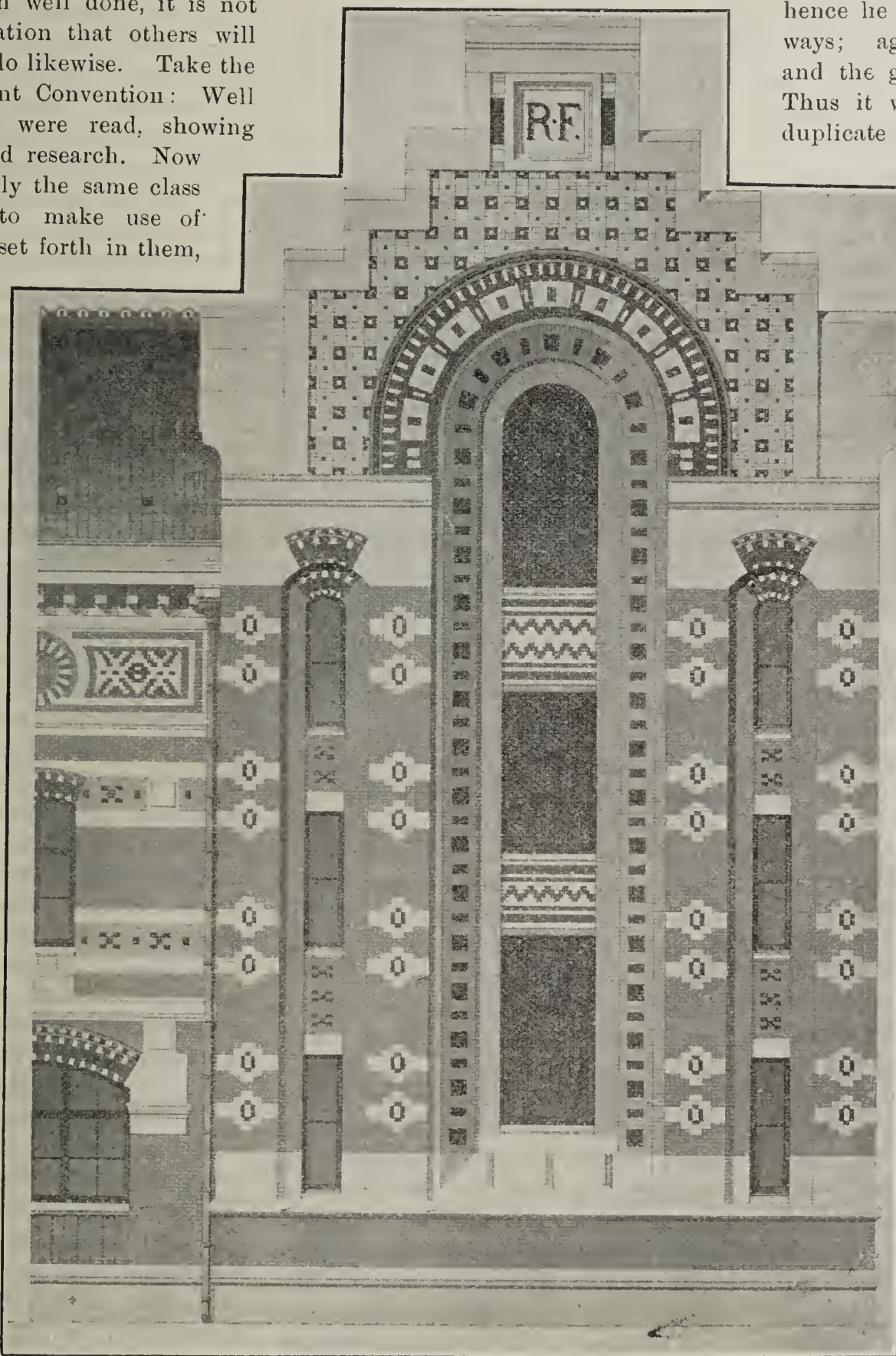
WHEN one presents an idea or an example of something which has been well done, it is not with the expectation that others will literally go and do likewise. Take the case of the recent Convention: Well prepared papers were read, showing deep thought and research. Now it takes measurably the same class of intelligence to make use of the information set forth in them, that it does to develop that information necessary to their preparation.

On this page is given an example of decorative brick work taken from a French drawing. We do not say literally, "Go and do likewise." However, we do say that there are ideas in connection with it which may be brought into every-day use, and which would add materially to the value of any structure. It would be absurd for us to expect that the section of the pavilion here represented could be literally adopted; it and the details adjacent to it were developed in connection

with the design as an entirety. The building was erected for the French, being a school building suited to a peculiar location. The structures on

either side of it are brilliant, tall and measurably picturesque. This building is relatively low, because of the purpose for which it was built. The designer did not wish his building to be lost, and hence he made it aggressive in other ways; aggressive in color, outline and the general scheme of the detail. Thus it would be foolish for us to duplicate this design and expect admiration for our effort.

To consider in a severely practical way how this design could be used, let us assume that one had two windows placed one above the other with the plain space between, as is shown in the center window of this illustration. Here is a very pleasant suggestion for a panel. The design could be worked out in red and yellow brick; or, again, there might be small windows which would call for an interesting arch,—one something out of the usual line. We have such an arch on either side of the large opening. We also find panels underneath the sills of these small windows which could be adapted to many locations. If there were a larger opening or a series of them in which it was desired to use an arch which was somewhat uncommon, we find a suggestion therefore at the lower left corner of our illustration. Under the sill of that window is shown a relief of the plain space which in its character is particularly suited to a window of that form. We can see that this window is relatively broad and



A BRICK FACADE.



that if care be not exercised it will be in bad proportion. Now, the designer of this window made the movement of the panels vertical; he preserved the line on either side of the opening coming down to the water table; hence, he was enabled to counteract the effect of the breadth of the window. Going a little further in the analysis of this design, we notice that the decorative forms used in the panels of the center window are horizontal in their nature. Thus, one form of decoration measurably helps the other. In order to give the piers at the side of the long center opening solidity, the decoration on them is also horizontal. The reason in this is more carefully developed than one might think from a hurried examination of the design. It is to be noticed that there is a continuous frame of decoration around the center opening which is not interrupted by any through horizontal lines. Thus if the piers had been continuous there would have been a tendency to elongation in this part of the facade which would have been violently in contrast with the physical necessities which called for low, broad, windows and a generally low structure in the other parts of the building. Over the second story window at the left of the pavilion is shown a round window and a panel. The demands of the interior of the structure no doubt required that this space be relatively plain. In this we have a suggestion to be used in handling a similar surface.

While it is not expected, by this kind of reasoning and explanation, to make architects and designers of clayworkers, we all must recognize that the very large proportion of building work done in this country is without the aid of professional service. The man who builds the brick house or brick store, more often than otherwise trusts to the skill of his contractor to help him in the decoration of his building. If he is able to do this skillfully, the builder accomplishes something not alone for the one who builds, but adds to his own reputation and hence to his money-making capacity.

If a bricklayer by the aid of a few light-colored brick and possibly some black ones in combination with the red, is able to work out something that is pleasing and satisfactory, the next time there is a store to be built in that town, there is no doubt that he will be selected to do the work.

We feel that we are doing a missionary

work when we show how attractive structures can be built without the use of the obnoxious galvanized iron window caps, cornices, chimney tops and other temporary abominations of that character. The worst thing that ever happened to the American public was the introduction of galvanized iron for decorative purposes. The thought which suggested its use was worthy, and if it had been properly met, the results would have been quite different. People wished to add interest to their buildings; they had a desire to make them more artistic. The galvanized iron-worker came along with his tin ships and pressed ornament, and showed how something fussy and aggressive could be made very cheaply, and the result we have in the temporary abominations which exist on every side. With the proper material at hand, the bricklayer might measurably have circumvented the introduction of galvanized iron. Brick, we all know, is permanent in whatever form it is used. Galvanized iron, excepting in a limited way, is necessarily temporary. Wherever it is used, it represents a certain amount of wasted capital.

#### CLAY WORKING FROM A BRICK-MAKERS' STANDPOINT.

\*BY D. V. PURINGTON.

The first historical record we have of preparing clay for use in making brick, covers the process of tempering or mixing it with water by the steady monotonous tramp of the Hebrew slave whose bare feet utilized the sense of touch as a test, the efficiency of which has never been excelled by any modern invention. Next in the order of development came the feet of oxen. The weight of the animal and the hardness and adaptability of the split hoofs for the purpose desired relegated to the past the use of human feet. From this period in the history of preparing clay there is a long gap in the record and it is not until the beginning of the 17th Century that we find any mention made of process or method. The first indication of a change, is in the use of the spade as an implement for preparing clay with which to make brick. From the date of its introduction to the present this humble tool has played an important part in the history of our craft, and in the development of the industry of preparing clay for mak-

ing brick and the muscles of the workmen. No matter what the process of manufacturing, no matter what kind of clay is used, all nations and people recognize the spade as a necessity. No modern brick yard is complete without it, and no successful brickmaker should be ignorant of the proper way to use it. Following close in the wake of the spade, and as a sort of supplement to its utility came the soak pit, where water and time were expected to do what is now done with machinery.

Along about 1850 there came into use as a preparer of clay the wooden wheel worked with a long wooden axle in a circular pit about 2½ feet in depth. These were made at first by simply putting a post in the ground in the center of the pit with a pin or swivel connecting the post with one end of the arm or axle, the other end projecting some three or four feet beyond the outer line of the pit. At first the wheel was made to change its position on the axle by a pole with which it was pushed or pulled as desired. This was soon replaced with a toothed rack working as a gear causing the wheel to go from the center to outside as needed. The whole thing was of the crudest kind and would hardly be recognized by the brickmaker of to-day as the modern steel rimmed tempering wheel in general use. From the introduction of the modern tempering wheel the march of progress has made rapid strides, dry pans, rollers, crushers, disintegrators and pug mills of a thousand different kinds are in use and the variety and multiplicity of these auxiliaries in preparing clay are the best evidence of their necessity. The brain of the inventor and the skill of the machinist have been taxed to their utmost to devise ways and means to remove stones and thoroughly pulverize the clay and mix with water. It may be stated as a general practical proposition that there is no danger of tempering clay too much and that no artificial preparation is quite equal to that done by nature. We who have used for years the soft or stiff mud process of making brick can call to mind the fact that the best brick we ever made were from clay that had been exposed to the action of frost and air. There is no doubt but that clay can be prepared artificially so that equally good results can be obtained as when it is done by nature. The reason it is not done now by all, is because of the expense attending it. In our anxiety to convert clay and its product into money

\*Read before the Illinois Tile, Brick and Drainage Association, January 18, 1893.



we almost universally sacrifice quality to quantity. We build our plants with too little power to run sufficient machinery to properly prepare the clay. An ordinary Chicago No. 1 brick machine plant that ten years ago required a 175-horse power engine as a maximum, now uses nearly double that size. As a result the quality of the product has greatly improved notwithstanding the output has been increased from 30 to 50 per cent. The best advice that can be given to beginners is "thoroughly prepare your clay and no matter what the cost you will be repaid." It will be noted that what has been written above has reference almost entirely to the preparation of clay for the soft or stiff mud process of manufacture. Had Mr. Ittner who was originally billed for this place on your programme been able to write this paper he would no doubt have taken up at length the preparation of clay for the dry process. My experience in that line is simply that of an observer, but I am satisfied from that observation that those who use that process would make a far better article if they would apply the same general rules here laid down in preparing their clay for use. Go to the shop of a manufacturer of dry pressed brick machines and watch the preparation of clay from samples sent for the purpose of testing its adaptability for brickmaking purposes. You will see the clay put into the molds of the consistency of bolted flour. The result an almost perfect brick. Go to the new works of the man who sent the clay to be tested and you will see the material ground to the consistency of coarse sand and you will hear him express surprise that the machine would not make as good brick as the samples sent him from the machine shop.

The reason is evident. The man who sells machines is willing to take pains and desires to make the best possible brick from the clay furnished him regardless of cost of preparation. He is thoroughly familiar with his work and sends to the would be brick manufacturer only such samples as are near enough perfection to suit his purpose. The brick manufacturer is not desirous of making all sample brick. He is after a few of the almighty dollars and by reducing the cost of preparing his clay he

is able to sell a poorer article at a larger profit and does not count the loss of reputation which naturally follows. Or as is more often the case, he accuses the machine man of substituting a different clay for the purpose of deceiving him.

Brick and tile makers of Illinois, you have at your disposal natural material for your purposes unequalled in any other state in the Union. Much of it is difficult to work, hard to pulverize and only valuable when properly prepared. It rests with you and you alone to say whether the development of these natural resources shall be commensurate with the growth of other industries. It



IRA M. HEDGES, BRICKMAKER, HAVERSTRAW, N. Y.

remains for you only to say whether the brick of the future shall possess all the requirements made possible by nature in giving you these wonderful deposits.

#### A SUCCESSFUL BRICKMAKER.

PROBABLY many of our readers have met the original of the accompanying photograph, Mr. Ira M. Hedges, one of the most prominent and progressive of Haverstraw brickmakers. For one that had no previous training in the many enterprises with which he is connected, his has been a phenomenal success.

On his return from three years service in the army with the 95th New

York, he engaged in the lumber business in Haverstraw with marked success. In 1877 with Geo. H. Smith, as a partner, he commenced to manufacture brick when the trade was at a low ebb. The fire in St. John, N. B., gave them a chance to show their fellow craftsmen what "push" could do. As soon as the news of the fire reached them, Mr. Smith started for St. John and secured the contract of all the brick needed there, which was a great many million over what they could supply, and these they purchased from other manufacturers.

Mr. Hedges then formed the Diamond Brick Co., of Haverstraw, which has been a pronounced success. About five years ago he invested largely in the salt industry at Warsaw, N. Y., and this has proven a valuable investment.

Three years ago, he with others formed the Excelsior Brick Co., of Haverstraw, which to-day is the only yard that has a tunnel dryer and they are experimenting burning brick with oil.

Mr. Hedges has filled the place of Department Commander of the G. A. R. of New York State, and at present he is Commander of the Post at Haverstraw.

General Hedges is the largest stockholder, and is President of the National Bank of Haverstraw. Twice he was nominee for State Treasurer, with one nomination for member of Assembly from Rockland county; but like your fellow townsman, President Harrison, he was on the wrong ticket and was defeated.

#### IT TOOK THE PRIZE.

The editor of the *Rocky Mountain Colt* won the prize of \$1,000 offered by the syndicate of Western editors for the best appeal poem to newspaper subscribers to pay up their subscription. This is the poem:—*Fort Worth News*.

Lives of poor men oft remind us,  
Honest men won't stand a chance;  
The more we work there grows behind us  
Bigger patches on our pants.

On our pants, once new and glossy,  
Now are stripes of different hue,  
All because subscribers linger,  
And won't pay us what is due.

Then let all be up and doing,  
Send your mite, however small,  
Or, when the snow of winter strikes us,  
We shall have no pants at all.



## GROTESQUE FINIALS.

## Their Origin.



HERE is probably no authentic record of the motives which induced architects and builders to introduce the use of fantastic and grotesque forms on the terminations of ridge crestings, or upon apex of gables.

Travellers and students have long been familiar with the fact that such forms are of frequent use in all of the old cities and towns of the Netherlands.

It is very probable that the use originated with the sturdy and home loving Dutch folks who have given us the peculiar but beautiful Flemish style of architecture.

There is no trace of the Grotesque Finial in the classic orders of architecture, either Grecian or Roman. True, the severely correct architects of the Classic School did use finials, not only upon the apex, but also at the basis of their pediments, and also at the angles and centres of their horizontal cornices. But in every case they were of the convoluted scroll pattern, enriched, if at all, with the conventional lotus or honey-suckle or the Acanthus. If the building was of a monumental character, they often used statues, but these, when used, were always of the strictest anatomical exactness, which always marks the excellence of true structure. Hence we must look to a



later period in order to find a motive for the introduction of Grotesques.

Those who are familiar with the Ancient and interesting cities of Holland, encompassed with low lands and canals, cannot have failed to observe

that the Stork with its stilted legs, its long, sharp beak, and bulky body, is serenely at home upon the roofs, gables and chimneys of the dwellings of the peaceful and industrious Dutch folks. These useful birds make their homes, build their nests and rear their young upon the house-tops of Holland, as secure from molestation and danger as does the fish-hawk or osprey make its



nest in the homestead trees on farms by the sea shores of the United States. They are fully protected by some peculiar feeling in the hearts of the population, that their presence is a token of good luck and that to destroy them would entail some reverse.

The Dutch or Flemish style of architecture delights in numerous and fantastic gables and large commodious chimneys. On these the peaceful and domesticated stork often perches himself, finding there a vantage ground from whence he may espy any dainty morsel of garbage scattered on the street or by the banks of the canals, which would furnish food for himself or his family.

The effect produced by these birds perched upon the apex of a gable, was at once agreeable to the eye and useful. It overcame the abrupt meeting of two lines and formed a finial and suggested a pleasing finish to the gable by continuing its lines up to a graceful point of termination. It also indicates a reasonable abutment for the cresting which covered the ridges.

The peculiar disposition on the patriotic Hollander, led them to the recognition of local animals and birds a fact so abundantly exhibited in their gardens, by the patient and fantastic clipping of shrubs and trees into a variety of forms taken from the animal kingdom. This same characteristic of the people led to the development of grotesque forms of birds and animals upon the gables of their dwellings.

Whereby they created combinations of mixed forms, giving to one object the wings of a bird, the head of an animal, the body of a reptile and the tail of a fish.

Another trait firmly implanted in these people is the reverence and love of pedigree. This led to heraldry and coats of arms. Here they found another motive for the use of grotesques in designing finials, which produced the shield held in place by a dog, the dog being an emblem of faithfulness and fidelity. The evolution of the grotesque was doubtless in a great measure assisted by the nature of the material most frequently employed. These finials were at first nearly always carved in wood, and sometimes in stone. These materials made it impossible to exactly reproduce the proportions of outline, form or dimensions, while retaining sufficient strength to resist the storms so frequently on the shores of the Zunder Zee. Hence arose the necessity of making various distortions, such as thick-necks, double-jointed limbs, spiral nails, serrated vertebra, etc. Moreover the men who produce many of these finials, were not artists or sculptors, but were very often only observant and ingenious carpenters, or stone cutters, who wrought out from such ideas as they possessed the rough hewn and crudely designed ornaments, which embodied some ideal with sufficient clearness to be read and recognized by all the people.



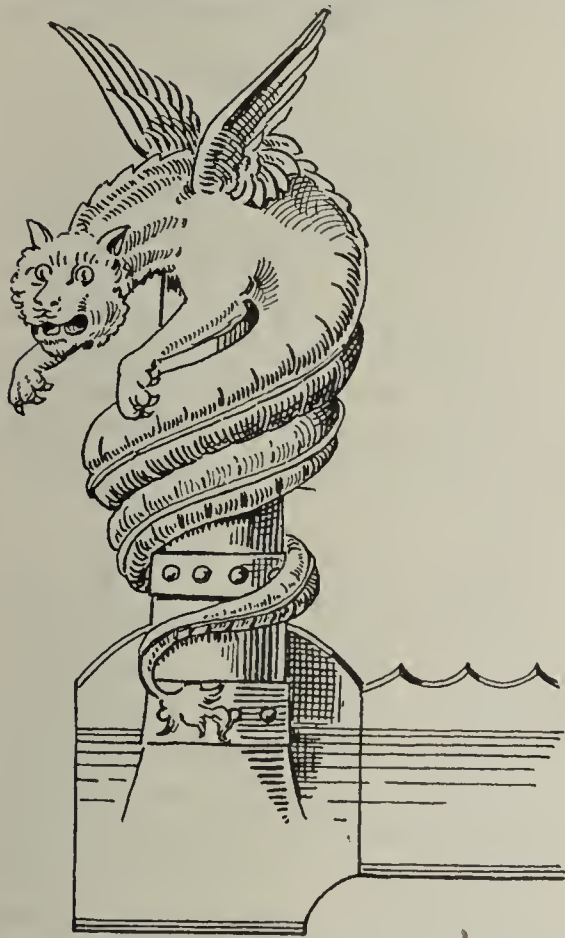
Thus it would appear that the making of these grotesque finials originated in the crude efforts of mechanics to produce a sculptured representative of some



form. The crude carvings of the South Sea Islanders, the sculptures of Assyria, the pottery of the Aztec, the picture



writing of the North American Indian, and the art work of China and Japan all have the same noticeable disproportion of parts, which produce the best gro-



tesques, but which also indicates a low condition of artistic development.

These crude works, however, are the alphabet of the art of sculpture, and are

but stepping stones to the higher art which seeks to represent the ideal rather than the form itself, and by this very effort attains to a more correct form, because it studies the nature of the living creature rather than the outward or merely material body, and thereby embodies its various functions correctly.

JAMES TAYLOR.

[TO BE CONTINUED.]

Written for the Clay-Worker.

#### A WONDERFUL CONVENTION.

**S**WIFTLY and smoothly glides along the Boston sleeper, while we lie stretched out across the seats and look out of the car windows at the ever changing panorama of telegraph poles and village brick-yards.

The "beautiful snow" is gently falling upon the face of nature and the old gentlemen goat, who is standing on the lea side of the railroad water-tank.

Pleasant thoughts follow one another across my mental vision about as fast as yonder brindle pup is chasing the collier cat through the back alley.

More and more rapidly glides on the train we are riding in, as well as the train of our thoughts.

The rumble of the wheels grow less and less distinct; the fellows arm which lately lay upon the seat back of the lady in front of us, seems to be slowly sliding off the same and more down and around the back of the lady herself. The telegraph poles begin to lock arms and dance a Virginia Reel, and then we are——riding upon an electrical flying machine, at the rate of five thousand miles per minute, and bound for the National Brick Manufacturers' Association, to be held in one of the world's above.

On and on we go, flashing past an occasional comet and no ends of stars, and find our car at rest in the city of Olympus, on the plant of Jupiter.

Once outside of our flying vehicle, we are pleased to learn that, instead of being left to the cold mercy of one of earth's hack drivers, to find our way to official hotel headquarters; we are met by one of the beautiful daughters of said officials, and behind a pair of winged horses, are carried to her home and ours to be, while at the Convention.

Upon the morrow—and which has followed a night's rest, free from the annoyance of roaming bed-fellows and angular night mai(d)(r)s,—our beautiful

guide of the evening before, once more conducts us to the Convention hall.

The building in which the Convention is being held, we notice is one constructed entirely of brick. Not the ordinary red, or even the buff colored brick of earth, but brick of onyx. The inside pillars which supported the roof, were made of silver brick, and the roof itself of layers of brick who had "gone before." The only common red brick found in the entire structure or its fittings, were those used in constructing the seats which were to be occupied by the members. This fact was a great puzzler to us until upon inquiry, we learned that those brick were made from the spirits of earthly brickmakers, and the object was to give living members from that section of the universe, the opportunity to do what they had never succeeded in performing when in their own world (i e) to sit down upon their fellow members.

Before we had been able to comprehend the fact that we were sitting upon those who in the past had often sat upon us, the announcement was made by the presiding officer that the first business before the Convention was to seek Divine Pardon for past sins committed, and deliverance from those we were *going to commit*.

Ever since entering the room we had been studying the presiding officer's countenance, and trying to fix in our mind the connecting circumstance with which we had known him upon earth. This somehow we had been unable to do until the chaplain had put the amen to his prayer. When, however, the president again arose and said: "Gentlemen and fellow members, we are happy to state that the *Big Four* columns of this great Convention are held in position by its *Keystone*," we had him pat quicker than a fly will kick a mule off its hind foot.

The Convention once having been formally opened, what most astonished us was the rapid progress of its business. First came the election of officers, and their manner of nomination left no chance for a "Cut and dried" schemes, as those sometimes resorted to by the N. B. M. A. of the U. S. The stenographer took a book which was ruled in spaces wide enough for recording the names of nominees, and each member arose in his seat when his name was called, and stating who was his choice for a given office; his vote was thus recorded under that same name, if already



upon the book, and if not, it was then entered. Of course this gave no chance after one individual had been named for the presidency, for the making of a motion that all nominations be closed, and thus do away with all the spice to be found in the election of a president, and prevent a certain *Chicago Alspice* from becoming president.

The installation of officers was at once followed by the appointing of committees to serve for the year to come, and the reports of those appointed the year before.

There were committees to govern the output of product and the input at Powwows. Committees to draw up resolutions of respect for the dead and to compel respect for the living. Committees on methods for the better securing of profits, and committees for its more equal distribution after being secured. In fact, the committees appointed were for the advancement of the general interest of the Association and not for the particular interest of the few.

Following the naming of future committees, came the report of those appointed the year before.

Committees on outputs reported general production throughout the entire universe as restricted within bounds of needs, and the winter hold over stock as moderate nearly everywhere, except New York and Barrington, R. I.

Special outputs were named and for the planet of Jupiter as being ninety-seven trillions; for the earth, twenty-six trillions and for the city of Chicago, as one hundred and ten trillions, and in the latter case the returns were not all in.

Committees on inputs reported a surplus of raw material in the line of solids as left over from the last Powwow, but that all liquids had been absorbed, and the all absorbing topics of that committee was where to find the where-with for present emergencies.

The committee on resolutions of respect for members who had "Gone before," reported that all dead brickmakers were good brickmakers, or soon would be, especially as regard the burning part of their profession.

Committees on the compelling of respect between members, claimed that their office was a failure, and that notwithstanding the known desire of the Convention that every member conduct himself as becomes a gentleman, that certain wild and crazy individuals

would occasionally rise and state that men holding certain opinions were "*Darn fool brickmakers.*"

The committee on methods for securing better profits advised the mixing of more brains and less sand with the clay. Committee on the distribution of profits reported no trouble to do the distributing, but the difficulty was to find any members that would acknowledge that they had anything left to be divided. Final reports having been received, adjournment was made to the following day, after the announcement had been made of the Powwow to be held that night in Olympic Game Hall, at the corner of 5th and Lickem streets.

In connection with and adjacent to the Convention hall was an immense room for the exhibition of sample brick, and the collection therein was something wonderful.

Opening out from this room by separate doors were other rooms, allotted to individual trades or departments connected with the business, and these latter rooms were again sub-divided into apartments by heavy wire screening. This it had been found necessary to do on account of serious antagonism which frequently developed. For instance, in the dryer department and where full sized driers, with a daily capacity of 100 M brick were kept in operation to show their workings, it had happened in a former Convention that the owner of a hot blast furnace dryer had, upon getting the worst of an argument over the merits of his particular process with a steam dryer advocate; the former had seized the latter and shoved him into his furnace just to convince him how quick he could make a dry brick of him.

In the same manner the patentee of one Disintegrator had dumped his rival into his machine, and inspectors of that disintegrator discovered what had happened, by the throwing out of bits of pants and bones, instead of roots and stones. These simple occurrences had brought about the sub-division of departments with heavy wire screens.

A glance through the different rooms soon convinced us that in the matter of all brickyard appliances the earth was far behind in merit. Both the dryer and kilns there considered as having any merit, used no fuel of any kind whatever. The dryer secured heat by lenses concentrating the rays of the sun, and the kilns vitrified paving brick by paralyzing them with electricity.

The most wonderful improvements, however, were found in the machinery department. The mere formation of a brick was considered of little consequence. Here were machines that automatically sent the brick, after being shaped, through both a dryer and kiln contained in its own construction, and delivered the vitrified brick direct upon the cars and all assorted to color.

In the sample room no such collection of brick were ever dreamed of as was here found. The progressive spirit in brickmaking had brought out those made from vitrified wood, re-pressed glass, and a very hard brick made from the "Milk of human kindness." Here were dry press brick made from pure silica; stiff mud brick made from the bark of trees, and hand made brick in which molten lava had been shaped in wooden moulds.

Time passing, however, we were obliged to leave all these great inventions and remarkable specimens of the art, and hurry away to our temporary home, supper and the Powwow.

That gathering we can never describe, and its doings never relate. No mascots, however, were there caught in the barbed wire fence, or from there any ladies sent home to the "Bosom of Abraham." J. A. S.

[CONTINUED LATER ON.]

## ILLUSIONS OF BRICK AND TILE MANUFACTURE.

\*BY THOS. E. BONFIELD.

I was assigned the subject of the manufacture of brick and tile, but I anticipated that this would be touched upon by men of more judgment and experience than myself. I have therefore prepared a paper on the "Illusions of Tile and Brick Manufacture." I am thoroughly competent to speak on this subject, both from experience and observation.

Like the majority of beginners I figured that the running of a tile yard was simplicity itself, and that the profits were something abnormal. I imagined that the work of a superintendent was light, the overseeing easy, and no particular judgment was required. My idea was that the superintendent should sign checks, receipt for the large sums of money that would flow in, and the hired men would do the rest.

I further imagined that most of my

\*Read before the Illinois Tile, Brick and Drainage Association, January 18, 1893.



time would be spent with my feet cocked upon my desk reading the great metropolitan dailies, the illustrated and comic papers. And all the time the factory would run as smoothly and automatically as a self governing engine. Bear in mind this is when I started in.

I had another pleasing illusion which I dwelt on long and fondly. Out of the enormous profit of the business I would buy my girl, not a celluloid manicure set, which is so popular a gift between lovers in our section of the country, but a real diamond, and it would be a diamond as big as a hazel nut. What if it did take two or three kilns of brick? Clay costs nothing, and all you have to do is to mold it and burn it, which takes a little labor and fuel. And for me, I would make myself a Christmas present of a furlined coat, which I would loan my father when he went visiting. It took me a long time to decide what fur I would line the coat with, but finally decided that seal would be the nobbiest, and would do most to excite the envy of both sexes.

If you will bear in mind that these visionary ideas were entertained when I started in, you will be prepared for the announcement, that I haven't yet got the coat, nor did my girl get the diamond. No, nor the manicure set. She was glad to compromise on a box of marsh mellows.

Another subject I devoted a great deal of hard thought to—where to spend my winters. After a season of fabulous profits it wouldn't do to spend my winters at home—it would look sordid. Besides I would need relaxation. I therefore planned a European trip, with at least a month amidst the gayeties of Paris. When the season was half over, I came to the conclusion that the balmy climate and orange groves of southern California would size up better with the seasons profits. As the season further advanced, and I found that brick and tile manufacture wasn't all profit, I moderated my plans still further; but I at least promised myself a visit to New Orleans during the Mardi Gras festivities.

I trust gentlemen you will neither be pained nor surprised when I make the further announcement that the outcome of all these dreamland journeys was that I staid at home with my parents.

A man can take a pencil and paper, and he can figure himself out in fifteen years in the sheep business, richer than the lamented Jay Gould. And so it is with the manufacturer of brick and tile. It looks all profit. And it gives a shock both to a man's feelings and calculations to find that somehow it don't come out quite the same as he figured it.

The average country factory runs its machine about four days in the week. A stranger in the business who happens to be present when the machine is running, notes that so many men are hauling clay, such a number feeding and



THOS. E. BONFIELD, BRICK AND TILE MANUFACTURER, ST. ANNE, ILL.

tending the machine and off-bearing. In addition, there is a fireman, foreman and an outside crew emptying and filling kilns, and a burner. He figures up the wages of the men, and the amount of coal used in the boilers and kilns, and if he is particularly astute he adds something for taxes and insurance. He then figures up the product of the machine at full price, never calculating waste, nor the days when the machine don't run, but the labor account does. This kind of figuring makes the business highly profitable. Theoretically it pays better on the investment than a church sociable.

There are numerous things that an outsider can't foresee or figure on. Acci-

dents and interruptions in running, cracked and broken ware, and even in the best managed institutions, there is an occasional under or over burn. The pumping out of your pit in the spring, the cost of clinkering, cleaning out of boilers, cleaning out brick machine, etc., is considerable of an item during the course of a year, all of which a stranger takes no account of, but which enter into the cost of manufacturing brick and tile as much as running clay through the machine.

But the big item is repairs. That's what eats the hole in the profits. The

best day of the most complete and expensive factory ever built, is its first day. Liquor improves with age; not so, with buildings, machinery and kilns. It is wear, tear and deterioration from the time the machinery is started until the last kiln is burned. At first the repairs are trifling, but in a few years they amount to considerable, especially to kilns. Every manufacturer is surprised every spring to see the amount of repairing and overhauling that it is necessary to do in order to start his plant. Fire arches and bag walls have to be repaired, kiln bottoms cleaned and repaired, crowns whitewashed, dumps fixed, runs mended, leaky roofs patched, carts repaired, cart roads paved with vitrified broken tile, and cart horses dosed with salt, and the cockle burs removed from their tails. I get mad every spring when I have to order a new supply of oil and buy a new outfit of spades. At the time I last bought I thought they would last forever. Changes, alterations and additions, are items that cut a big slice out of the

profits of a factory. Very few factories are started with machinery, buildings and kilns evenly balanced. Something is always lacking. Either they haven't got enough kiln capacity, or are lacking in sheds or drying room, or the machine is defective, or the engine isn't big enough to pull the machine, and most commonly the boiler hasn't got enough steaming capacity to supply the engine. This necessitates either more kilns, new sheds, maybe a new machine, often a new engine, and invariably a larger and additional boiler. It can safely be said that three fourths of the tile and brick manufacturers have had to replace their engines and boilers with larger ones. This is especially the case



with the latter when steam drying is added to a factory. Then machines, crushers, etc., have to be repaired in whole or in part. The country tile and brick men are notoriously poor bookkeepers. Either they don't keep account of these items or they put them down to improvements, when the majority of the above items should go either to repairs or profit and loss. The time finally comes when the iron smoke stack rots and falls down. It would set a bad example to the community if the manufacturer didn't use his own product, so he is compelled to build a brick stack, and it nearly breaks his heart.

One of the curses of tile and brick manufacturer is second machinery. A beginner is apt to figure that he can start with second hand machinery, when the fact is, that the best is none too good. They struggle along under the load of second hand engines, second hand boilers, second hand tile machines second hand crushers, and third hand bookkeeping. I have seen yards that looked like amateur junk shops, and have known tile men that didn't know Cr. from Dr.

Above all things a factory should be convenient and compact. But a large number of beginners start wrong in the arrangement of machinery and location of buildings, especially the latter. After a factory is built it is hard to change it, unless the whole establishment is torn down. When more room is needed another addition is tacked on until the buildings spread over his land like a huge spider. He then wishes that somebody had been around at the start to have advised him with a club.

Verily the lot of the beginner is hard, and his pathway is strewn with culled tile, broken brick, second hand machinery, profanity and delusive profits.

The occasional tile roofs seen upon new houses are pleasing and an evidence of good sense and good taste. Though metal and slate roofs are deservedly in general favor, and now more easily obtained, we trust to see the tile roof come into more general use. It is decidedly the most durable and indestructible of any material known. It should also be one of the most economical in first-cost as soon as proper attention is turned to its manufacture, and builders have learned to handle it properly.—*Exchange*.

Written for the Clay-Worker.

## PRACTICAL POINTS ABOUT PAVING BRICK.

Tenth Paper.

BY D. W. STOOKEY.

THE DARK SIDE.



THE business of manufacturing paving brick is one of the latest and most popular enterprises that has been presented for the investment of capital. No one supposes for an instant that the parties who have embarked, or who are about to embark in this business, do it for amusement, nor for their health, but in all cases the hope of gain is the sole motive that leads them on. At the risk of being called an alarmist or a croaker, I wish to say that there may be a dark side even to the bright prospects ahead of the business of making paving brick. Although some of the clouds that I imagine have already arisen "out of the sea" may be no larger than a man's hand, they are clouds nevertheless, and it may come to pass that to some the heaven may become "black with clouds and wind."

These clouds that to the beginner and in the bright flash of the present boom, may seem insignificant, will undoubtedly grow, but no one can predict at present the dimensions they will assume.

To some, I doubt not, they will be overwhelming, while with others it may prove to be the opposite. In other words, the popular and apparently prosperous business of manufacturing paving brick is not without its objectionable features, and has its dark sides.

Many men who are actively engaged in business enterprises of various kinds, often complain of the peculiarities in their own occupation that are especially trying and objectionable, and wish for one that is remunerative and at the same time free from care or unpleasantnesses. This is very natural, and yet, like the fountain of youth, this very desirable occupation will never be found. Should some one be so fortunate as to discover it, others, seeing his happy condition, would envy him, become still more dissatisfied with their own circumstances and, as a final result, would embark in the delightful pursuit in such numbers that competition would very quickly

become an objectionable point and the charm would be gone.

There are several things that have within them the possibilities of developing into difficulties or objectionable points in the manufacture of paving brick.

ONE THING IS, THAT THE BRICK MUST ALL BE GOOD,

Or they will not be admitted into the pavement. In the manufacture and sale of building brick, those that are inferior may be sold at a slightly reduced price, and will answer a purpose and fill a place satisfactorily somewhere in the work, but in laying brick pavements there is no place where the use of inferior or improperly burned brick will be tolerated. There are inevitably, in every kiln, a greater or less amount that will not pass inspection and that cannot be sold to the paving contractor. It has cost just as much to make these as it did the same number of the very best, and if they are lost their cost must be borne by those that are good and that are accepted. While some of the inferior ones may be sold for building purposes, it is not to be expected that any great quantity can be so disposed of and the loss must be made up by the good ones, that is, must be deducted from the profits realized by the sale of those that are good and acceptable.

The facts that paving brick must be burned very hard, must keep their shape and yet must be in a degree vitrified, brings together a combination of requirements that many clays will not be able to meet. The clays used in many brick and tile factories show, under favorable conditions, indications that the proper ingredients are there, but these hope inspiring pieces are only a very small per cent. of what was in the kiln, and an attempt to produce a whole kiln of this kind would only result in a disastrous failure.

BRICK MUST PASS INSPECTION.

The private ideas and opinions of city engineers and inspectors, who oversee the work of laying pavements, will have much weight in deciding the degree of favor with which any particular make of brick will be received. If they should become prejudiced against those made by any particular factory or those made of some special class of clays, they could, and probably would, do much to injure the trade of the makers of those brick. The ill will or disapproval of city engineers would practically ruin



the business of any parties engaged in the manufacture of paving brick, because the sales must be made subject to the approval of the engineer, whose business it is to guard the interests of the particular city which he serves.

In the matter of pavements as in anything else, fashions change from time to time, and public opinion largely follows the fashion, or perhaps it would be better in this connection to say that fashion follows public opinion. The most popular kind of paving brick at present is the so-called vitrified brick, made of some grade of shale. These are good paving material and it is not the intention to say anything to their discredit, but it must be granted by their friends and advocates that they are not the only brick that make good pavements. Those who have studied the history of brick pavements the most, know too well that the first pavements laid, and those that gave brick their present popularity as a material for street pavements, were not made of shale, and in fact many of them were not very well vitrified, yet they have stood the tests of nearly a quarter of a century, and are in excellent condition to-day. With this fact patent to all the present fashion runs after the shale brick, and in many instances engineers insert in their specifications the requirement that the brick used in paving the streets of their cities shall be of this class. The motive that prompts this is laudable and the engineers doubtless insert it in all sincerity, but is it always wise and for the best that they should be so? Their desire is to get the best pavement that is to be had and fashion says that brick made of shale make the best.

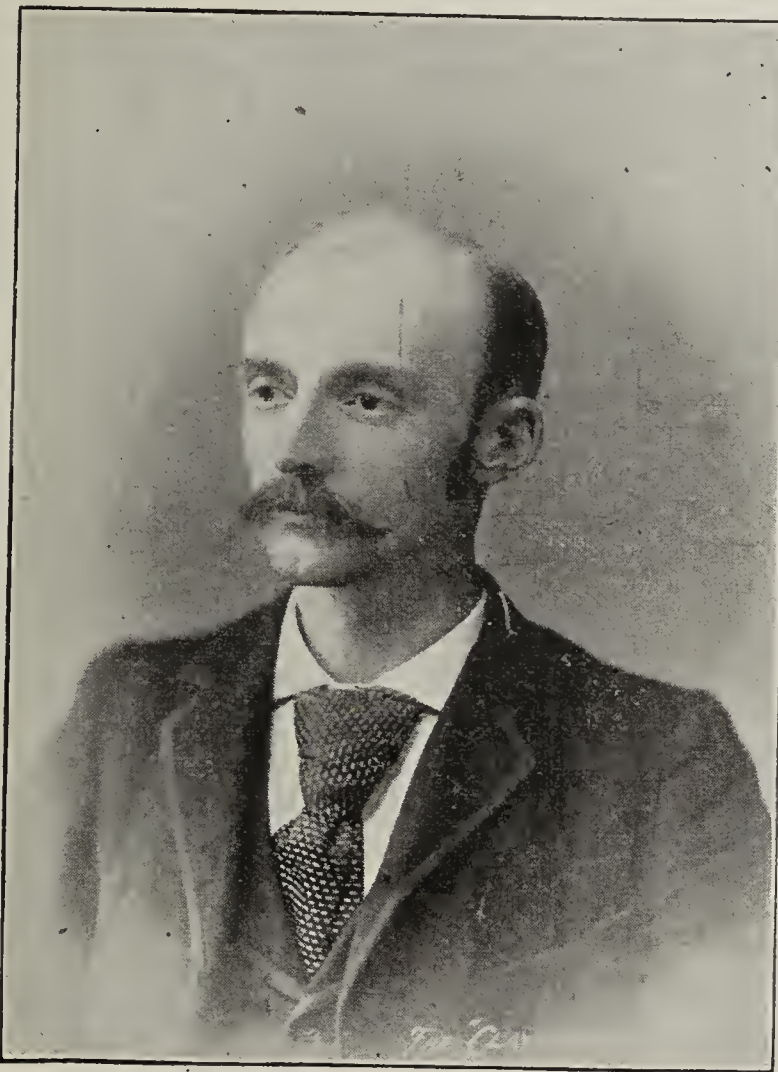
An old saying declares that, "Enough is as good as a feast." In the face of prejudice and inexperience the early brick pavements have wrung from the minds of the people the confession that they were good enough.

Upon this basis the present boom in brick pavements has been built. Is it not then not only an injustice, an ingratitude, but an exhibition of arrogance for the shale brick to claim that it alone is adapted to the work of street paving? If it should happen, as it often does, that there were no factories working shale near the city to be paved, but

good paving brick made of other clays could be obtained near and at less expense than those made of shale, it would not be right to specify that only brick made of shale should be used. The engineer who did this and required his patrons to bear the additional expense would not be a faithful servant who guarded the people's interests. All of this goes to show that the market for paving brick is so largely in the hands of disinterested parties as to make it an objectionable feature of the business.

#### PRESENT CAPACITY OF FACTORIES AND OVERPRODUCTION.

The use of brick for street pavements



J. WHEATON STONE, MANAGER BRICK MACHINERY DEPARTMENT THE MCLAGON FOUNDRY CO., NEW HAVEN, CONN.

has only come into general use within the last decade. The universal prosperity of the country during that time has made it possible to pave the streets of many towns that heretofore have been neglected. Since the desirability of brick for this purpose has been established and they have been placed upon the market at prices that made it possible to improve the much needed but long neglected streets, an impetus has been given to the business that is almost without a parallel in the annals of the industries.

During the present decade there have been two classes of streets to pave, those

that had been neglected during the growth of the cities for many years past, because of the want of a suitable material for the work at prices within the means of the cities needing pavements, and those that result from the growth of the towns during the decade.

There has been an attempt made to bring the work of paving up to the times, and to complete the work according to the needs of each city. This work is being rapidly carried forward, and whenever it is accomplished there will be a decline in the amount of paving done each year, and this amount will naturally become adjusted to the growth of the country. Evidently this will not, for many years, equal the present amount done annually, which includes not only the work resulting from the present prosperous times, but also the extra work brought from the past, as explained above.

#### DEPRECIATION IN VALUE OF THE PLANT.

In order that paving brick may be manufactured in a way to secure the best results, an expensive plant must be constructed. The working of clay in such large quantities tends to the rapid destruction of the machinery, and the intensity of the heat necessary to bring the brick to the required condition with the repeated heating and cooling of the kilns, and the attendant expansions and contractions have a destroying effect upon the kilns that is not inconsiderable. Experience in clayworking has taught that quite a large per cent. on the investment must be realized to compensate for the depreciation in value.

An equal amount of money invested in good farms would bring in a fair interest, while the value of the property instead of decreasing would increase in value, and at almost any future time the original amount invested could be realized from its sale. In general this is not true of clay manufacturing plants. There may be times during their most prosperous seasons that the property could be sold for the first cost and possibly at an advance, but these opportunities are the exception and not the rule.

Any one who has traveled much among clayworking plants has often noticed the repeated changes that have



been made in the kilns of different factories. We know of a paving brick plant that, less than ten years ago, was operating eight or ten round down draft kilns, but to-day nearly if not quite all of those kilns have been torn down or abandoned, new ones having been built in the places of several of them. In this connection it may be argued by some that new styles of kilns are constantly being introduced that give better results and that are more profitable to operate than those of the older patterns. This may be true, but it in no manner alters the fact that kilns must often be rebuilt at a considerable expense.

Another consideration that many manufacturers of clay goods have found to be of vital consequence is, the supply of clay. It is no uncommon experience for the clay to become exhausted and the location abandoned entirely, or the outfit removed, which practically amounts to the erection of a new plant. Sometimes adjacent clay lands can be purchased, but in such cases it is only natural for the owner to take advantage of his power and exact prices that are considered extortionate, while in many cases it has been impossible to secure additional clay.

#### OUTSIDE CAPITAL.

A knowledge of the present status of the business will convince any one that it is employing much capital, and a superficial observation will lead one to believe that it is in a prosperous and remunerative condition. In reality much of the money that is invested to-day in the manufacture of paving brick is outside capital, that has been drawn from elsewhere.

It is not money that has been made from the manufacture and sale of paving brick in the markets of the world, but has been attracted by the demand for the brick and represents stock of capitalists who have embarked only recently in the business and have not yet, in many cases, had time to receive dividends from the corporation for the industry is too new yet to have fully established by actual experience its absolute desirability as an investment at present prices and cost of manufacture. It may transpire within a few years, when the work of paving has about caught up with the needs and growth of cities and the repairs and reconstruction of the plants have become pressing necessities, that the bright hopes of many stockholders will be turned into bitter disappointments.

#### THE VILLAGE BRICKYARD.

##### BRICKLYN COLLEGE.

Did you ever go to a "District School" and when "big noon" came, find that the nice turn-over mince pie, which your loving mother had stored in your basket for that interesting occasion, had mysteriously disappeared, without leaving a trail; unless the smirk on "Hans Schmidt's" otherwise obtuse face might indicate that his stomach was comfortably padded, and that it would not be prudent for a small boy like you to ask any questions.

Well, what did you do? Why "tell teacher" of course.

That is just the way the Village Brickmaker felt when in a recent number of the CLAY-WORKER he found those German Brickmakers had gone and built a college on the foundation stone selected for "Bricklyn College," and this shows how the "great minds" of all countries seeking after truth, simultaneously, bind steam to the wheel in America and Europe and chain the lightning on the same day, in the United States and France: truth of certain kinds seems to pervade the whole atmosphere and men see eye to eye from far distant climes.

The plan of college named was to have every Master Brickmaker indorse the qualifications of the student on his parchment and when said student had gone over a certain amount of experimental work and practical work ad infinitum we should have a record about as follows:

##### BRICKLYN COLLEGE SALUTUM.

To all men—John Cliffstick Mudlark—has been in my employ two years as an off-bearer, he was always on hand at "Sun up" and I commend him to the craft as a boy who lays his "brick straight."—*The Village Brickmaker.*

John Cliffstick Mudlark came to me one year ago; he can put a toss over the kiln pole and is in all respects a No. 1 hand."—*A. N. Oltime.*

John Cliffstick Mudlark has worked with me one season as a brick sorter he is a careful man with a well trained eye.—*Edmund Webster.*

The above named man has set and burned on my yards for the current year; we have not had a poor burn from his hand.—*C. P. Merwin.*

John Cliffstick Mudlark has assisted in the care of the machinery on the yard at Chicago and taken a shift at burning with oil during the year; he is

a reliable man and will do what he is told.—*D. V. Furrington.*

The said J. C. M. has been with me as yard foreman one year; he is the first man to arrive in the morning and the last to leave at night; he commands the respect of the men under him and has first-class executive ability.—*Thos. B. McAvoy.*

John Cliffstick Mudlark has had the management of my business for five years last past, and the result is that the yard runs like clock work; he makes the sales, collects the money promptly and by his simple presence at every point of difficulty seems to drop the necessary oil on any friction, so that it has become a pleasure to own a brickyard.—*R. B. Morrison.*

Now Brother Brickmakers, hands off, this is my man; just as soon as he is graduated and I know that every one of you wants him for yourself about twice as bad as I do; the fact is, the woods is not full of such men; while to return to the subject of college bred men, they are actually peddling books and begging their rich relations to let them sit behind the office stove for ten dollars a week and some times the rich relations actually so employ them, through charity but never to, my knowledge because they were getting a full return for the outlay.

Here is a college foundation so broad and deep and well laid that it has enabled men to come up and make the best of citizens, as well as ripe brickmakers, and it is the only foundation that will stand the test of time; because every stone in the foundation is carefully laid on the bed of experience.

#### THE VILLAGE BRICKMAKER.

#### IF I SHOULD DIE.

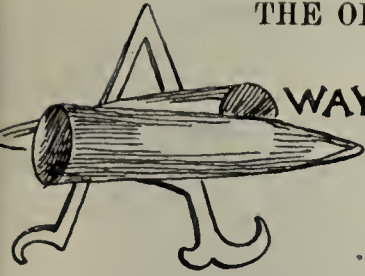
If I should die to-night  
And you should come to my cold corpse and say  
(Weeping and heartsick o'er my lifeless clay);  
If I should die to-night  
And you should come in deepest grief and woe  
And say: "Here's that \$10 that I owe,"  
I might arise in my white cravat  
And say, "What's that?"

If I should die to-night  
And you should come to my cold corpse and kneel,  
Clasping my bier to show the grief you feel;  
I say, if I should die to-night  
And you should come to me and there and then  
Just even hint 'bout payin' me that ten,  
I might arise the while,  
But I'd drop dead again.

—*Chicago Mail*



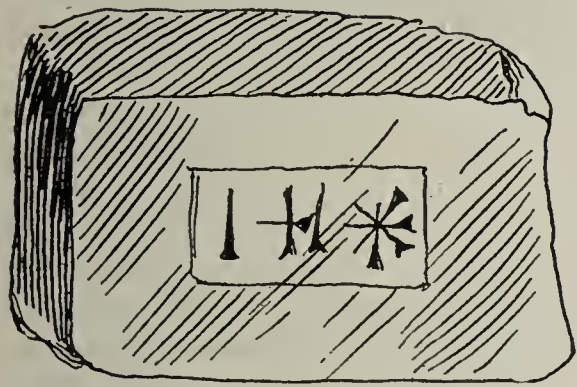
## THE OLD CLAYWORKERS.



WAY back in the dim past, at a time when the Bible itself was yet undreamed of, there lived in "The cradle of the world" a

people known as the Chaldeans. By the "Cradle of the world" is meant that part of the earth located between the rivers Tigris and Euphrates. It is there that the earliest traditions of the human race are centered. What the origin of these people was, is only something to be surmised, for the only evidence we have of their existence is of such a nature as to indicate that they were a partially civilized people, to say the least. They must certainly have sprung from a lower type of people, but every hint of what or who they were is lost in the great void of past ages. The Chaldeans lived in a land where stone was a marvel. As they advanced in culture they probably felt more and more the want of some material for building purposes. As has been well said, "Architecture has its origin not in nature alone, but in religion." This well explains the great use of clay, which was as common as the soil itself, in architectural work. In Gen. X, 13, mention is made of brick as a building material.

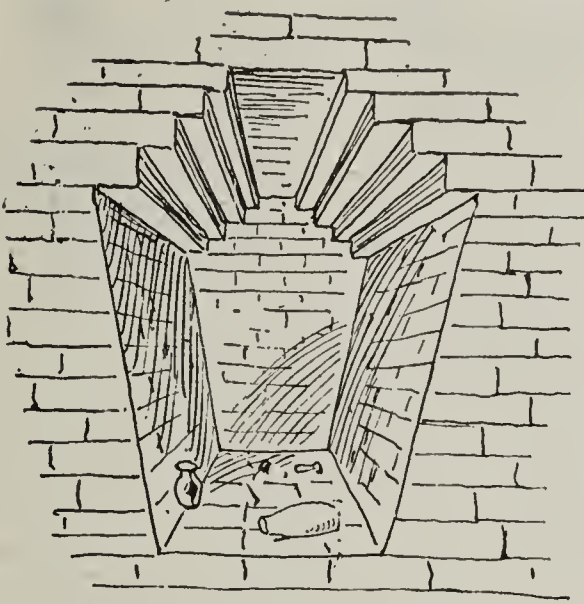
The principal remains of ancient Chaldean work has been found on the sites of three old cities, Urr, Warka, and Niffer. The bricks used are of two kinds, being those that were dried in the sun and of poor quality, and those that are kiln burned. It is remarkable, however, that even the sun-dried bricks,



after ages they have stood, are stubborn things in their opposition to the excavators tools. That this is so is probably due to the very dry climate of that country. At Warka, the mass of the building material is the unburned brick, but it is faced, in many places, with a protecting wall of the kiln-burned kind.

The general shape of these brick is square and thin. In this they differ

very much from the Roman bricks. The earliest specimens found are about 11 inches square and 2½ inches thick. The best quality of burned brick is of a yellow white tint, resembling somewhat the Stourbridge or fire brick. Another grade is very hard and quite brittle, being of a black blue color. The poorest grade is of a pale red shade, and is slack-dried. The earliest specimens of burned brick are of the latter class. The sun-dried bricks are of the most varying sizes, some 16 inches square and 7 inches thick. There are also some special forms, as of a triangular shape to go in corners and wedge



shapes for the building of arches.

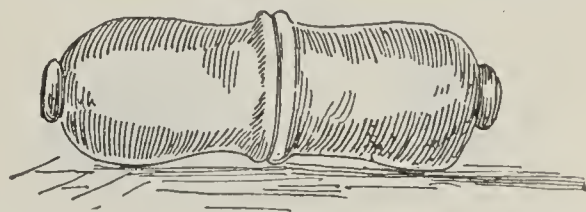
The methods of using the bricks in building were several in number, one as I have before mentioned, facing the mass of sun-baked ones with a protecting wall of those that were baked. Another curious way was, to build a course several feet in thickness of the burned brick, and the next course of the unburned variety. Between each course was interposed a layer of reed matting the entire length of the building work. This matting was allowed to hang or extend outside of the wall, thus making a sort of protecting shelf. Herodotus, the father of history, takes notice of this oddity of structure (1, p. 179,) when he writes of the great and famous walls of Babylon. From this circumstance we may infer that those walls were in part composed of sun-dried brick. The long rows of darkened matting must have given a striking effect to the structure when viewed from a short distance. It was quite similar to the coursing of dark Italian marble so affected in the modern Byzantine style.

The Chaldean style of architecture, if it can be so called, is quite rude indeed, seldom out-growing the plain rectangular form. The walls are usually drawn

in slightly toward the top, giving a slightly Egyptian look to their buildings. As a rule, the walls are buttressed in a massive manner. In construction, there was used two kinds of cement to correspond to the two kinds of bricks. A mixture of clay or mud and chopped straw was used for the sun-dried bricks, while for those that were kiln-burned, bitumen was used. This bitumen amounts to what we commonly call asphaltum, and binds its work to-day so firmly that often the bricks are themselves broken before the cement will give way.

These structures are, as a rule, devoid of ornamentation. An attempt has been made to break the monotonous effect of blank walls, by arranging the supporting buttresses with some regard to order, but beyond this the only ornament consists of a terra cotta cone, which is imbedded in large numbers in mud or plaster. These, when arranged in a variety of patterns, and probably colored, were after all not a bad ornament in that low plain land. The walls themselves are, as a rule, vastly thick, and the chambers long and narrow. One odd thing is noticed, and that is the lack of passages between the chambers, each room opening directly into the next one.

One of the most interesting ways in which clay was used by these old people, was in connection with their burials, and if there is any significance in the remains so far found, the rites of the grave must have been considered of the most important meaning to the race. At Warka, for instance, the dead are to be found to the depth of nearly 60 feet in the earth, tier upon tier, and extending away from the city in all directions for miles. It is believed that this city



was held in particular reverence, after the manner in which the followers of Mohamed regarded the holy cities of Arabia, and that the bodies so abundantly found were brought from far and near for special interment. The burial vaults are, as a rule, made of brick, and are about 7 feet long by 5 feet high. At the bottom they are about 3½ feet wide, but grow wider as it approaches the top, which is arched by the overlapping the

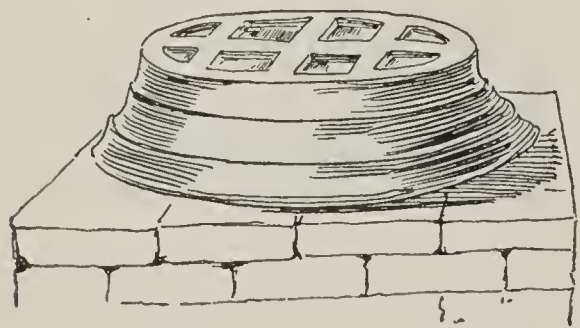


bricks until they meet near enough to be covered by one brick alone. The floor of these tombs are carefully paved. A matting of reeds is first placed on the floor, then the body is rested on the left side with the head pillowed upon a broad brick. In the left hand is held a bowl of copper, and resting upon the rim of this bowl are the fingers of the other hand. Around the body was usually deposited a number of relics or tokens, being vases of clay and glass, or ornaments of copper.

There were, however, two other ways of burial that were, to say the least, unique. One was in what are known as coffins, and the other in jars. The coffins are made of clay and of the peculiar form illustrated. A platform of brick was first made and upon it was placed a reed matting. Upon this mat was placed the body and over this a huge cover or lid was placed. This cover is about 7 x 2½ feet, and 3 feet high. The top is marked in a sort of grid-iron pattern. This cover is securely cemented to the platform. The inside is always plain, but sometimes the outside is ornamented by annular indentations.

The jars are about 2½ feet long by 2 feet in diameter. The body is somewhat bent in inserting it into the jars. Sometimes one jar is a trifle smaller in diameter, so that it can be inserted into the other and then sealed with bitumen, as they always are. An air-hole is always left in one end for the escape of gas formed by decomposition.

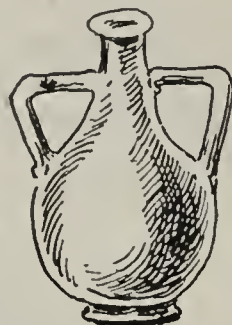
One of the great secrets of the fine condition in which these burial mounds have been preserved to our times, is the thorough and excellent system of their drainage. This was accomplished by means of long tubes of clay, or rather sectional tubes, for some of them con-



tained many pieces. The sections are circular and with concaved sides, and are sealed together with the ever present bitumen. These tubes run downwards, and besides the surface water they collect through an orifice at the very top, under drainage is accomplished through holes in the tubes at different places. The top section as seen in the engraving,

is of a peculiar shape, being bell formed and with annular ridges. When it is considered that this one section at times is no less than 4 feet in diameter, our respect for the work of the ancients is not in the least diminished.

Most interesting specimens of pottery have also been found. Some of it shows skill of no ordinary kind and



quite a sense of beauty is developed. But on the whole utility is the chief object in pottery, and to accomplish this other qualities are sacrificed. There are illustrated two vases, neither of remarkable form, but they tell, to the student, very much. One of them is much ruder in its making than the other, which means that one is made by hand, while the other shows signs of the potters wheel. The presence of a glaze also indicates advance in the potters art. A few samples of the clay pottery exhibit an attempt at picture decoration, but as a rule the drawing is very poor.

Perhaps, however, the most interesting use the Chaldeans made of clay, was as a writing material. Two forms of clay was moulded for this purpose, the brick and the tablet. The former was reserved for the use of royalty, while the tablets were of every day convenience. The writings was cuneiform, which some scholars would seem to think is no more than picture writing somewhat changed by custom. The writing upon bricks, usually occupies but a small square on the surface, and was accomplished with a triangular style.

The clay work of the Chaldeans is truly the first step in the potters art.

Most of us laugh at the homely mule and admire the lordly lion, although one good mule is worth a thousand thieving lions. Most of us have laughed at the mule which attempted to look like a lion and was whipped by his master for the nonsense. There is something wrong in the public sentiment which caused that useful mule to aspire to be a worthless lion. There is too much disposition among the people to admire the worthless ideal, and make light of the useful reality.—*Atchison Globe*.

## HINTS TO A BEGINNER IN THE BRICK BUSINESS.

BY C. H. M.

It's a plain business, very, and barren of tricks, The science and art of the making of bricks, For scores upon scores of the active have found, A nice little fortune dug from the ground.

The very first point that engages the mind, Is the capital needed, the cash you must find To put in the business, my friend do not doubt it, It is capital punishment to be without it.

The amount of the same very largely depends On the size of your plant, and this comprehends

The state of the market, the time it will take To realize cash on the bricks you may make, But of this be assured, your way will be rough, If you're very far short of the needed enough.

The home of your plant claims a critical eye, You should bore the lot well ere you lease it or Being fully assured the clay is therein, [buy, It is proper at once the work to begin.

The plant is erected, the kilns are constructed, A very round sum from your purse is deducted, But be not afraid, it is sure to return, A fraction will come with each brick you may burn.

The shed that is used for the tempering of clay

Is the fount of success, and you'll sure rue the You neglect it—your negligence there, [day; Subsequent acts cannot make or repair.

An ill-tempered brick, like an ill-tempered man,

Is a joy to the world when its race has been This simply refers to making by hand, [ran; And not by machine, you will please understand.

The method of making, aye here comes the rub,

You'll be jostled about like a man in a tub. Of machines, there are surely one hundred or more;

No lack of a choice on variety's score. Here's the Buckeye, the Dwarf, the Chambers, the Wonder,

You are ready to cry—but which in the thund- Is best—let me humbly suggest [der That for prominent reasons the "Chambers" is best.

If you wish to produce quite largely of rough And your market is such that you'll sure have enough

Of the finer to sell—a few made by hand, While of common you can scarcely supply the demand,

The Chambers machine for quantity and quality made, Casts all other makes of the kind in the shade.

Here's a thought whose importance you will not deny,

Let the clay for your wares be tempered—not If boned by inventors, the latter you get, [dry. It will cause you—now mark me—the deepest regret.

A brick that is made from untempered clay Is unfitted for use—it is best thrown away.

The saying is old yet lacks not in power, You cannot make bread when dry is the flour.

Your bricks are now made with mechanical skill,

Your kilns are completed and ready to fill But let me here say that in making a brick, You should learn not to have them too thin or too thick;

Let your eye be your tutor, examine them well, You'll soon have the size that will readily sell.

If perchance you should wish various colors to make,

A buff if you please—for "that takes the cake;" What'er you produce, may they ever be seen Unmarred by a coating of odious green.

To burn your bricks well and thus money make,

You require a man that will sure keep awake; And early you'll find—I am sure that you will Undoubtedly want a large "Meleher kiln;" Discarding these hints, the experience you gleam

Will speedily make a fat pocket-book lean.

Assuming you're now in the market to sell, Your kilns set and burned, and burned very well,

You have stretchers and salmon, nice press brick and hard,

From non-paying buyers now be on your guard;

In selling to jobbers be active and keen, You are lacking the remedy known as a "lien," Of school houses too, the same may be said, And all public work comes under this head.

With these simple hints, very simple I know I leave you to travel the way you should go.



Written for the Clay-Worker.

## THE CLAY INDUSTRIES OF DENVER.

COLORADO possesses at different points, particularly along the Eastern base of the foot hills of the Rocky Mountains, large and valuable deposits of clay, and it is questionable whether any other given area of the same size, in the United States, has clay in equal quantity, quality and variety, as the vicinity of Golden, a small town 16 miles west of Denver, and lying immediately at the base of the aforesaid foot hills. Space will not here admit of a technical description of the geological formations at Golden. Suffice it to say that there are at least ten different stratifications of clay, with separate and distinct characteristics. They occur both above and below coal bearing strata. Associated with the coal a good quality of fire clay is always found and slightly removed from that, a very superior fire clay in larger deposits. Adjoining the coal measures are also, found large deposits of plastic clays. The strata are nearly perpendicular. The same ledges furnish both plastic and fire clays, which are mined, as for coal, by adit, level or shaft, as the circumstances call for. The deposit from which the building bricks are made is so large that it might almost be called a bank, but it lies between well defined walls of different character, one side reaching almost down to the coal ledges and the other abutting on the fire clays and silica. These clay deposits at Golden are the main source of supply for the pressed brick, Roman tile, fire brick, fire clay goods and sewer pipe made at or near

Denver, but some clay comes from the vicinity of Boulder and Morrison.

When we consider that so recently as 1870 Denver had only 1,128 houses (mostly frame) with a population of 4,731; but that it has now a population of over 150,000; that the city is now practically built of brick or stone, including fine residences costing up to \$70,000 each, and many business buildings ranging from 3 to 9 stories in height, costing as high as over \$1,000,000 each; and that the building permits issued at the City Hall (which do not include the suburbs,) from 1st January

May 1st, in consequence of the extensive building operations now going on.

The principal yards are those of A. J. Baker, Boyle Bros., F. N. Davis, the Denver Brick Manufacturing and Building Co., the Denver Paving and Pressed Brick Co., J. A. Keefe, the Denver Pressed Brick Co., etc., etc.

### PRESSED BRICK.

The past season has witnessed a greater demand for fine pressed brick in Denver than ever before, as they are increasingly preferred to ordinary brick for facing purposes.

The following establishments make pressed brick:

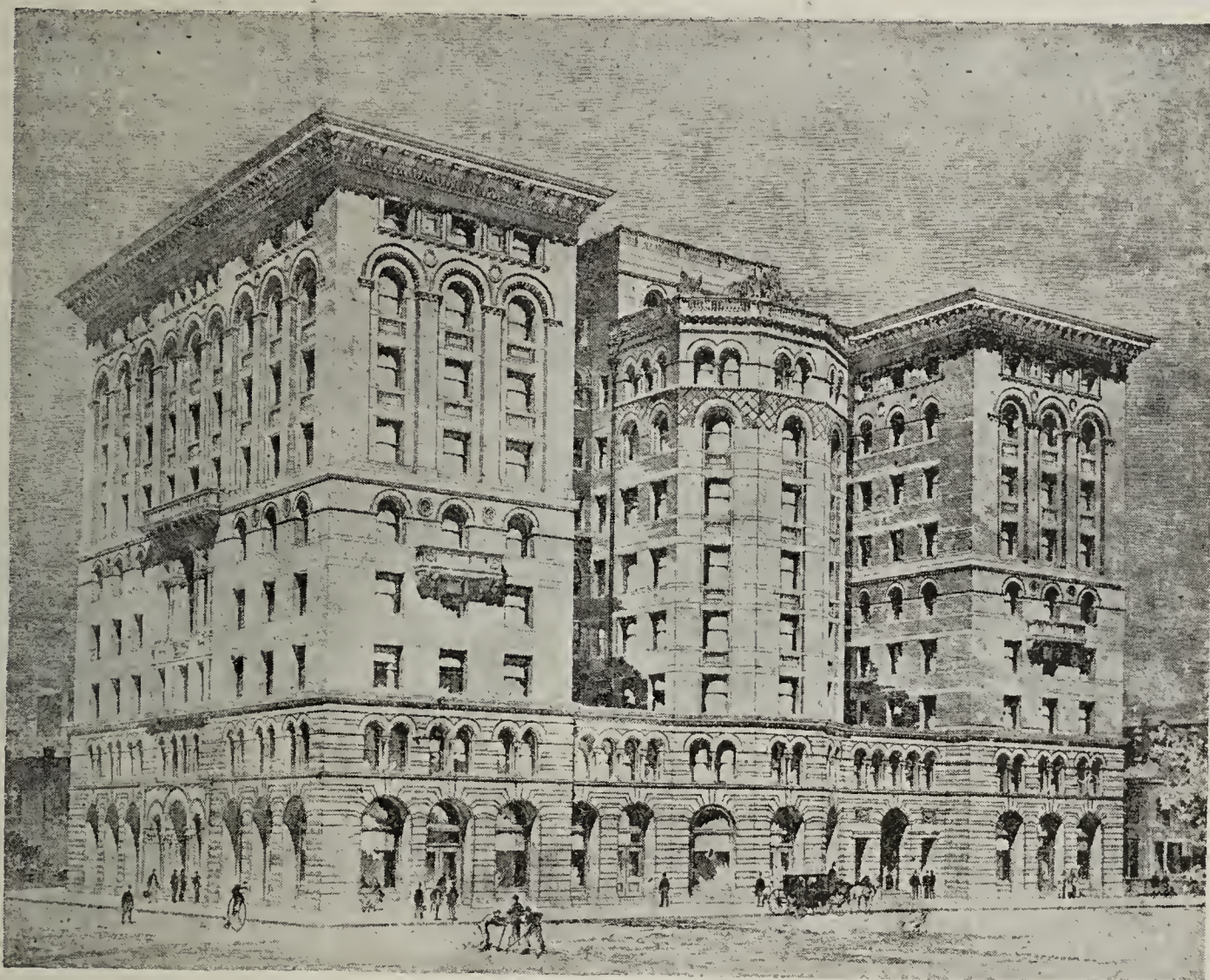
Acme Dry Pressed Brick and Improvement Co., Denver; 28 men, 4 kilns, daily capacity, 20,000; machines used—two Kennedys 4 molds.

Boulder Pressed Brick Co., at Boulder, 30 miles northwest of Denver, chief office in Denver; 20 men, 4 kilns, daily capacity, 15,000; machine used—one Boyd 3 mould.

Denver Pressed Brick Co., Denver; 45 men, 6 kilns, daily capacity, 50,000; machine used—two Boyd 3 mould, one Boyd 4 mould.

Denver Paving and Pressed Brick Co., Denver; 35 men, ordinary kilns, daily capacity, 75,000 ordinary brick and 15,000 pressed brick; machine used—one Whittaker, one Chambers Bros.

Golden Pressed and Fire Brick Co., Golden; chief office, Denver; 100 men, 14 kilns, ranging from 30,000 to 700,000 capacity; machine used—two Andrus, three Boyds and three Triumphs, daily capacity, 150,000; making pressed brick, building tile, fire brick, etc. This company makes the finest pressed brick



EQUITABLE BUILDING, DENVER, COLO.

1880 to 31st October 1892, aggregate over \$60,000,000, some idea may be formed of the vast local demand for building brick.

### COMMON BUILDING BRICK.

There are in the vicinity of Denver at least 50 yards, which started the past season with a stock in hand and have this year over 100 millions of ordinary building brick from local materials, the price at the kiln ranging from \$4 to \$7 per 1,000. It is estimated that at the close of the season on 1st October there were 30 millions in stock, which supply will probably be practically exhausted by the opening of next season about



in all shades of color to meet any architectural demand, pure white, buff, red, terra cotta, chocolate and fancy grades. As a matter of fact, people from the Eastern States of special experience in building materials, readily admit that the Golden clays produce a greater variety of fancy shades of brick than the clays of any other locality in America that they are aware of. Buff, Roman or Pompeian building tiles are also extensively made of which the company furnished 500,000 for the Equitable Building in Denver, as well as 6,000,000 hard brick. This building (costing over \$1,250,000, erected with Eastern capital) was much admired by Eastern visitors during the Knight's Templar Conclave in August.

## FIRE BRICK.

The extent and importance of the smelting industry at Denver, Pueblo and other points adjacent to the rich mining regions which extend from the British line to the city of Mexico, involve the use of vast quantities of fire brick for the production of which the fire clays of Golden are unexcelled. The local output exceeds 3,000,000 per annum, which sell at the yards at from \$20 to \$30 per 1,000 and are shipped throughout Colorado, New Mexico, Old Mexico, Arizona, Wyoming, Idaho, Utah, Montana and even as far as Portland, Oregon, where, on account of their superior quality, they fetch double the price of imported English fire brick, which are brought cheaply by water round Cape Horn as ballast.

The following establishments make fire brick:

Denver Fire Clay Co., Denver; 60 men, 3 kilns, daily capacity, 3,000 fire brick; machine used—one Acme. This company's chief business is making assayers' goods.

Golden Pressed and Fire Brick Co., Golden, mentioned above.

Cambria Brick and Tile Co., Golden; 30 men, 5 kilns, capacity per day, 6,000; machine used—one Little Wonder.

Denver Fire Brick Manufacturing Co., Denver; 60 men, 5 kilns, daily capacity, 15,000; machine used—one Penfield and one Raymond.

## ROOFING TILE.

The Golden Pressed and Fire Brick Co. has made arrangements with the Clay Shingle Co., of Indianapolis, Ind., for the manufacture in Colorado (for the supply of Western States) of fire clay roofing tile under the patents of the lat-

ter Company. With the superior quality of the Golden clay, such clay shingles will largely supersede for expensive residences etc. the wooden shingles now in vogue, and the more expensive slate at present imported from Pennsylvania.

## PAVING BRICK.

Superior paving bricks of local manufacture have been tested on the streets of Denver with very satisfactory results, but the general adoption of asphalt for street pavement does not admit, at present, of any extensive use of paving brick, and consequently there is no local demand, except for foundation and sewer purposes. They sell at the kiln for \$8 per 1,000. Public opinion, however, is growing in favor of paving brick.

## TERRA COTTA.

Ornamental terra cotta has not yet been made in Colorado to any extent, although there is an abundance of clay specially adapted for the purpose, but the limited local demand has not justified the erection of the necessary plant for the purpose.

The Denver Terra Cotta Lumber Co., established in 1891, with premises 7 acres in extent, manufactures a patent fire proofing material, known as "terra cotta lumber," composed of clay and sawdust. Of this, 4,000 tons were supplied to the Equitable Building, 5,000 tons to the Brown Palace Hotel, 3,500 tons to the State Capitol, and it is in growing demand for smaller buildings. The company employs 125 men, viz., 75 at the factory and 50 on buildings, and use a "New Departure" machine, manufactured by the Anderson Foundry and Machine Co., of Anderson, Ind.

## SEWER PIPE.

The excellence of the clays of Colorado attracted the attention of Mr. James Green, of the Laclede Works, St. Louis, Mo., who acquired his practical knowledge in Staffordshire, Eng. A little over two years ago he established a sewer pipe factory at Argo, one of the suburbs of Denver, which factory was acquired by the present owner, the Denver Sewer Pipe and Clay Co., in February last. The plant represents over \$100,000 capital, has an area of eight acres, furnishes employment for 80 men and produces sewer pipe ranging from 3 inches to 24 inches in diameter. This factory during the month of October made 15 miles of pipe. It amply supplies the Colorado market and also ships to Utah, Wyoming and New

Mexico. Two-thirds of the clay is obtained from Golden and the balance near Denver.

## ASSAYERS' SUPPLIES.

The Denver Fire Clay Co. makes a specialty of assayers' goods, such as mufflers, scorifiers, crucibles, etc. Denver is the geographical, railroad and manufacturing centre of the richest gold and silver mining region in the world, which naturally has a large number of assayers, who use considerable quantities of these goods, which have to be made of such a character of clay as to withstand and survive an intense degree of heat, that would destroy any inferior material. These goods were formerly obtained from Battersea, Eng., and Freiberg, Germany, but this company not only now supplies Colorado requirements, but ships to all the Western States, (including carload lots to San Francisco), Old Mexico, South America, and even in carload lots to New York City, where the goods successfully compete, both for quality and price, with European goods.

## POTTERIES.

The excellence of the local clays and the growing importance of the home market has led to the establishment of two potteries, making stone ware, etc. They are the Denver Steam Pottery Co., Denver, employing nine men, with two kilns and a capacity of 16,000 gallons per week; and the Queen City Pottery Co., Denver, employing twelve men, with two kilns and a capacity of 20,000 gallons per week. A third plant, the Colorado Pottery Co., makes flower pots only.

Considering that in Denver and the county of which this city is the railroad and distributing centre, there is now sold every year \$4,500,000 worth of general pottery goods, such as are made in Staffordshire, Eng., and \$200,000 worth of sanitary earthenware, now obtained mostly from Trenton, New Jersey, it can only be a question of a short time when new potteries in Colorado will utilize the local kaolinic and other high class clays for the supply of the entire Western market with Queensware, China, etc.

THOMAS TONGE.

RECIPE FOR CHEAP LIVING:—For breakfast take two cents worth of dried apples without drink; for dinner drink a quart of water to swell the apples; take tea with a friend. If you want to live better, advertise.—*Ex.*



## POROUS TERRA COTTA IN NEW ENGLAND.



THE acceptance and use of porous terra cotta as a desirable building material by the architects and builders of New England is an excellent example of true "down East" conservatism. The first company formed in Boston for the purpose of manufacturing porous terra cotta blocks met with the customary difficulty of incredulousness, even in the face of most satisfactory tests. The architects were slow to recommend the material and the builders were slow to take it up. The blocks, however, after being introduced into one or two representative buildings and seeming to promise good results were taken up by the architects with greater freedom and their progress toward complete recognition as a desirable building material has,

than was at first anticipated and the outlay of money much larger than was expected. As a result of these conditions and owing to the lack of confidence on the part of many of the stockholders, in the future of porous terra cotta, the company was permitted to lapse into financial straits and finally into such a condition that its entire plant was bought by Mr. David McIntosh, of Boston, who, up to this time was, and is yet, perhaps, the largest consumer of its product. The business is now carried on under the name the Boston Fire Proofing Company and the careful handling and executive ability of the present management, together with the lessons taught by the original company combine to make porous terra cotta one of the most successful products of the clay pit in New England. The relationship which porous terra cotta bears to the other forms of clay used in building in Boston and vicinity to-day is best

side and cement on the outside. The new fire department headquarters is being finished throughout, partitions, arches and all, with porous terra cotta. The Government buildings at Augusta, Me., Montpelier, Vt., and Manchester, N. H., were furnished throughout by the Boston Fire Proofing Co., although two of these buildings are claimed by a certain hard terra cotta company of New York City.

The sizes of blocks most commonly known are the 3, 4, and 6 inch partition blocks, and the 6, 8, 9, 10 and 12 inch flat arch blocks, although there are 36 varieties in the catalogues of the company. The blocks can be made to order to fit any specifications.

The plant of the company is located at Revere, Mass., which is about 5 miles out of the city of Boston and is thoroughly equipped with everything which experience and ingenuity can devise. The view in cut No. 1 presents the en-



WORKS OF THE BOSTON FIRE PROOFING COMPANY.

since then, been steady and unceasing.

The first company organized in New England for the purpose of manufacturing porous terra cotta was formed in 1885 under the name of the New England Terra Cotta Co., in the form of a stock company which included a number of Boston business men, headed by Mr. Stanton D. Loring, as stockholders. The production of the block was begun with every prospect of ultimate success, and with everything in the way of facilities which could be obtained in the country. One of the most active of the men who were then engaged in advocating the merits of this form of burnt clay, was Mr. S. A. Walker, who is the only one of the original company now identified with the business in New England. He is connected with the present company in a position of responsibility. The original company found the introduction of the material, into general use, much more difficult

exemplified by the fact that The Boston Fire Proofing Co., manufactured over 200,000 cubic feet of blocks in 1892. It has been with difficulty that stock enough has been manufactured to keep even with the demand. The progress which porous blocks have made is very remarkable when it is considered that only six years ago the most rigorous tests as to fire resisting qualities, crushing strain, etc., were eyed askance and its use was undertaken with fear and trembling.

Among the more prominent buildings in Boston in which porous blocks have been used are the Ames, Exchange, Houghton & Dutton, Museum of Fine Arts, New Public Library, John Hancock and many others. The city has employed the use of these blocks in nearly all the recent buildings erected for its various purposes and located on the islands in the harbor; plaster being applied directly to the blocks on the in-

gine and boiler house in the right foreground, with the work rooms, two stories high, in the rear, the dry houses or tunnels, and at the extreme left a portion of the kiln sheds. The engine and boiler room are 30x31; the work rooms 70x100 and the dry houses 100x100. In the dry house there are eight tunnels 80 ft. deep, 11 ft. wide and 6 ft. high, each supplied with two tracks upon which cars loaded with blocks stand while the heat from 25,000 ft. of inch pipe assists in the drying. Cut No. 2 shows the kiln sheds 100x150 and a portion of one of the abandoned pits. No. 3 presents a general view of the yard. The pits are immediately adjoining the plant and the clay, which is of an excellent quality is practically inexhaustible. In burning the clay for porous terra cotta it is mixed with about one-half sawdust, preferably pine sawdust, because it is generally the coarsest and its resinous character makes it burn more freely



than that of any other wood. The coarser the sawdust, the larger the pores in the block, and hence the greater affinity it offers to mortar and cement. The porous blocks have been subjected to the severest tests with the best results; blocks having been taken from the fire at a red heat and instantly immersed in water without the least evidence of disintegration.

The Boston Fire Proofing Company gives employment to an average of 30 men the year around. The particular territory in which the output of the company is sold is New England, there being an agreement among the terra cotta companies of the country not to interfere with each other's market. The constantly increasing demand for fire-proof building material, which has been very largely aided by the existence of terra cotta blocks, speaks volumes for the character of the recently erected buildings of Boston and vicinity.

D. B. G.

Written for the Clay-Worker.

## CHEMISTRY FOR CLAYWORKERS.

### Paper No 10.

**P**ASSING on to the next important element in clay we are confronted with Silicon. Its occurrence in clay, however, is not as silicon, but silica acid, familiar to you all as sand, also called silica, and in the older works on chemistry it is called silex. Therefore, when you read of silex, of silica, or of silicic acid, or oxide of silicon, you may safely conclude that pure sand represents them all. Professor Silliman estimates that one-eighth of the earth's surface is formed of silica.

#### PREPARATION OF SILICA AND ITS VARIETIES.

If you wish to prepare some nearly pure silica, heat to redness a piece of rock-crystal—which is another name for quartz—then quench it in water and you may then easily reduce it to a fine powder which is white, tasteless, and gritty. It may seem strange to call this tasteless powder an acid, nevertheless it is an acid, and only requires a high temperature to make it exhibit very powerful acid properties and to readily combine with metallic oxides, forming silicates of those metals, as, silicate of aluminum (clay); silicate of magnesium (steatite, or soapstone); silicate of sodium and aluminum (albite or feldspar); silicate of potassium and aluminum (mica,) etc.

To obtain absolutely pure silica, a much more complicated method must be resorted to than the simple method given above. The pulverized quartz must be fused with alkaline carbonates, boiled, evaporated to dryness, redissolved, etc., etc. I need not describe the method further just now, but return to its varieties. Speaking of silica, Prof. Youmans says: "In some of its forms this mineral is found everywhere. It constitutes a large portion of the rocks in many mountain ranges, the sand and gravel of soils, and the pebbles on the sea shore. It forms gun-flints, (or used to,) grindstones, and the porous burr-stones used in flowering mills for grinding grain. (Burr-stones are fast following the gun-flints.—W. W.). Crystallized silica, when colorless, forms quartz or rock-crystal; when violet colored, it is the *amethyst*; when green, *chrysoprase*; when red, rose-quartz; when passing red veins or spots, *blood-stone*; when of a flesh color, *carmelian*; when deposited from water, *chalcedony*. *Lard* is a reddish brown variety of chalcedony. *Onyx* is a milk-white variety. *Sardonyx* consists of the two in plates or layers, giving rise to a beautiful arrangement of colors, and when cut forms *cameos*. *Agate*, *jasper* and *opal* are also forms of silica. Silica, as it occurs in all these forms, is contaminated with certain impurities, usually oxide of iron. Quartz is so hard as to give fire with steel, and scratch glass; and so pure as to be often used for the eyes of spectacles, under the name of pebbles."

#### BRICKS, POTTERY-WARE AND GLASS ALL SALTS.

The apparent absurdity of calling sand an *acid*, is fully equalled by calling brick, tile, pottery-ware, porcelain and glass, *salts*; yet these with most rocks and minerals, are all silicates. We must not confine our ideas of a salt to such substances as sulphate of magnesia (Epsom salts); sulphate of soda (Glauber's salt) and nitrate of potash (Salt-petre). These and many more such, are soluble in water. We must remember that all the sulphates, nitrates, chlorates, silicates, carbonates, phosphates, etc., are salts, whatever form they may assume, whether they are soluble or insoluble in water, crystalline or amorphous (non-crystalline). The brick, the tile, the meat-dish and the vase, are all composed of the salt, silicate of aluminum; then, or principally so, there are small quantities of other substances—as before mentioned—in as ad-

mixtures, especially in the brick and tile. The salt of course is insoluble in water and in the amorphous condition.

The glass tumbler is another salt, or rather a mixture of two salts, silicate of potassium and silicate of lead; this is known as "flint-glass," and is made by melting in a pot a mixture of white sand, pearl-ash, (carbonate of potassium) and red lead, (red oxide of lead). It appears strange no doubt that red lead should confer on glass its high refractive power, its transparency and clearness, thus making it valuable for making lenses and prisms. This glass is used also for making tumblers, decanters white bottles, etc. It is comparatively fusible, soft, easily scratched and liable to change color.

The two principal varieties are, "crown" and "flint-glass." The crown glass contains no lead, but is chiefly a mixture of sand, chalk, and soda-ash, forming silicates of sodium and calcium. This combination forms ordinary window glass. Common wine bottles are made from a coarser variety, their dark color is due to the iron etc. they contain. About the same composition is used for plate glass. If we substitute potash for the soda in the crown-glass mixture, we obtain a very infusible glass, suitable for Bohemian tubing, etc.

#### COLORING OF GLASS BY METALLIC OXIDES.

The pretty colors of glass, and we may add, the colors that are not pretty, too, are all imparted by adding metallic oxides to the glass in the molten state. By adding oxide of iron we may obtain blue, green, yellow and brown glass, depending on the quantity and the degree of oxidation. The black oxide of manganese will give from a black glass to various shades of purple, depending on the quantity used; the larger the quantity the deeper the shade. Oxide of cobalt gives various pretty blue tints; antimony and silver impart a rich yellow, and when sub-oxide of copper is used we get a ruby glass; and with chromium a green.

Much of the colored glass we see is only superficially colored, or "flashed," as they technically term it. "Flashing" is accomplished by dipping a mass of white glass before working it into molten colored glass, thus giving it a thin coating of the colored material, and if when finished it must have any pattern or design on it in clear glass, this thin colored coating is either ground off, or dissolved by fluoric acid to the desired pattern. Enameled bricks and tiles are similarly flashed. Semi-opaque transparencies, watch-dials, etc., are made white by oxide of tin, or bone-earth.

This important element, silica, must be carried over to my next paper.

W. WAPLINGTON.



Written for the Clay-Worker.

### THE MISTAKE OF DENNIS.

An Episode in the Brick Transportation Industry.



SHOULD not inflict this somewhat harrowing and decidedly tragic tale upon the readers of the CLAY-WORKER were it not that my hero is so intimately connected with the brick industry—in the “transportashun de-pair-rtment, sorr,” as

Dennis O. Donnell himself styled it; that is before he went to the hospital, and I don't know whether he is now there or not—they said he might recover, for he had a splendid constitution. I haven't had a chance to inquire after him for a week.

Dennis O'Donnell you might have met before misfortune overtook him



and he became a hod-carrier; you might have met him when he wore star 3447 and was a club-carrier on the Chicago “polis foorce.”

One day a venturesome citizen asked Dennis what his number was and Dennis “swatted” him for his ill-timed curiosity. But, as it happened, the V. C. was own cousin to the senior alderman of the twenty-second ward, and Dennis lost his job(?).

For a few weeks Dennis put in his best licks trying to be re-instated, but without avail—his *infloence* was worn threadbare.

Then Dennis got the place that may

have resulted in his death—I *must* inquire after the poor fellow to-morrow, sure. The job consisted of carrying a hod at the new building of the Poke Fire Insurance Co. Now Dennis was



naturally of an observant, intelligent nature and had frequently noticed—before he had acquired an ambition to become one himself—that hod-carriers usually climbed up ladders after they had filled their hods full of brick. He didn't know that in this building they used—to him—an unknown, new-fangled—arrangement by which the hods were placed in thingemebobs on a chain and automatically hoisted to their destination.

So, the morning he was to start to work Dennis arrived, like the honest, hard-working soul that he was, before any of the other hod-carriers did. However, the hoisting apparatus was already in operation.

“Divil a ladder do I soy,” said Dennis to himself, but he was too proud to ask any questions.

Then he caught sight of the hod-hoisting chain.

“Begob,” said Dennis, “Thims good payple that's putting oop this buildin'; sure they've put in eleviators to kerry



up the good byes, thim that has to work for a livin'.”

Dennis filled his hod as full of brick as he could heap it and climbed upon the ascending chain. There is no doubt in my mind that Dennis realized that he made an error in his calculations somehow.

As I said before, I *must* go to the hospital and see if the poor fellow is still alive, and I can't help thinkin if that venturesome citizen had only never asked Dennis for his number—ah, well, regrets are vain.

CHARLES LEDERER.

### THE NEW YORK MARKET.

IF your many readers could have placed before them in the columns of the CLAY-WORKER the contents of the log book of each captain that has sent his stock to the New York and adjoining market, the gray matter would be kept busy trying to think out why they sent at figures below par. Vessels, like people, vary in size, which is one of the causes that compels them to place on the market their stock. There is no shed that would hold the output for a season. A two machine yard will have from 40 to 50 arch capacity of say, 40 M to the arch, and I know of the same number of machines that has between 30 and 40 arches of shed room, with a lease, that calls for four million to the machine to be made or paid for. In fact, two million to the machine is the usual lease. Frequently we see that vessels have met heavy weather and have to jettison some of their cargo, so our captains have to ship for room, no matter what the price is. Some will say, “Why do they load so so deep when the demand is good?” Most of the leases are drawn before the lease expires. Such times as we have had for the past three years. All in the trade know that when the manufacturer has the stock and there is a good season he can get his own price. Just so the parties that own the property, put on their own price and the number of brick to be made. I might say, why do some people pay such fancy prices for brick property, why not wait until they can buy it cheaper? They think the business will stand it; if it happens that men with plenty of money buys, all right, but too often it has to pass out of their hands. I will quote one case. There was a time when brick was bringing \$16 per M in N. Y., when the price dropped to \$9.00 per M. There was a yard, the shed not quite as bad as Rum-



stick Point shed. It was a three machine yard and the yard covered the width of the property with the exception of a wagon road, say, 10 feet wide and the length probably 1,000 feet. It was bought for \$28,000; sold again in a few months for \$33,000, and within a year sold once more for \$65,000. As I said before, brick was down to \$9.00 per M, and have been falling ever since. At times there has been money made, at other times, as from '73 to '78, not much profit, but lots of hard work to hold their own. '83 to '84 did not add much to their bank account. The past three years has not made a record for fortunes made, but still there are those who will take charge in the hope that they will succeed where others have failed.

The "Logs" would all show low prices received for stock during 1892. Each and every captain thinks he pays the lowest wages. The cost of crew is a large item.

## WHAT THEY PAY.

| HAVERSTRAW.       | NEWBURGH BAY.            |
|-------------------|--------------------------|
| per month.        | per month.               |
| \$130 and \$100   | foreman. \$100 and \$180 |
| 80 " 60           | second hand. 78.         |
| 60 " 52           | brick setter. —          |
| 52 " 47           | dumper. 52.              |
| 42 " 47           | moulder. 47.             |
| 35 " 48           | shed hand. 45.           |
| 32 " 48           | trucker. 35.             |
| 33 cents per day. | pit shoveler. 52.        |
|                   | sander. 56.              |
|                   | bankman. 14.             |
|                   | machine boy. —           |

The brick made on the yards of both these places rate as high in price as any that reach the N. Y. market. The wages are high with no sliding scale. If brick dropped to a lower figure than they have yet reached, it would be the same, or a "strike," I might say, for more money.

On the Hudson river and Hackensack yards, when burning a kiln, the men that are around the kilns of nights are paid for half night's labor, that is, one set of men from 6 P. M. to midnight, the others from that time till morning, foreman and second men included, which make the wages rate some higher.

| KINGSTON.     | COEYMAN'S.                   |
|---------------|------------------------------|
| per month.    | per day.                     |
| \$100         | foreman. \$4.00.             |
| —             | second man. 2.25.            |
| per day.      | brick setter. \$2.25 @ 2.50. |
| 2.20 and 2.00 | moulder. 2.25.               |
| 2.20          | dumper. 2.00.                |
| 1.90 " 1.75   | trucker. 1.50 " 1.75.        |
| 2.00          | shed hand. 1.75.             |
| 2.00          | pit shoveler. 2.00.          |
| —             | bankman. 1.75.               |
| 1.90          | cartman. 1.60.               |
| —             | machine boy. 1.25.           |
| 2.20          | sander. 2.00.                |

The output on the four named places is about 24,000 to a machine.

| RHODE ISLAND. | MASS.                |
|---------------|----------------------|
| no man above  | per month.           |
| per day.      | per day.             |
| \$2.50        | foreman. \$150.00.   |
| 1.50          | second hand. 1.75.   |
| 1.35          | moulder. 1.75.       |
| 1.35          | sander. 1.75.        |
| —             | brick wheeler. 1.75. |
| 1.35          | pit shoveler. 1.75.  |
| 1.35          | trucker. 1.50.       |
| —             | dumper. 1.50.        |
| —             | cartman. 1.50.       |
| —             | bankman. 1.50.       |
| 1.75          | brick setter. 2.00.  |

Protection to American workmen does not seem to rule here as far as high wages is concerned and brick being from 7 to 8 dollars per M in this State. If some of these rates were paid on the yards on the Hudson it would help the manufacturers. With the wet weather and short seasons the men earn but small wages and certainly cannot have anything but very common food. The laborer on the yards in those States must eat snow balls in winter. Is it any wonder that the votes of those States can be depended on for protection?

| INDIANA.                         | COLORADO.            |
|----------------------------------|----------------------|
| No mention of foreman or second. | per day.             |
| per day.                         | per day.             |
| \$1.50                           | temperers. \$2.25.   |
| 1.50                             | clay wheeler. 2.25.  |
| 1.75                             | brick wheeler. 2.25. |
| —                                | off bearer. 2.00.    |
| 2.00                             | setters. 3.00.       |
| —                                | moulder. 3.00.       |
| 1.50                             | common hand. —.      |
| 1.25                             | cart man. —.         |

In one of those places wages, like the ladies stockings, come high. I hope that the selling price is in proportion, if not, the manufacturer must feel some of the heavy weather that has been blowing in this vicinity. In the other case there is some chance to hold ones own.

| MEXICO.  | FLORIDA.                     |
|----------|------------------------------|
| per day. | per day.                     |
| \$1.25   | best men. \$1.00 and \$1.50. |
| .50      | boys. —.                     |

This is nice, but I presume that warm climate is not conducive to extreme labor, and the rate is in proportion to the work done.

| CONNECTICUT.                  | NEW JERSEY.           |
|-------------------------------|-----------------------|
| per month.                    | per month.            |
| \$36.00 new hand, foreman,    | \$100.00.             |
| — second hand,                | 78.00.                |
| —                             | per day.              |
| —                             | brick setter, \$2.25. |
| —                             | moulder, 2.00.        |
| —                             | dummers, 2.00.        |
| —                             | sanders, 2.00.        |
| —                             | pit shoveler. 2.00.   |
| —                             | truckers, 1.75.       |
| —                             | brick wheeler, 1.75.  |
| 39.00 old hands, machine boy, | 1.25.                 |

The men of the one State cannot indulge in the commodity which that

State is noted for,—nutmegs—even if they are wooden. The other State is well known for its apple-jack. During the summer season the amount that is consumed by the laborers on the yards makes a serious hole in their cash. My correspondent in Conn. does not mention about a foreman or second. One is safe to presume that they employ them. He mentioned the part that the above was the prevailing rate with but few exceptions, when from two to three dollars per M more a month was paid.

## WHERE THE CARGO WENT.

| New Buildings.            |                            |
|---------------------------|----------------------------|
| New York, 1891.           | Brooklyn, 1891.            |
| 1225, value \$21,531,385. | 1833, value \$9,828,533.   |
|                           | 1892.                      |
| 1175, value \$19,826,916. | 2,345, value \$11,029,744. |

This is the showing for the last six months for both years. In the one case N. Y. shows a falling off in valuation \$1,704,469 and fifty less permits for buildings. Brooklyn has erected 512 more buildings the past six months than for the same time in 1891. The increase in value, \$1,201,211, has to be distributed, as all the buildings were not of brick, in '91—1,289 frames, '92—1,504 frames, as only the foundations were laid up with hard, and they are filled in with pale. It would make quite a difference in the demand if they were all brick. In N. Y. City no pale are consumed. There is a building to be erected on Broadway that is to be sixteen stories high, but alas, it is to be skeleton framed. Lots of brick looking for just such a job, but iron has come to stay.

## THE AMOUNT OF BRICK ON HAND.

From all points at the close of 1892, there were about 44½ million more on hand than the year before. At the close of 1892 there were 30 million more than the previous year. As shipment from all points have been stopped on account of ice, the amount of stock on hand at the opening of navigation, will be very much larger than at the same time last year, as Long Island, Staten and South Jersey could ship all last winter, but this year ice has prevented. No danger of building operation having to stop for want of common brick. The past season there was not as many brick made as the year before, still the consumption was way below the output.

## BRANDING BRICK.

Friend Crary in January CLAY-WORKER recommends that each manufacturer have his name branded on his stock. Well, friend Crary, each manufacturer



in this section of the land has his moulds branded with his initials, which appear on the brick, not so much to let the public know what quality of brick he makes, but to keep the ever present machine boy from stealing them or portion of the set. If one of his set has been broken, he will walk over to the next or possibly a half dozen yards away and help himself. Any one familiar with the names of brickmakers, as he walks through the streets of New York or Brooklyn when he sees a pile of brick by looking at the brand can tell by whom they were made.

## MARKET.

|                       |      |                    |
|-----------------------|------|--------------------|
| N. J. and Hackensack, | hard | \$5.00 and \$5.50, |
| North River,          | "    | \$5.25 and \$6.00, |
|                       | pale | \$2.25 and \$3.00. |

The price might just as well be very much higher, as nothing can reach the market. Wait till navigation opens then the price will fall. At Haverstraw there are 18 barges loaded ready to be towed to New York as soon as the river opens. The average price for the past year may be quoted about as follows:

|               |          |        |         |         |
|---------------|----------|--------|---------|---------|
| Pale          | highest, | \$2.00 | lowest, | \$1.75. |
| North River   | "        | \$5.50 | "       | \$4.75, |
| South Jersey, | "        | \$5.50 | "       | \$4.50. |

There were pale sold for less than the lowest quoted figures, but they were not first-class. The coming year has far, very far, from a rosy hue.

A. N. OLDTIMER.

## A WESTERN BRICK PLANT.

**A**MONG the numerous industries erected during the past few years in the phenomenal city of Omaha, Neb., are the extensive brick works of D. G. Rhoads & Co., located at Hickory and Sixth and Seventh Streets. A brief description of this plant will give our readers an idea of the progress made in the manufacture of brick in a locality not many years ago known to the native Indian only. Their plant consists of one latest improved down draft continuous kiln, 147 ft. long, 60 ft. wide, with a continuous burning chamber, 14 ft. wide and 12 ft. high, connected with brick draft stack 100 ft. high. Their kiln or burning chambers are lined throughout with fire brick provided with necessary draft ducts, dampers, etc., to control and direct heat to parts of chambers where wanted to obtain an even burn. The daily capacity of the kiln is 30,000 burned brick each day.

The larger or principal drying shed is 120x140 ft., 8 ft. high at eaves, 16 ft. high in center, and is located 12 ft. from east side of the kiln, with doorways from alternate drying racks through shed. This shed has been recently provided with a system of heating, not heretofore used. Most of our readers are familiar

with the form and construction of continuous kilns, and know that the heat required to burn the brick in them is readily controlled after the brick in certain chambers are burned. Cooling is generally hastened by opening the fuel feeding holes in the arches, heat allowed to pass off by the construction of a duct or canal above the chambers provided with openings through the arches to this canal, the heat is drawn from the cooling off chambers into this canal, by a combination suction and blast fan in dry shed, then distributed through a system of piping under each row of closed racks in shed. Flow and discharge of heat is regulated by dampers as required to give a uniform degree of heat in all parts of the shed where wanted.

The vapor or moisture expelled from the drying brick is drawn from the closed racks by a large suction fan connected with another system of overhead piping, removing all the moisture generated. The power of this well equipped plant is furnished by one 40 horse-power engine for the brick molding machines and one 20-horse-power engine to work the blast and suction fans.

The machines used by D. G. Rhoads & Co. are a Sword stiff mud, and a Jonathan Creager's Sons latest improved sand mold machine. The clay used is



D. G. RHOADS &amp; CO'S BRICK WORKS, OMAHA, NEB.



of excellent quality, entirely free from pebbles, or hard substances; with proper pugging it attains strength of plasticity, making building brick of a superior quality. The clay is dumped at the bank by a man with team and scraper, into an iron conveyor 144 ft. long, carrying it direct to the pug mills, thus reducing the expense of transporting clay from bank to machines to a minimum cost.

The general arrangement of machinery, dry sheds, and permanent character of buildings of this plant elicits favorable commendations from practical brick manufacturers.

Written for the Clay-Worker.

### ENAMELED BRICK.

#### No. 1.

HAVING been engaged in the manufacture of enameled brick for a few years, I think I can possibly give a few items that will be of interest to your readers. In all that follows I refer entirely to the process of enameling on green brick, thus turning out a finished product at one fire.

The first requisite is, of course, a suitable clay. This should be a clay that is of a buff color when burned and should, preferably, be a clay that will stand quite a high heat without warping or twisting, but this is not so essential as freedom from iron and iron in a more or less free state. If your clay is tough it can be made to withstand the heat by various means well known to the generality of clayworkers. Lime will give considerable trouble by causing the enameled face of the brick to crack, and at a high heat will act as a flux and make the enamel appear thin or transparent, which is objectionable. Iron shows up in the shape of discolored spots on the face of the brick.

If the iron is evenly diffused through, and chemically combined with the clay, we can stand quite a percentage of it. It is iron in a more or less free state that I refer to as being most objectionable.

The same thing is true, in a certain degree, of lime, though an excess of lime in any form is very objectionable.

From my own experience I would say that almost any tough buff clay can be made to answer the purpose, and many of the shorter clays will answer admirably. The only objection to the short

clay is, that it does not give so good a chance to improve its fire resisting qualities—should it happen to be a clay that will stand only a moderate amount of heat.

Next in order comes the mode of manufacture. A semi-dry brick—

"When she was good she was very, very good,  
And when she was bad she was horrid."

And unfortunately ours were horrid. I do not mean to infer from this that it is impossible to successfully enamel a semi-dry brick, but this has been my own experience.

I paid a fair price for it and value it accordingly. Hand-made and stiff-mud brick will work all right when properly made, as I know by experience and this being the case, it is a foregone conclusion that the soft-mud brick will also answer for enameling purposes, though I never happened to use any of them.

When your brick are ready you press them, and as soon as they are fit to handle the enamel is applied.

The mixing of the enamel is quite a delicate operation, as your enamel must shrink with your brick while drying and also while burning. If it fails in either of these particulars the result will be disastrous. If your enamel does not shrink enough in drying it will scale off; if too much, it will crack.

The same thing is true in the kiln. If the enamel shrinks more than the brick it will show cracks on its face. If it does not shrink enough it will either scale off or bulge out from the face of the brick. Sometimes the proper result is obtained by altering the enamel and sometimes by doctoring the clay. Which method should be adopted depends very much on the nature of the clay. The enamel being composed of clay, flint and feldspar, together with other fluxes, can be altered very materially by varying the proportions of the different ingredients, but sometimes such alterations have a bad effect on the appearance of the enamel, in which case it may pay better to alter the body of the brick, so as to give more or less shrinkage, as may be necessary to produce the desired result.

After the bricks are enameled they may be dried in any manner best suited to the nature of the work and the convenience of the makers, though it is best not to dry them too rapidly, because sometimes an enamel will adhere to the brick admirably when dried slowly, but will not stand too quick drying.

It is necessary to clean the the sur-

plus enamel off of the sides and ends of the brick. This can be done while the bricks are still damp, or preferably, when they are thoroughly dry, so as to save the labor of cleaning those brick that crack or peel while drying, for no matter how well your enamel and clay are adapted to each other, you will always find some brick that are not perfect from some cause or other, and it does not pay to burn imperfect ones no matter how slight the defect may be.

Next in order comes burning. They must be burned at a high heat in order to fuse an enamel that will prove reliable under all conditions. The heat in the coolest part of the kiln should be about the melting point of cast iron. I have found the heat of our kilns too high for any sample of red clay that I have ever tried, though I have never tried very many. I have seen samples of our brick that were burned in fire brick kilns, when they had the reputation of burning very hard, and in no case was the enamel fused to any appreciable degree.

A crowned kiln of some description is necessary for the proper burning of enameled brick, whether up or down draft I should judge is immaterial. My own experience has been chiefly with the ordinary potters' up draft kiln.

Our English cousins burn their brick set open, but I never had very good results by this method, but am of the opinion that this is the proper method when the correct form of kiln and mode of setting are employed. I have always used Saggers, turning out an average of 70 to 80 per cent. of first-class brick.

The balance of the operations are almost identical with the assorting and shipping of fine press brick, and I presume further comment is unnecessary.

Properly conducted, this branch of the brick business is very profitable, but I know of no other business in which it is easier to lose money when it is commenced with too little knowledge of its requirements, and I would advise all to go slowly at the start that they may more surely reach the desired end. Success will surely crown intelligent, well directed effort, and experience gained during a small beginning will be found a most profitable investment after the business is more fully developed.

J. M.

Little drops of water  
Little chunks of brick,  
Make the sort of fortune  
That is bound to stick.



Written for the Clay-Worker.

## HINTS ON BRICKMAKING. No. 72.

BY R. BRICK.

### MODE OF DRYING BRICK.

WE have come to the question of how to dry the bricks; in a former article was discussed the temporary mode during the first season. We must now determine the permanent mode of artificial drying. There are in use but two modes, one the tunnel and car system, the other the hot floor or flue dryer. The former has some advantages over the latter, the principal one however is the better preserving of the bricks, as they are placed on the car at the machine, are handled no more until they are tossed to the setter in the kiln, as they pass from machine to dryer on a tram track, and when dry are conveyed in like manner to the kiln. There are several kinds of tunnel dryers, the two distinct kinds however, are those heated by steam pipes and those heated by flues passing under the entire length of tunnel fire and smoke passing through; there being an air tight covering over the flues separating flues from tram track. There is still another where heat and smoke pass directly from the furnace into and through the tunnel, this can only be used for stiff clay brick and requires fire proof cars, the smoke and soot settles on the bricks leaving them black when dry; the former can be used for drying soft mud brick as well as stiff clay bricks and wooden pallets can be used. There is considerable risk from fire unless the drier is most carefully and skillfully constructed, and when in operation managed with care and judgment. Those heated by steam pipes are safer from fire. In both kinds heat is radiated, in one through bricks, in the other through steam pipes; a successful tunnel drier must have heat radiating from the bottom of the tunnel its entire length, in order to keep heat uniform from top to bottom of tunnel. There must also be a horizontal movement of hot air in the tunnel and outlets for escape of the moisture laden air. Where tunnels exceed sixty feet in length, there should be outlets at top at intervals between that point and the draft or vapor stacks. There should be dampers at these outlets and vapor stacks to regulate the volume of escaping hot air according to the condition of the bricks in the tunnel. When the tunnel is first filled the

heat should be turned on in quantity and degree to suit the nature of the clay to be dried. Some clays will bear sudden application of heat without injury, others require gradual application in degree and quantity of heat this only can be determined by actual trial. When the tunnel is filled with bricks turn on heat fast as it will bear, but leave just enough draft at outlets to distribute heat uniformly through all the bricks. Continue this for two hours or more until all the bricks are well heated through, then give it necessary draft and increase of heat; bricks cannot begin to part with their moisture in the tunnel, until it becomes heated to a degree above the point of condensation. If all the bricks are heated to a uniform degree before the drying currents are thrown upon them, all will begin to dry at once. If the heat and full draft is begun soon as the tunnel is filled, the bricks on the top and sides of car get warm and begin to throw off moisture before those in the center of the load even get warm, and those on the outside are dry and ready for the kiln, while those on the inside are still quite damp. If bricks are dried in this manner, there is during the last twelve hours, a great waste of heat, as only a small per cent. of the air passing through comes in contact with the damp brick, a large portion of it is coming in contact with brick that are dry and hot.

To avoid this waste of heat, first the bricks should be all heated before much draft is applied; second, the bricks must be placed on the cars in open order so there is a free passage of air through the bricks in center of car, so that they may dry almost as soon as those on the surface of the lot. Until this is accomplished tunnel driers will not be the most economical, so far as cost for fuel is concerned. Proprietors of driers try to get too many bricks in a square foot of space, to dry uniformly and economically by hot air currents. They are, however, continually improving their construction, and application of heat and control of air currents. There has been some heavy losses from fire in the use of tunnel driers. In this respect the steam pipe driers are safer. The hot flue tunnels are more liable to take fire unless great care is exercised in the construction of flues; wood should never come in contact with brick work near a hot flue or furnace. Then again in applying heat, judgment must be exercised or too great a heat will be thrown into the tunnel. Where capital is not limit-

ed, a good, well built tunnel drier will, all things considered, be the best.

In these articles we are building a plant with small capital and cannot always have the best of everything if the cost is beyond the reach of our means, this being the case we must look for something that costs much less and at the same time it must be effective and economic in its operation. This brings us to the hot floor or flue dryer where bricks are dried by direct contact with the heated surface, the brick absorbs heat from the floor; as the heat enters, the moisture is driven out and taken up by the atmosphere in the form of vapor, being invisible in summer, in winter when the temperature is low, this vapor is condensed and passes off in fog.

In the next article we will consider the advantages of a floor drier, in the application of and economic distribution of heat, safety from fire, cost, durability and the points of interest to the brickmaker.

### On the Right Road.

*Editor Clay-Worker:*

A happy and prosperous year to the CLAY-WORKER and all workers of clay, but how craftsman can be happy and Prosperous without the CLAY-WORKER is a mystery to me. I have been in the brick industry for two years and have made one million first-class building brick last season, and must admit that I owe a great deal of my success to the CLAY-WORKER. We have made all our brick with a hand press, ten thousand capacity, but used steam-power for pug mill. Will put in a 30,000 capacity steam press for coming season and would like to hear from different stiff and soft mud machine manufacturers at an early date.

Enclosed you will please find Money Order for \$4.00, \$2.00 for subscription to CLAY-WORKER and \$2.00 for membership fee in the N. B. M. A.

Washington, Ia. A. J. MULLER,

### Appreciative.

*Editor Clay-Worker:*

Enclosed please find check to pay for CLAY-WORKER for 1893 and membership fee in the N. B. M. A.

In regard to the CLAY-WORKER, do not stop it until you have orders to, as I am very much pleased with it, and as long as it continues to be as good as it is at present, would not do without it.

The year 1892 was only fairly good for making brick in this section of the country.

D. P. DeLONG,  
Glens Falls, N. Y.



## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

### Recollections of the National Convention.

Editor Clay-Worker:

My recollection of the Brick Manufacturers' Convention held at Louisville in January is still a little confused, however I have far enough recovered to collect my thoughts and live over again in memory those three very pleasantly spent days, (nights not counted). I had looked forward with pleasure to the meeting of many old friends who are sure to attend the Convention, and also to making the acquaintance of new members who come in from year to year.

It was a lively gathering at the Louisville Hotel, which was designated as headquarters, and each train arriving, no matter from what direction, brought in new recruits, when hand-shaking and kindly inquiry about absent friends, business, etc., etc., was the order. Then the Governor of North Carolina would say to the Governor of South Carolina: "We have all traveled far over rough dry roads, and the dust and cinders clog our throats; Ohio river water is very dirty, also a change of water is very bad, yet we must quench our thirst; we will try the famous distilled waters of old Kentucky, the same that John McCain advised Keystone to prepare himself for." Then as each new delegation arrived, the already gathered members would have to accompany them to the fountain and try Kentucky's best distilled flue cleaner, and all seemed as happy as clams at high tide.

When the Convention opened up Tuesday afternoon, the Board of Trade Hall was filled with as fine a looking lot of men I think as I have ever seen come together. There were the "Big 4" from Philadelphia, looking not the least changed from a year ago, and Bro. Flood, their spokesman, was on the alert and ready for every emergency; then there was Adams, and Purington, and McGraw, the now five-year-old, and Nutmeg Merwin, who went bobbing around like a sand-piper on a marshy beach looking for worms; and Quaker Fletcher was there, but I think he has left the old broad brimmed church for the new and latest improved; also, there was Repress

Raymond getting in his work of pressing and re-pressing everything in sight; and never to be forgotten, Mr. Eudaly was on the floor; and there was Blaffer, of New Orleans, and up draft Morrison, and down draft Pike, and there was soft mud, and stiff mud, dry and semi-dry, steam heat and hot blast, and others too numerous to mention. McDermot, of Wellington, Ohio, could be seen at all hours mopping his massive brow and making imaginary brick on the wonderful Monarch as he explained its merits.

The Convention was duly opened according to Flood, and President Pearson read his opening, or closing address, which was clear, practical and to the point, then the business proper commenced. The first thing in order being the election of a president for the ensuing year, and right here the fun commenced. The Louisville Association had been wise enough to see breakers ahead, and feeling that while power to do so was in their grasp, they would forever avert trouble that might come, so through their spokesman, Mr. McDonald, in a very plain, frank, business-like manner stated that the precedent established by the Association of electing a president from the city in which the Convention was held should now be broken, and that the Louisville Association claimed the privilege of naming the man outside of their city to preside. Now the three regular running horses, Purington, Eudaly and McCain had been duly entered for the race in words, but the latter unfortunately was unable to be on the track, so Adams and McGraw were trotted in to take his place as best they could, and they came in prancing, with head up and tail over dasher; McGraw made a fine start in being determined to convince McDonald that he (McDonald) was the only possible candidate for president of the Association—whether he would or no. Then Mr. Eudaly got the floor, and stirred up the waters by attempting to pour out some of his child-like and bland oil, but, as usual, opened his mouth and put his foot in it. O! where was Keystone then? I tried to discover our Pennsylvania friend of a year ago, but if there, he must have kept in the dark; I expected to find him with his double back action self counting, phonograph, gathering in the whole proceedings. Even Deacon Tidd who went for the hair triggers and breech loaders kept in the dark, if he was there at all. But as I said, Mr. Eudaly had the floor, and it was neck

and neck with he and McGraw for a time, but the latter was distanced by degrees. Mr. Ittner, who was the Louisville candidate, got his dander up, because Mr. Prussing, of Chicago, intimated that there was a little *old dry* mixed up in the matter; coffee for two settled it amicably and no harm was done.

But little business was transacted beyond this heat, and the day wound up with Brother Flood somewhat disabled.

The second day some most excellent papers were read. In fact, I think the best we have ever had, and the discussions I am glad to say were more general. But the talkative members far outstripped the balance. One of 'em had the floor on an average of six times by the watch in the discussion of each paper. Adams became alarmed; he was getting badly left, and came up on the home stretch puffing and blowing with a resolution, viz: "Mr. President, I move you, sir, that hereafter no member be allowed to speak more than once on any one subject, and then not more than five minutes, unless by the unanimous consent of the Convention." This was a stunner to the leading horse, and he swore vengeance (in his thoughts only) against the man who would try to throttle free speech.

About this time, McDonald, the younger, of Louisville, introduced a resolution which would tend to turn the Association into a Commercial Agency; although rather impractical it was made in good faith, but it struck the funny spot of our sawed-off friend from the Windy City, and he expressed his views in a very plain way. Coffee was too weak for this case. It required good old Kentucky straight for two, and all moved on as before without blood shed. The third day was quiet and serene, and everything moved along smoothly until noon, but Eudaly got the floor and had his full five minutes after each paper. However in the afternoon he could not be held back longer, he kicked in the traces and went tearing down the track, and the last thing I heard in Louisville was "Eudaly's got the floor."

Purington seemed to be off his feed; he ran slow; he said very little, but when he did get up to speak it was only for one or two minutes, but he always said something. However, he flew the track in the matter of wanting to change the time for electing our president, in that I could not agree with him.

I shall say nothing about the banquet



only that our Louisville brethren did themselves proud, and the brickmaker who did not attend the Convention doesn't know what he missed.

The night sessions were numerous and varied, and enjoyed by parties of friends, of from six to a dozen, together. Theatres, concerts, suppers, etc. The tobacco leaf badge was the "open sesame;" it was the key to Louisville, and the hospitality will not soon be forgotten. Our friend, Parry, the sweet singer of Boston will not soon be forgotten for the part he took in making the night sessions enjoyable; but they do say that since his return from Louisville, the North Cambridge fish and oyster market has been very dull; straight beef-steak is good enough for him now.

The junketing tour to Cloverport was a success, we had a jolly time on the road, and that little arrangement in the brick kiln did just strike the spot. But when on the return we struck the freight wreck our spirits fell, for it looked as though we might have to lay out all night, and *Louisville only seven miles away*. It was positively necessary for some of us at least to leave for home that night, and get to Louisville we must, if such a thing were possible, and we did, and made our train.

These hasty random shots of personal observation at the Convention have already strung out too long; there were many other things of interest which doubtless some one else will give us. Hope we may all live to attend the next Convention in Chicago.

A. SUCKER.

#### Suggestions for The Programme Committee.

*Editor Clay-Worker:*

Permit me to offer a few suggestions tending towards the realization of the greatest possible good to be derived from our Conventions. Year by year these annual meetings have grown in importance, and while growing in importance our numbers have been greatly increased. With this increase we as a natural consequence have more people to please, more minds to cater to and a greater diversity of interests and opinions that must be met and analyzed. Again, as our Association becomes older we are gathering additional experience as to just how those affairs should be conducted and managed so as to furnish the most good to the greatest number.

According to my views, it is murderous to ask a brickmaker to listen to a

forty-five minute paper on Fire Brick or Roofing Tile, or the best way to make Drain Tile, or to ask a man who makes nothing else but street paving brick on a stiff mud machine, to listen to a long discourse on the Dry Clay process and so on and so forth, not forgetting the fiend who bobs up annually, bringing with him the Children of Israel, crosses the Dead Sea and buries himself as well as the unfortunate children, in the pyramids of Egypt. I might also include in this class, "The streets paved with gold," the oldest and noblest industry in the world, and many other similar chestnuts. All this, Mr. Editor, may do for a rainy afternoon or a cold evening when he knows not what to do, but to me it is most decidedly out of place in the Convention hall.

Some might offer as a remedy to so arrange the programme that we would have paving brick the first day, building brick the next, then would come drain tile, fire brick, vitrification, etc., in regular order. A midnight session might be had at which the Children of Israel could be brought in in a body and the pyramids could be illustrated with a magic lantern, but all this I believe would be fatal to our common interests, for any intelligent member must admit that it is possible, nay, highly probable, to catch an idea from a sewer pipe discussion or a vitrification wrangle that may be used even though he be a dry clay victim or a soft mud foggy. It is always possible to get some valuable information unexpectedly from a source—apparently—entirely foreign to the information sought.

I have closely scanned the field, I have carefully husbanded every stray remark dropped perhaps unconsciously from members representing every quarter of our union, and I have come to the fixed conclusion that what we need at these meetings is less paper and more discussion. At our more recent meetings—Washington and Louisville—if I have heard the expression, "To hades with the paper, it is the discussion I am after"—once, I have heard it forty times, always being followed with the remark, "That we can read the papers at our leisure at home—as published by our Trade Journals. What we want is to incite discussion on questions of interest to us."

There is much truth in this. When men from every section of our country meet but once a year, we need more room for off-hand spontaneous expressions

and discussions. Not one man's ideas on one or a dozen subjects, but a dozen different ideas from as many sources on one subject of general importance; all being expressed in the same or even less time than is required to pull us by the nose through a long harangue as to how a certain machine happens to be "the best in the world," or to lead us by the hand through Turkey in Europe or Turkey in Asia, finally bringing us out all over Greece; and this two thousand five hundred years before Christ.

To remedy these troubles I would suggest that our members should all express themselves either for or against a rule limiting all papers to say, six or eight hundred words. This, I believe, would be no hardship upon the writers. It would only cause them to condense their subject a little—something that should be done with all papers that are to be read before a large Assembly. If a rule like this was adopted many more subjects of interest could be considered and much discussion from our practical but non-literary members be elicited—which is just what we most desire. Those members who have heretofore monopolized valuable time should take a back seat voluntarily to make room for this class.

The unwritten law which inflicts a fine of a V and costs for the mere allusion to the Egyptians, the Red Sea, the Pyramids or the Children of Israel should be amended to include such expressions as, "The oldest industry, the noblest, (of them all), the most honorable, etc.," and strictly enforced. They are all good enough in their way, but have become whiskered from constant use and must go—along with several old timer's—to the Chestnut Basket, where, at some future date, they may be resurrected.

SMOKY CITY.

#### A Correction.

*My Dear Randall:*

I have a grievance. As I do not use tobacco, I must have been chewing gum when I was speaking, for you make me say in Convention, "That non-absorbent brick will not stand the wear."

If the gum had been out of my mouth I should have said that a brick need not be non-absorbent, and that a brick capable of taking up 3 to 5 per cent. of water was more desirable than one perfectly non-absorbent, especially in dry weather in summer.

When I saw your picture in the Con-



vention number I felt avenged. Why, my dear boy, it looks worse than you do, if possible, and as for Purington, his looks as if a heat unit had struck him in the mouth, and as he "doesn't know one when he sees it," he was wondering "who frowed dat las brick." But didn't we have a good time all the same?

Yours, always in the Vocation,  
S. P. CRAFTS,

New Haven, Feb. 18th.

#### Ohio Valley News.

*Editor Clay-Worker:*

The demand for sewer pipe and paving brick has been only fair the past month with the Valley manufacturers. The extreme cold weather caused the suspension of all sewer and pavement construction, thus effecting the demand.

Many of the shops met with the loss of quantities of green pipe, being frozen on the drying floor, and not fit for burning.

The much talked of Association has, as yet, not been formed. At the last meeting of the manufacturers a committee of four, consisting of N. W. Walker Clay Mfg. Co., of Walkers, O., T. D. Brown, of the Pittsburg Clay Mfg. Co., of New Brighton, Pa., A. J. Baggs, of the Royal Clay Mfg. Co., Urichsville, O., and C. A. Freeman, of the Freeman Fire Clay Co., Freemans', Ohio, were appointed to prepare plans for a "New" Association.

The old Jefferson Sewer Pipe Works at Toronto, Ohio, the pioneer of the Ohio Valley, which resumed operations last May, after an idleness of three years, is again closed down. Jefferson Saltzman, of Toledo, was appointed receiver on Jan. 10th. The Jefferson Fire Clay Co., the name under which the late operators of this plant carried no business, was a co-partnership, consisting of Judge W. V. B. Croskey, owning one-half and Chas. Young and Henry Kerr one-fourth each. They purchased the works May 2nd, 1892, from the Penna. Mining, Mfg. and Supply Co., for \$21,800, on which a mortgage was placed for \$10,000, payable in six months. It was due in November and a suit for foreclosure was brought in December. As many other claims were being pushed and creditors clamorous for their money, and disagreements among the owners, and they could not agree upon a new manager, to close up affairs, they petitioned for the appointment of a receiver. Many of the pipe men say that this company

found out what many others do; that in the business at present you cannot clear \$10,000 in six months.

On Jan. 17th, Capt. Wm. Lacey's Fire Brick Works at Irondale, Ohio, was burned. Marion Murray is in custody, suspicioned of being the fire-bug. He was a suitor for the hand of the Captain's fair daughter, and being refused, it is thought thus revenged himself.

The sewer pipe manufacturers have decided to establish a headquarters in the Goncher Block in Toronto, Ohio, to be known as the "Sewer Pipe Exchange," and will be used for social as well as business purposes. The Exchange will not only be used as a rendezvous for local pipe men, but all visiting clay manufacturers, and all meetings pertaining to the industry. It will be furnished in elaborate style, including smoking; reading, writing and billiard room, and every wayfaring pipe man may be sure of a cordial welcome.

The John Porter Co., of New Cumberland, W. Va., has purchased the Clifton Fire Brick Works from Smith, Porter & Co., for \$125,000. This works is considered one of the most complete brick plants in the United States. The John Porter Co. now control all but four works on that side of the river,—Globe, Cunningham's, American and Lone Star Works. The transfer will take place Feb. 25th, the firm reserving until that time to fill its contracts and close its books. This deal brings a large amount of new capital into this region, as well as releasing considerable, which will be invested, doubtless, in and about that thriving community. BUCKEYE.

#### Buffalo News.

*Editor Clay-Worker:*

We are having the coldest steady winter weather for several years past. The thermometer was 6° below zero this morning and it does not warm up a bit all day.

There is a lot of brick work underway in this city, in fact, one builder remarked there was more work started since Oct. 1st than was in process of construction all summer. The output on the various yards was curtailed about 16 millions by the wet weather during the months of May and June.

We have a brick Association and they fix the market price. Common brick delivered, bring \$6.00 per M; with stock brick, bringing \$10.00 for firsts and \$8.00 for seconds. The Canadians

come into our market, pay 25 per cent. duty and still compete with pressed brick from Ohio.

Messrs. Brush & Schmidt are fast getting their new plant at Jewettville in working order to turn out a fine pressed brick. They have an excellent shale, and manufacture dry press. They have a dryer of their own invention, and are converting their kilns from up to down draft.

The Lancaster Brick Co. had an excellent year, most of their brick being sold in the neighboring town of Niagara Falls. They have branched off into the manufacture of hollow brick and drain tile, and have a large and growing trade. More Anon. Yours, "VIDETTE."

#### Burning Common Brick.

*Editor Clay-Worker:*

Enclosed please find amount for another year's subscription. I can't tell you very much about the brick and tile interests in this portion of the country, only that the brickmakers in the little towns near here have, along with myself, made and sold a good many poor brick the past year. Don't know how long it will be till people will learn to burn good brick. The best of people will miss it sometimes, as for instance, Mr. Cray wrote me once that I should set binders and overhangers, skintling in the benches, and I tried it, but such a mess of broken brick I never had before nor since, and now when I want good benches I set all the piers I can from beginning of overhangers to close of arch.

We have now got about all the experimenting we want, and have satisfactory plans for our kilns, excepting that I am at sea to know how to arrange the top of the kilns, for two courses of platting leaves the top course of kiln rather chaffy to sell. We can set our benches like this:

— | ——— | ——— | ——— | ——— | ———

It would show ground plan for eight arches, set with 6 x 3½ benches, and one 2½ brick bench, with half benches one brick wide. If we set the top courses of kiln headers about an eighth of an inch apart and put on three flat courses of common burnt casing bricks tight as possible, we can make the finest kind of burns, but this takes an immense amount of work, so I am puzzled to know what to do.

Well, I will close by wishing you a Happy New Year, hoping that you will



continue to prosper and that I may receive the CLAY-WORKER regularly.

MORE ANON.

#### A Good Move.

*Editor Clay-Worker:*

Enclosed please find two dollars (\$2) for the CLAY-WORKER for '93.

I would like to inform some of my brother brickmakers, who are running their yards by horse-power, my experience:

Three years ago I bought a Quaker machine of Mr. Fletcher, and have run it successfully, making a nice square brick, and turning out 18,000 per day, on pallets on open yard, have soak pits, emptying two per day, running my machine on trucks from pit to pit. It was an easy days work for ten hours, but times are getting faster and the boys thought they had to get through in eight hours, so I had to furnish a boy at 50 cents a day, to pound it out of the poor horses. When severe hot weather came, I began to see my horses pull, with sores on each shoulder as large as my hands, caused by galls. I told the boys there would have to be a change, so I bought of Mr. Fletcher, the "gears" to change from horse to steam-power. Then bought a second-hand traction engine at two hundred and fifty dollars, laid plank along my track for the engine to run on, connected engine to machine by heavy tongue. It did my heart good to see the change. Three times the tempering capacity with one-half pound more mud to each brick made them twice as strong, and how easy the engine could walk the machine from pit to pit, in less than five minute's time, and how much easier for the moulder to throw the strikings on a platform annexed to the machine. The engineer, at \$1.75 per day, who has plenty of time to throw the same in the machine, than for the truckers to wheel by barrows to the pits to be again shoveled by the pitmen. The boys say they can run 20,000 now easier than they could 18,000 before, with the horses to bother them, by waiting for them to pass, besides the dust they kick up.

The country is full of second-hand traction engines, which can be bought for the price of a good team, and I feel as though some one ought to come to the rescue of the poor horses, especially as one can make from two to four M more brick per day at the same outlay.

JOHN H. SHANK.

#### An Important Matter.

*Mr. Editor:*

I have for the last two years tried to provide a sort of reading room for the workmen in the factory of the Staten Island Terra Cotta Lumber Co., of which I am the Superintendent. I have asked the assistance of the Co. but have not obtained any satisfactory answer. This I consider a very important matter for all manufacturers of all the various industries, and especially clayworkers, and hope you will give it some consideration and request all your subscribers who are factory owners, to have a room somewhere in the factory of suitable size to accommodate the number of workmen employed. Said room to be heated and lighted and furnished with chairs or benches for the men while they are taking their noon hour. A table could be placed in the middle of the room where the CLAY-WORKER and other good clay journals could be kept for the men. The owner may call the employes together at least once a month in the same room and give a lecture on clay, etc. The little trouble and expense would be repaid many times and better and more intelligent workmen would be the result, and they would feel as if some one took an interest in them.

I am a subscriber of three clay journals, and after looking them over, I pass them to my foreman. He gives them to the oldest hands in the factory when he has read them. When I go in our main office I generally pick up  $\frac{1}{2}$  dozen clayworking papers and catalogues from the scrap basket, which I distribute amongst the workmen, and in passing through the works during noon hour, I see sometimes 8 or 10 men grouped together reading the same paper. I understand the difficulty that will be encountered where there are so many nationalities in one factory, but something can be done in this matter, and I hope that you will influence the manufacturers through your valuable paper to try the experiment.

A. M. STRUSHOLM, Supt. of Ornamental Brick and Terra Cotta Department.

#### What We Like to Hear.

*Publishers Clay-Worker:*

Enclosed please find \$2 for the CLAY-WORKER for one year, which we wish continued as we would not do without it at double the price you ask. We look expectantly for it every month in our mail.

S. J. ROSE & SON,

Chester, Pa.

#### Likes Mottled Brick.

*Editor Clay-Worker:*

In looking over August number of CLAY-WORKER I notice T. S. G. takes one of your correspondents to task for finding fault with the "whitewash" on red brick, etc. It struck the writer that perhaps *he* is the unlucky correspondent, as some time previous he asked through your journal if any one could give a good reason for the "whitewash" appearing on red brick, more particularly.

If I am the unlucky one to bring out this large amount of "whitewash," I shall, of course, have to agree with T. S. G. that I have seen it upon other colored brick than red. If T. S. G. will come to this city I can show him a whole kiln full of well burned red brick and every mother's son of 'em "whitewashed" before entering the building. True they were made by the soft mud process, and are more or less porous. We have also, noticed more or less "buff" brick discolored by green or nasty stain, but for all that, "buff" brick will make a handsomer building than red. Take the New York World building, or the large building on the corner of Chestnut and, I believe, 9th Streets in Philadelphia, and for beauty of appearance, they lead any red, to the writer's mind.

Of course, we may be prejudiced in favor of other colors than red, and indeed we must own that, for full richness and beauty, not even "buff" can come up to the "Mottled" brick now being so extensively used in the East, and which is now being used somewhat in the cities west of the Mountains. These "Mottled" brick, in order to bring the mottle out, *must* be almost vitrified in order to melt the small nodules of iron that produce the spots or mottled. We have the first brick of this kind yet to see with "whitewash" on it, or other stains.

I must own that I co-incide with T. S. G. that brick should be made more compact and solid than it is possible to make them out of *mud*, then if properly burned, the brick will make both a stronger and *healthier* wall.

But for all, the brickmaking industry is so ancient, it is only now in its *infancy*. Every year we advance in the art. A few years ago the idea of making brick through a "Sausage stuffer" would have been laughed at, then comes the dry press on the market which will no doubt revolutionize the mode of making brick when it is once thoroughly understood.

What process may we look for next?



If a stiff mud or dry press machine cannot make a brick dense enough to keep out the discolorations (with proper burning thrown in, of course,) how can we produce a brick that will be perfect?

In conclusion I would like to say this, possibly there is something peculiar in the atmosphere in the vicinity of Cleveland that causes so much discoloration in T. S. G's. eyes. Of all the rough, tough looking brick the writer ever saw, were made in a yard near New Burg, a suburb of Cleveland. When a remark was made as to the roughness, the proprietor said: "Well, we only get \$4.50 per M. for them and cannot take much pains with them." This was several years ago. Perhaps prices have advanced since that time, but evidently quality has not, or else Bro. T. S. G. would not ask so seriously to have a better brick.

Seriously, though there is vast room for improvement in quality, brickmaking is an art, and one of the finest. Can the consumers be educated up to the point of paying a fair price for a number-one article? We think so. Very few who contemplate erecting a handsome home would stand upon a few hundred or may be a thousand dollars or so difference in first cost, if they can get something that will both be a pleasure to look at, and a healthful, comfortable, home to live in.

Let the colors be whatever one likes best, but let the brickmaker put forth his best efforts to improve the quality. The demand will come just so sure as the brick are made suitable to take the place of the nasty, ugly things so many of us make now.

We are still running brick from machine onto the yard, possibly some fine morning we will wake up with a hundred thousand or so, so badly frost bitten that the toe-nails will come off, but then we must try and catch up to last years' record, which has been kept back this season on account of spring rains. Prices are still firm and demand fair to middling. A good many dwellings are being built, indeed, I am told that the city averages about one new house every day in the year, and as building stone is a scarce article hereabouts, a large number of brick are used for foundations.

One new house a day must mean one new family a day to the population, so you see our city is growing at the rate of a couple of thousand a year; not a bad record, I should say. I can well remem-

ber when my father brought large quantities of iron and coal and coke to this city via the "Raging Canal," now a wreck, and, indeed, almost "out of sight" or covered up by the rail roads, and the writer is not so very old either. So we progress. Yesterday we made brick by the slop process; to-day by the horse or steam power machines; to-morrow by the dry or other processes. Will we ever be able to make a durable brick without burning in the BEST kiln that is offered upon the market, or in any other kiln? If so, what is to become of Eudaly, Pike, Morrison, and all the rest of those poor fellows? I might also add the burner too, as then their valuable services will not be required.

What a nice, jolly business it would be if a fellow did not have to get stuffed up with the fumes of sulphur—before his time.

The dry press process is to be tested in this city shortly.

The Selden Brick Co. have placed an order with the Simpson firm for a 4-mold press, and with Turner, Vaughn, & Taylor for a dry pan, to prepare the clay properly; foundations are now being put in for the new machinery, which every one who knows the firm wish them success with.

Colder weather puts a chill upon building matters, and business is consequently quiet at present writing.

Erie, Pa.

W. R. O.

#### Philadelphia News.

##### Editor Clay-Worker:

Beyond the interruption to transportation and building operations, the cold weather does not seem to have had a damaging effect upon business. The work has simply been postponed not abandoned. The permits taken out for new buildings are on a scale equal to that of last year, so that all that is required is clear weather to demonstrate that business will be of good volume for 1893.

The future of the brick business is decidedly encouraging, as the supply in Philadelphia is smaller at present than it has been for ten years. This is accounted for in a measure, however, by the suspension of business owing to the inability to procure coal. The Jarden Brick Company's output for the past year has exceeded that of almost any other preceeding year. They are now the recognized leaders in the business in the amount of bricks turned out; that is, in fine pressed, fancy brick and the

buff for which they are so celebrated. This has been an era of low prices, and that of bricks has been no exception to the rule. This loss of values may be accounted for in a measure, however, by over-production; but as 1893 starts out free from that objectionable feature, prices may be better maintained. At least, this may be considered reasonably certain.

As a rule capital has not been rewarded for the risks it has taken, and yet wages have generally been well maintained and as promptly paid. The rate of wages for bricklayers under the old schedule of 46 cents per hour, has been continued. Many of the brick-makers have certainly not been prosperous, prices of brick have been exceptionally low, so that the mechanic may consider himself fortunate in the assurance that they will be liberally rewarded for another year at least, with wages of their choice.

Thomas B. McAvoy has consummated a deal whereby the entire plant of Sheets & Hinkle, at 23rd and Tasker streets was transferred to him. The purchase includes besides a fully equipped brickyard some 15 acres of clay land. Mr. McAvoy proposes to take his two sons into partnership and expects to enlarge the business of the firm generally.

Loughbridge & Bend's terra cotta works, No. 2,300 N. Seventh street, was totally destroyed by fire recently. Loss on building and stock \$6,000.

A building brick with five smooth faces, the sixth face having smooth edges with rock-face centre is something new in brickmaking.

The contract for the stone and brick work for the Pennsylvania Railroad's new station has been awarded to George W. Roydhouse, the terra cotta work will be done by Armstrong & Conkling. The great mass of work in contemplation will eat up a vast number of brick, great quantities of which will be on the fancy order.

About the first spring operation of any magnitude has been announced, it is that of 32 dwellings to be erected by W. A. Arthur & Bro., at 55th and a half street, West Philadelphia. ANON.

#### Toledo Ohio News.

##### Editor Clay-Worker:

Mr. A. E. Macomber has taken down his old brick burning shed, and is putting up a new one some three hundred feet long; it will be a first-class burning



shed. They dry the brick by the pallet system and are using the Monarch Brick machine.

Spear & Jacobs are putting in one of Creager's Brick machines. They dry by the pallet system and burn with oil.

Mr John Boise is going to start a new brickyard this winter and is putting in the Penfield stock brick machine and cars for hauling the clay to the crusher. The brick are going to be dried in Sharer's improved dryer; it will be the first one in Toledo; it will be watched—if it is a success probably others will adopt them in the future. The brick will be burned with oil. The yard is located on the Detroit branch of Lake Shore railroad. Will have switch run into the yard for shipping. W. A. R.

#### Roofing Tiles.

*Editor Clay-Worker:*

From the numerous communications I receive on the subject, I find that advice on the manufacture of roofing tile, like advertising, or the Chinaman's umbrella, to be effective, "You have to keep it up."

The making of roofing tile may be divided into five heads, like a parson's sermon.

First, the selection and preparation of the clay. This is the foundation, and therefore one of the most important parts of the whole process. "You cannot make a silk purse out of a sow's ear," nor can you make a good roofing tile out of bad or poorly prepared material. See that this part of the business is properly attended to, and all subsequent work will be easy and satisfactory.

Second, the forming of the tile, which may be described as moulding and pressing. This is simply a matter of having good machinery and exercising proper judgment and care in every detail. See that the "Slab" is hacked when a proper and uniform stage of dryness has been reached. A good plan is to hack ten slabs on a pallet the exact size of the tile, and place them in close racks made for the purpose, at least ten or twelve hours before pressing. If the corners of the slabs have become harder than the rest, they should be moistened when being hacked. A great deal is claimed for presses exerting a very heavy pressure. I must say I cannot see the advantage of this for roofing tile. Let them be pressed until the mould is perfectly filled out. Any pressure over and above this only serves

to shorten the life of the press, and to force the mud into the die, thereby causing trouble and delay in cleaning it.

What press do you recommend? is a question I am constantly asked, and not from the States alone. I notice some of your ablest contributors seem to consider it rather "invidious" to especially mention any particular make of machine. I cannot look upon it in that light. If one maker has produced a machine which has proved servicable to me, I do not see why I should not give my experience on the point, when asked, to my brother clayworkers, because another manufactures a similar class of machines, possibly equally as good—perhaps better, leaving those who have proved them so, to give the trade the benefit of their experience on the subject.

I have received several catalogues from Germany and France of presses with revolving dies and all sorts of ingenious devices, claiming to press the particular roofing tile, in which I am interested, chiefly and effectively. For this purpose, however, I do not want anything better than a Raymond Re-press. It will press roofing tile perfectly and as fast as it is possible to properly take care of the product. I have never yet seen the press, in the hands of a competent man, the cause of a moment's delay. The trouble is always in getting the material to it and away from it fast enough.

Let your offbearers remedy any defects, and see that the tiles are straight and true before placing them in the racks to dry, and have some responsible person go over them a few hours after to make certain that they are so. Care on all these points will be found most remunerative. A small defect, which could often be rectified by a touch of the hand, will frequently cause the difference between a first and a second class tile, which difference, in this country, represents more than the entire cost of production.

A very small warp will increase considerably in the process of drying, whereas if the tile is perfectly true (and the clay has been properly selected and prepared,) it will remain so. The great bug-bear of warping and cracking in a larger roofing tile, exists principally in the imagination of those who never have had proper practical experience of their manufacture, or who are interested in some other form of roofing material.

Third, drying. If the necessary care has been exercised up to this point, the drying of the pressed tile is simply a matter of patience. Have plenty of rack and pallet room, or allow the tile to remain, protected from both sun and wind, until perfectly dry. There probably are better methods of accomplishing this, but I have no practical knowledge of them.

Fourth, setting. This is best done in a square kiln. Let the tile be trimmed with a knife to remove rough edges, etc., as taken from the pallet, and piled in pairs, back to back, reversed, two or three pair in each pile and so conveyed to the setter—set in the kiln in pairs on their sides, the flanges widest apart below, as close as possible together and perfectly plumb, reversing the course of the rows each layer. So placed they will easily bear their weight 7 or 8 courses of a 9½-inch tile, which is high enough. There is nothing to be gained, in my opinion, by setting a kiln very high.

Fifth, burning. This is undoubtedly the most important branch of the whole business, for no matter how much skill and care have been expended, and success achieved up to this, unless the burning is properly done, it is all labor lost. This has been said, I expect, by every writer who has ever expressed his views on the subject, but it is none the less true on that account.

As I find my letter getting rather too long, and wish to describe a simple form of up draft kiln, which I find burns tile very successfully, I will postpone further remarks till next issue.

Tuxpan, Mexico. R. M. GREER,

#### Wants Information—Kilns, Etc.

*Editor Clay-Worker:*

Enclosed find my check for amount due on subscription account.

I am running a small yard here in Arapahoe, selling between 200,000 and 500,000 a year. The demand was better than usual the past season. There is a brick famine in Nebraska at present, no brick to be had at any price. The prospect is very good for next year, better than it has been for the last ten years.

I burn in open top kilns and mould by hand. Do you think it would pay me to get a machine and put up good kilns with the trade I have at present? My brick crack badly on the yard and I use the cracked brick to make the casing. I pay \$4.60 a ton for coal and \$4.00 a cord for wood. My fuel costs me



\$2.00 per thousand and I have about 500 salmon out of every 100,000 brick. Arapahoe, Neb. WM. KAILEY.

#### The Longer the Better.

*Editor Clay-Worker:*

Please find enclosed \$2.00 for subscription to CLAY-WORKER for 1893. I must say the longer I take the CLAY-WORKER, the better I like it. I look for it each month with as much anxiety as I do for a letter from my best girl. I think he is a poor brickmaker that cannot or will not subscribe for the CLAY-WORKER. As an educator, your Journal has no equal. Keep on in your good work, and in time it will bear good fruit throughout the land.

Wishing you a prosperous year, I am  
Very Respectfully,  
Hamilton, Ontario, T. FANNING,

#### A Large Field Well Occupied.

*Editor Clay-Worker:*

Enclosed find check for renewal of subscription to your valuable Journal.

I am glad to state that there seems to be considerable activity in the brick business in this vicinity, notwithstanding the extreme cold weather we have had, both in mining clay and shipping by rail. The manufacturers in this section are all enlarging their works, and seem to anticipate an immense business.

I noticed, a few days ago, that the very extensive brick works, with some forty new cottages, of Adam Weber's are getting well under way, and are being pushed as rapidly as the weather will permit. These new works are being built on the Raritan River, adjoining the extensive plant of the Raritan Hollow and Porous Brick Co., of which C. Ropi is the able superintendent. This firm has, within the past year, built a number of pretty cottages for their workmen, which make the vicinity not only look business-like, but quite attractive.

Near by these are the large works of Mr. Isaacs, and the extensive plant of C. Pardee, where they manufacture a great variety of goods from a fire brick to a very creditable art tile.

The new fire brick works of Ostrander, which have recently been completed, I understand, are filling large orders for Cuba and other adjacent points.

These plants with several other larger ones, have located here on account of the large beds of fire and front brick

clays found in this neighborhood, and I can frankly say, any of your numerous readers in search of extensive beds of clay, with good rail and water communications, with a convenient market for their goods, would do well to bring some of their Western machinery and progressive business methods to these parts.

Wishing you and the CLAY-WORKER all the success you are so well entitled to, and fully believing we are on the eve of a great prosperity, even if I frankly admit that I had no hand in the political change, I am,

Very Hopefully,

AUGUSTINE CAMPBELL,  
Raritan Ridge Clay Co.,  
Metuchen, N. J.

#### Wants to Build a Dryer.

*Editor Clay-Worker:*

I have often noticed inquiries in your Journal by different persons in regard to questions about new improvements, plans, etc., of brickmaking.

We have been running a brickyard for about 12 years and have passed through the various grades of brick-making, from the one horse mill to our present plant, consisting of a "Kells end cut" machine and a 50 horse-power engine. We are making a very fine grade brick, which finds a ready market in the surrounding country.

We are very much in need of a different process of drying our brick. At present we have four large sheds with a capacity of \$160,000. We take the brick from the machine on cart and hack them in the shed. One great difficulty we find in drying them is, their cracking. It is impossible to keep the dry, hot winds under control, so that we have a great many broken brick.

Our plan now is to build a dryer, but what style to use is the greatest question to us. Our sheds (4 in number) are 70 feet long by 20 feet wide.

Which will be the cheaper and the more satisfactory, to use brick or tiling for the flues in the floor of the dryer? We have one plan of building, a course of flues of six-inch tiling, making them about six inches apart and running lengthwise of the shed, making each shed separate from the others.

Again, which is the cheaper to use as a means of heating—steam or heat? Is it possible to use the waste steam from the engine and would there be sufficient steam from a 50 horse-power engine? We are quite anxious to learn

from the experience of others, and not drive ahead and get some old concern of no use to us, through ignorance. We expect to make 1,000,000 brick this year.

Where can we obtain plans and "experience?" It might be cheaper to have a dryer put in and warranted by some experienced party.

Cordially Yours,

W. G. BOWER & SON,  
Vermillion, S. D.

#### A Railroad to Success.

*Editor Clay-Worker:*

Enclosed find check for subscription for CLAY-WORKER. This should have been sent before, and I have no excuse to offer. I think I hear you say, "All right, but do not let it happen again," as I have often said to my pallet boys. Whatever you do, do not fail to send the CLAY-WORKER. We have use for it yet, if only to read the different opinions some of which are logical and will certainly bring those who follow intelligently, to some good point, and not get them stuck in the mud. There are a good many young ones, though, just starting out, who will jump the main line for some side track with poor ballast and old, worn out, discarded track from the main line, which is sure to land them in the ditch of "Millions in it."

They have never been over the road, don't know how far it is to the end. No schedule to run by, only a wild cat. No pilot ahead. Up and down grade. Short curves, liable to strike a snag any time. Still they go on the same line. An old engineer or conductor that would take them through safe on the main line, they have no use for. They want to make some big strike all alone, and they are sure they are on the right track. For they see "millions in it." At last they come to the end and stick in the mud, their "millions" gone, and are surprised to find others have been there.

The Pacific coast offers exceedingly good chances for live, experienced brick men, who know good clay when they see it. That is what we have—no better on earth, for all classes of work and plenty of it. We have no use for the inexperienced, all-wise manager who builds air castles on a foundation that will crack and let the castle and the manager through. He may succeed in getting out alive, and with the advice of a good doctor, may, if he has lots of sand, recover from the fall and with an experienced engineer pull through in time, that is, if his pocket is deep enough.

This is a great world, all made of mud and all return to mud.

PACIFIC COASTER.



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81 MASSACHUSETTS AVE., INDIANAPOLIS.

**THE SPECIAL CONVENTION NUMBER.**

We look back upon the issue of the Convention number of the CLAY-WORKER, not as a creation of our own, but rather as one which emanated from the Convention; which came from the clayworkers themselves; as something which has a specific and distinct value as relating to the products of practical, money-making business men. For that reason it is entitled to, and should receive, the considerate attention of all practical craftsmen. None of the essays or speeches were from theorists. All were from men who have tasted the results of experience. They went before the convention with specific subjects assigned to them. How well they covered the ground may be seen by reading our Special Convention Number, of which we are quite proud. Not many years ago work of this kind would have been regarded as absurd. People would have said: "Why should mechanics, or manufacturers, those who have paid large sums of money for their experience, come into a body and tell all about their work and how it is done?" They would have said that the man who is smart enough to get hold of and control such a business; the one who can make money in working clay; the one who can make good and cheap brick, would naturally keep all the knowledge relating thereto, in his own hands. They would have seen no reason why he

should make it public. Nevertheless, we have, in the recent Convention Number, this very experience from practical people. They give publicly the results of their every-day experience, with the knowledge that it would go into type and become the common property of the entire craft. Why is this? It is not done for fun; it is not done distinctly for the sake of helping a neighbor, for we do not find that kind of charity in business. It is because it is recognized that the fullness of knowledge is necessary for the highest success in all kinds of business, and as a result, we have various schemes of co-operation. A meeting in convention is one type of co-operation. It is a co-operation in the diffusion of knowledge regarding the practical details of the business of working clay. It is known that no man can monopolize it all, it is known that no man can succeed from what he acquires alone; from what he works out from his inner consciousness. It is known that the knowledge of all is none too much, and that the knowledge of all is necessary to the best success.

**THE PROFESSIONAL BRICKMAKER.**

It seems that the professional brick-maker has not yet been fully developed. However, Mr. Fairhall clearly outlines the plan necessary to the existence of such service. Mr. Fairhall is in the line of the highest advancement of technical education. The scheme which he represents for a trade school is parallel with the highest thought in connection with technical advancement as known in European countries. In France it is the aim of the Government, in connection with schools, that the work shall be of a severely practical character. That which shall do the most from a business point of view, is a direct, special training, looking to the material advancement of the people. It is not regarded as sufficient that people should have general information and general education. It is necessary they have such information and training as is required to enable them to add to their productive capacity immediately upon leaving school.

A young man or woman who goes through the primary, intermediate and high schools and even the colleges of this country, is not in a position to earn a living. This is directly antagonistic to the highest educational ideas of the most advanced

nation of Europe. They say that when one has for many years been bending his efforts and energies in an educational direction, he should be able to do something of direct benefit to himself; something which gives an earning capacity, and which is of direct and material benefit to the nation at large. This is technical education. Now, a young man who goes through college, requires additional training of from three to five years in which to equip himself to earn a living. If he could come home with a knowledge of how to make brick, how to do carpenter work, how to superintend the construction of buildings, how to build a railroad, or how even to conduct one detail of a railroad, he would be of more use to the world than under the present condition.

Making brick is profitable work. A man can make no better use of his time than in studying the best methods of getting the most money out of clay. The more education one has, if applied in the right direction, the better clay-worker he will make. This is the thought of Mr. Fairhall. He makes it clear enough, and it is one which, because of its inherent merit, must make itself felt, no difference what the minority may think about it.

**ARTISTIC BRICKMAKING.**

Mr. Taylor's essay on front brick and the artistic aspect of brickmaking read at Louisville and given in full in the Special Convention Number, has a historical and a practical business value. We have the record of front brickmaking, indicating its small beginnings, its development and prognostication as to the future. The future is only to be judged by the past. The clay world must enlarge. The making of ordinary building brick is a large feature of the work, but with organization, new machinery, and most of all, increase of capital, the time may come when the making of ordinary brick will not be as profitable as at this time. This will make it necessary for those who have capital invested in this business to look outside the ordinary channels of brick-making. The history of the higher development of any art in any section is generally about the same. In New York, Philadelphia, Boston, Chicago and other large cities, the first ventures from the beaten track are usually made. Front brick were first made in Philadelphia. Now we have front brick made



in Tailholt and other small towns; there is a demand for something more than the enclosure of four walls. As Mr. Taylor so clearly outlines, most people are looking to something beyond the ordinary. At first this takes the form of the unusual, and in time that of the artistic. One who in making decorative brick merely undertakes to do the unusual, to make a form not common, a shape other than square, may receive patronage for a time. However, it is the one who makes a form which is interesting, one which is artistic and beautiful, who receives permanent support. Beautiful bricks well formed, suggested by the artist and shaped by the skillful mechanic, once introduced are on the market for all time. On the back of the program of the recent convention is a brick supposed to be ornamental in form. However, the outlines are crude, there is no beauty in it, it is merely unusual. It is simply not a square brick. An investment in patterns and machinery to make a brick of this form would no doubt prove a permanent one, though possibly not profitable. The lesson of this is, if one would make ornamental brick or other decorative forms in clay work, they should see to it that the product is artistically designed and then it will be good for all time. There is no fashion about true beauty. Really good design is always in style. The truly artistic never grows old. An investment in machinery and methods to do artistic work is never wasted. The trouble is that most of the patterns of ornamental brick work put on the market are ugly. The artistic sense of the people and the demand of the architect is for something better.

#### CLAYWORKING MACHINERY AT THE WORLD'S FAIR.

The following firms, it is reported, have arranged to make exhibits of their machinery at the Columbian Exposition:

The Frey-Sheckler Co., of Bucyrus, O.; J. W. Penfield & Son, of Willoughby, O.; E. M. Freese & Co., Galion, O.; Chisholm, Boyd & White, of Chicago, Ill.; Simpson Press Brick Machine Co., of Chicago, Ill., and C. W. Raymond & Co., of Dayton, O.

These firms have agreed to erect a building to cost \$15,000, for their exclusive use.

Bradford, Pa., is to have a new brick plant, with a capital of \$30,000.

#### NEW CATALOGUES.

WE ARE INDEBTED to the Frey-Sheckler Co., Bucyrus, Ohio, for a copy of their new 1893 catalogue of Clayworking machinery. It is a fine book of 136 pages and illustrates almost every known device for the manufacture and handling of brick by the stiff clay process. The index alone occupies two full pages indicating the elaborate character of the work. Those contemplating the purchase of any brickyard appliance should write them for a copy.

THE SIMPSON BRICK PRESS Co., 87 Washington street, Chicago, has favored us with a copy of their new catalogue—a handsome publication devoted to the dry press process of brick manufacture in general, and the Simpson press in particular. The illustrations are exceptionally fine and the plates showing the sectional views of a dry press plant will prove of value to all contemplating the construction of such works—copy will be mailed free on application.

AUGER BRICK MACHINERY is the subject of a new and beautifully executed catalogue recently issued by J. W. Penfield & Son, Willoughby, Ohio. The front cover title is a work of art and contrasts strangely with the commonplace pamphlets that were the rule a very few years since. Not more marked is the improvement in the matter and make up of catalogues than the character, design and efficiency of the machinery illustrated. Write for a copy, mentioning the CLAY-WORKER.

HEATING, VENTILATING AND DRYING, is the title, which is handsomely embossed in fire bronze, of an elaborate catalogue issued by the Buffalo Forge Co., Buffalo, N. Y. This firm has perfected a system of hot blast steam drying, that they believe is destined to revolutionize the now common method of drying brick. Those interested can obtain copy of catalogue and full information free by addressing them.

THE 1893 MONARCH BRICK MACHINE is the title of a neat catalogue issued by the Wellington (Ohio) Machine Co. The Monarch is a radical departure in the soft clay brick machine line, as our readers may see by writing for a copy of their new catalogue.

A BRICK has been thrown at us by C. & A. Potts & Co., Indianapolis. Not a real brick but just a miniature brick in paper, between the two lids of which is combined a memorandum book, calen-

dar and incidentally, brief mention of the brick yard supplies manufactured by them. Write them if you want a unique souvenir of the recent Convention at Louisville.

Geo. B. Engle Jr., & Co., Chicago, has favored us with a very pretty pocket catalogue of the ornamental and press brick manufactured by the Columbus (Ohio) Brick and Terra Cotta Co. In addition to the various forms of brick, of which there are a hundred or more, views of arches, panels and piers are given, also sectional drawings showing the manner of laying the brick for certain effects. The little book should find a place on every architect and contractor's desk.

The Standard Dry Kiln Co., Louisville, Ky., have issued a neat little pamphlet illustrating and describing their standard brick and tile drier. A copy will be mailed free to any of our readers who write them for it.

M. F. Williams & Co., St. Louis, Mo., have issued a new catalogue and price list of Dry Press Brick Machinery and fixtures, of which they manufacture a great variety, as the reader may see by referring to page 315 of this paper which gives the complete list.

The Jeffrey Manufacturing Co., Columbus, Ohio, are mailing their new 1893 catalogue. If you want to know anything about Chain Belting, Elevating and Conveying Machinery, send for a copy.

#### CLAY ROOFS.

We believe that if there were a manufacturer of clay roofs in every important town in the United States, that each particular owner of such a plant would derive a profit from the industry. The clay roof is wanted. It is not readily obtainable. New clay products of all kinds are in demand. The inherent value of the material makes this true. Nothing is wanted more than a good roofing material. It is not to be found in any of the compositions, nor in slate nor shingle. The ideal roof, the one that must come, the one certain of practical and commercial success is the burned clay roof.

On the morning of the 16th the large paving brick works of the Buckstaff Bros. Mfg. Co., near Lincoln, Neb., was totally destroyed by fire. Loss, \$150,000. Insurance, \$50,000. The works will be rebuilt at once.



## EDITORIAL NOTES and CLIPPINGS.

Whitehall, Ill., wants a brick factory.

A brick plant will be erected at Charlestown, Ind.

The Chesterfield (Ind) Brick Co., has been incorporated. Capital, \$12,000.

Mr. Joseph Holyoke, an oldtime brickmaker, of Brewer, Me., died Feb. 9th.

Lawrence P. Huhn, a well known brickmaker, of Trenton, N. J., died Feb. 6th.

A brick and tile factory will be established at Industry, Ill., in the near future.

The Chemical Pottery Works, Brooklyn, N. Y., were burned Jan. 16th. Loss, \$15,000.

The Hercules Brick Co., Chicago, Ill., has been incorporated. Capital stock, \$50,000.

A paving brick company has organized at Clinton, Ind. Capital stock \$30,000.

The Arlington, (Tenn.) Brick Co. had a \$700 blaze at their works early in January.

J. L. Platt, president Platt Brick and Fire Proofing Co., Fort Dodge, Ia., died of heart failure Feb. 1st.

Daniel A. Tobias, of the firm of Tobias Bros. & Co., brickmakers, Hamburg, Pa., died Feb. 4th. Aged 39 years.

Ford & Hughes, Lynchburg, Va., have purchased the brick works owned by the West Lynchburg Land Co.

J. R. Vaughn & Son will erect an extensive plant at Eldorado, Pa., for the manufacture of red building brick.

Louis Oberschelp and Frank C. Boyden, Sheffield, Ill., will start a brick and tile factory at that place in the spring.

The State Line Brick Works, Salem, Ohio, have shut down on account of a strike, caused by a reduction in wages.

Gladding, McBean & Co., Lincoln, Cali., contemplate establishing a large terra cotta plant at Salt Lake City, Utah.

Jno. A. Voss has sold his tile factory at Thomasboro, Ill., to Otto J. Manke of Chicago, who will take possession March 1st.

An employe of the Mexico (Mo.) Fire Brick Co., was killed Jan. 23rd, by a cave-in at the clay mine near Warrington, Mo.

Dr. W. K. Boyle, of Rives, Va., has sold a tract of clay land near Hyattsville, Md., to parties who will erect a large brick plant.

A plant for the manufacture of paving and common brick is soon to be erected at DeSoto, Ind. The parties interested are Peter McNerney, Col. J. H. Grover and J. S. Melton.

Kensington, Kan., is to have a brick plant.

Lincoln, Ill., is to have a steam brick plant.

The Fort Dodge (Ia.) Clay Works has increased its capital to \$50,000.

The Powhatan Clay Mfg. Co., Richmond, Va., has been chartered. Capital, \$100,000.

Geo. F. Cotton, Mayor of Superior Neb., is the owner of a patent kiln, and intends to organize a company and start a brick plant at Table Rock.

C. C. Cocke, Charlottesville, Va., has a Chief brick machine that he would like to trade for a Potts or Penfield machine of larger capacity.

Frank O'Brien, of O'Brien Bros., Natchez, Miss., has purchased an interest and will assume the management of the Monroe Brick Co.

The vitrified brickmakers of the Missouri Valley held a meeting at Nebraska City, Neb., February 10th to arrange a schedule of prices, etc.

A cave-in at the works of the Merrill Brick Co., Des Moines, Ia., resulted in the death of Chas. Reider and the injury of other workmen.

F. L. Hall and others of Middleburgh, Fla., will establish brick works there. Will be pleased to receive catalogues of steam-power machinery, etc.

Powell, Partridge & Storer's Brick and Terra Cotta Works, at Rocky Hill, near Princeton, N. J., were burned Feb. 1st. Loss, \$20,000. Partly insured.

The Donnelly Brick Works, New Britain, Conn., will add to their brick works a department for the manufacture of terra cotta and fancy pressed brick.

Jno. Goodwin, employed at the Peoria pottery, Peoria, Ill., was injured by saggers falling on his head and shoulders. His injuries are not considered fatal.

The Wataga Brick, Tile and Coal Co., Wataga, Ill., have removed to Galeburgh, Ill., changed their name to the Galesburgh Vitrified Brick Co., and increased their capital to \$50,000.

The Brown Brother's Brick Co., and the Central City Brick Co., Pools Brook, near Chittenango, N. Y., have consolidated and will hereafter be known as the Central City Brick Co.

The Canon Brick and Tile Manufacturing Co., Canon City, Colo., has been organized with a capital of \$30,000. The incorporators are: J. H. Peabody, C. W. Burrage, W. H. Trout, Charles Pauls, G. R. Shaeffer, B. F. Young and E. F. Jewett. Works will be erected at one.

D. G. Rhodes & Co., of Omaha, Neb., who had a small "Wanted" ad. in the Jan. CLAY-WORKER writes: "We must give your journal credit for being a medium to enlarge any person's line of correspondence. We have had replies from almost every State in the Union. 'Please TAKE IT OUT.'"

The Queen's Run Fire Brick Company have received an order for a car load of fire brick from the Old Dominion Copper Company, of Willcox, Arizona. The shipment will consist of but one car load of fifteen ton. The freight will amount to \$325, and the fire brick will have to be hauled on wagons 140 miles from the railroad station.

The Superior Pressed Brick Co., of St. Louis, Mo., declared a dividend January 1st of 45 per cent. on its capital stock of \$50,000. The Company made during the past season with one Lion Machine over 8,000,000 of brick, which discounts, any single year's work ever done before by a Lion machine. The Superior Co., is now putting in another Lion Machine and expects to make 15,000,000 brick the coming season. Frank Frommeyer formerly connected with the Lion Pressed Brick Co., is superintendent of the Superior Co.

The Aerated Fuel Co., 45 Drexel Bldg., New York, have obtained a verdict in suits brought for infringement of their patent covering apparatus for burning oil in connection with compressed air. The decision was rendered by Judge Acheson and is a complete victory for the Aerated Fuel Co. They will be pleased to send complete transcript of the case to any of our readers who are interested.

PRICES OF BRICK FOR 1893.—These prices for supplying bricks during the present year were determined upon yesterday at a meeting of the brick manufacturers of Philadelphia, held at the Builders' Exchange: Salmon brick, \$5.75 per thousand; hard bricks, \$8; machine made stretchers, \$10 to \$11; hand-made stretchers, \$10 to \$14; pressed bricks, \$18 to \$20. Thomas Flood, vice-president of the association, was chairman, and every brick manufacturer in the city signed the schedule of prices, promising not to supply bricks at less than the rate agreed upon.—*Philadelphia Record*.

The Grant Park (Ill.) Brick and Tile Co., has been incorporated, capital stock, \$25,000 and the plant is now undergoing extensive improvements. They will replace their small engine and boiler with a 90 horse power automatic engine and a 100 horse power boiler; will also add a new Pug mill and reconstruct their dry house. The dry house is 30 x 120 feet, the steam pipes will be laid lengthwise of the house six inches apart, then between each two strings of pipe will be two rows of brick set upon edge running parallel with pipes, then one course of brick will be laid flat crosswise of shed upon which the green brick and tile are to be dried, using exhaust steam during the day and live steam at night. brick and tile to be loaded upon cars run upon eight pound T rail on the first floor, and as the upper floor is shelved. They will let it remain so and use trucks. The demand for brick and tile has been very great and they have been behind all fall.



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One of the richest mineral regions in the United States exists in the Valley of the Muskingum River, in the State of Ohio. For years past millions of plain and ornamental building brick and vitrified paving brick, millions of gallons of pottery ware, and miles of sewer and drain tile have been shipped from this neighborhood to all parts of the Nation. At Zanesville, the metropolis of this region, is located the largest encaustic tile works in the world, a plant covering thirty-five acres, and whose wares are the only successful competitors of the imported product.

The cream of this remarkable region lies along the banks of the river, a navigable stream, in charge of the U. S. Government, and the Zanesville and Ohio River Railway has recently been constructed to open this valuable territory to development. Clays of every quality and description are found in inexhaustible quantities, and, as if Nature purposed to create an El Dorado, in many places immense veins of superior bituminous coal lie with the clays, so that they may be mined together.

Excellent building sites abound and the clays and coal may be tipped into the works, thus insuring the minimum cost in production.

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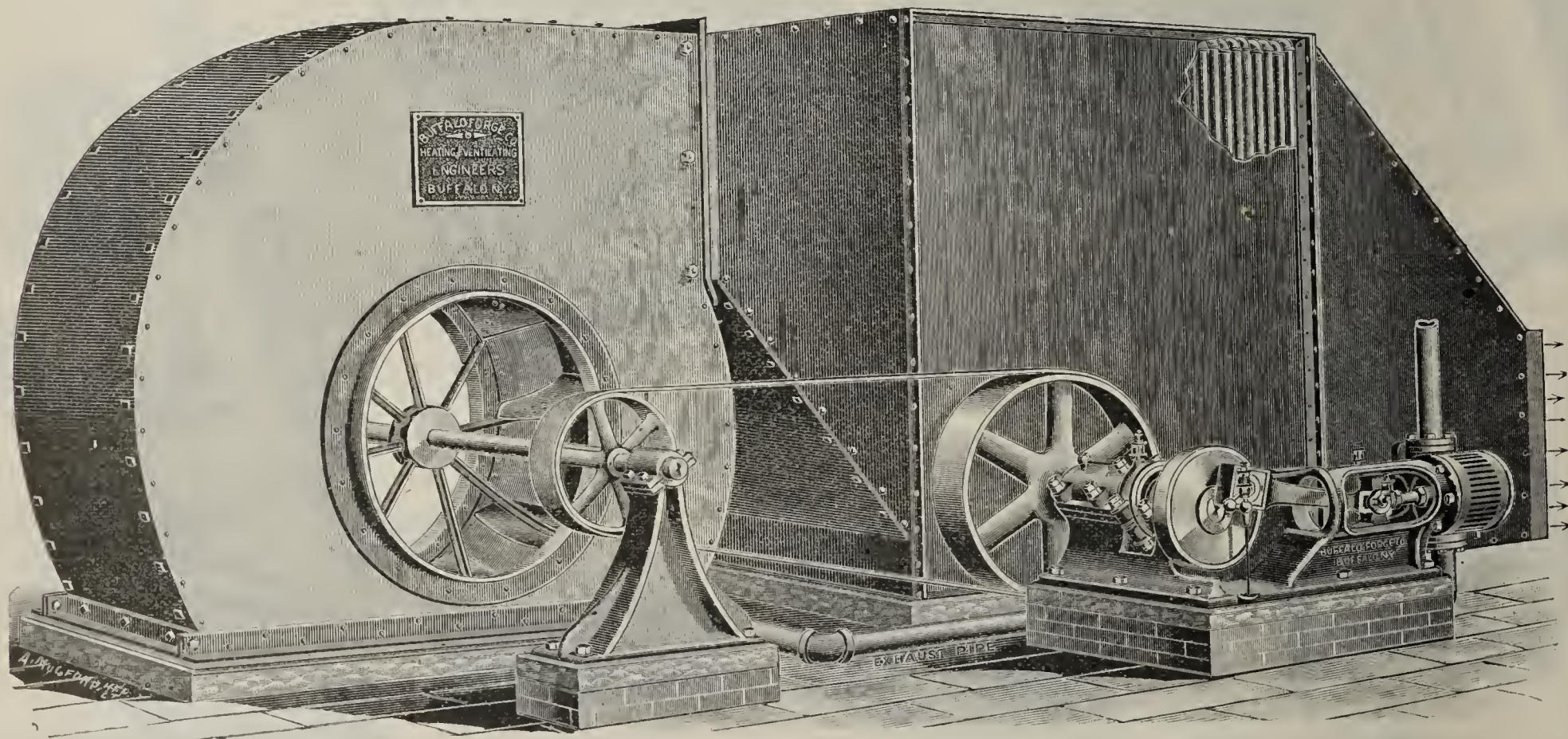
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6. No oil drips from the mouth of the burners while in action.
7. Neither smoke nor smell results from the combustion under boilers.
8. The burner is made of brass and is simple in construction having no delicate parts to wear out or clog up. It is almost indestructible by ordinary use.
9. It is known to be the most economical system in the market.

We are prepared to equip plants of any character. Our burners have demonstrated their superiority over all others. Send for Circular telling of the ADVANTAGES OF OIL as a fuel.

**J. R. ARMSTRONG CO.,**

"The Temple," Room 616, CHICAGO, ILL.



This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To CLAIM that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is ONE thing; to PROVE it is QUITE ANOTHER.

The proof that Buffalo Progressive Brick Dryers embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO., Buffalo, N. Y.**



# FLORA TEMPLE

## HAD HER DAY

And a bright future is before JAMES FLOREY, of BRYN MAHR, Penn., who ordered of us a Little Wonder Brick Machine and Cunningham's Automatic Brick Cutting Table.

Also W. M. Estill & Co., of Athens, Ill., Little Wonder Brick Machine, Cunningham's Automatic Cutting Table and No. 1 Open Top Pug Mill.

R. B. Moody, of Deland, Ill., Little Wonder Tile Machine.

M. C. Meigs, of La Fayette, Ind., Little Wonder Brick and Tile Machine.

Frederick Weeks, of Akron, O., Little Wonder Brick Machine.

The Dixon-Woods Co., of Pittsburgh, Penn., Wallace Patent Pug Mill.

And, if you want to achieve success, buy no other than The Little or Big Wonder Brick Machine and Cunningham's Automatic Cutting Table;

THEY ARE THE BEST!

Manufactured by 

## The Wallace Mfg. Co.,

FRANKFORT, IND.



## FOR SALE, WANTED, ETC.

**Advertising rates in this column** 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**WANTED**—A Dry Press brick burner accustomed to down draft kilns. None but first class men need apply. Address, s t f d DRY PRESS, care "Clay-Worker."

**WANTED**—A Superintendent for a dry press brick yard running two 4-mold machines. Must be fully capable of taking charge of such works in all its branches. Address "K," s 1 d Care "Clay-Worker."

**FOR SALE.** 36 Oil Burners in first-class condition, cheap. Apply to, s 3 d LEXINGTON BRICK Co., Lexington, Ky.

**FOR SALE.** No. 8 Brewer Mold Wheel, with plungers complete, only been used four months, will sell cheap. Size of molds  $8\frac{3}{4}$  x  $4\frac{1}{4}$ . s 3 d COFFIN & PERRY, Florence, S. C.

**WANTED.** To rent with privilege of buying a power brick machine of large capacity. Address, giving terms and full particulars, s 1 d m Box "U," Leadville, Colo.

**FOR SALE.** One good, heavy, slide-valve engine, 16' x 30, 10 foot hand wheel, heavy, 12 foot fly wheel in sections. Reasons for selling, being replaced by larger engine. Can be seen at s 3 d BOOTH & FLINN, Ltd., Brick Yard, Ruehs Hill, Pittsburg, Pa.

**WANTED.** A thoroughly competent man a hustler, as superintendent Wire cut and Dry Clay Machines. Down draft kilns. Give experience and salary expected. Address s 2 e 2,014 3d Ave. S., Minneapolis, Minn.

**FOR SALE**—Controlling interest in tile factory at Melvin, Ill. Entire interest in tile factory now operated by us at Bloomington, Ill. Also, one 40 horse-power engine, good as new. One Brewer & Co. tile machine, good as new. s 12. t f. d. N. B. HEAFER & Co., Bloomington, Ill.

**FOR SALE CHEAP.**—A Chief, soft mud brick machine. It is as good as new, having been used but little and is a good machine. Reasons for selling—going out of business. For full particulars address, s 12. t f. d. OLD MANN, Care Clay-Worker

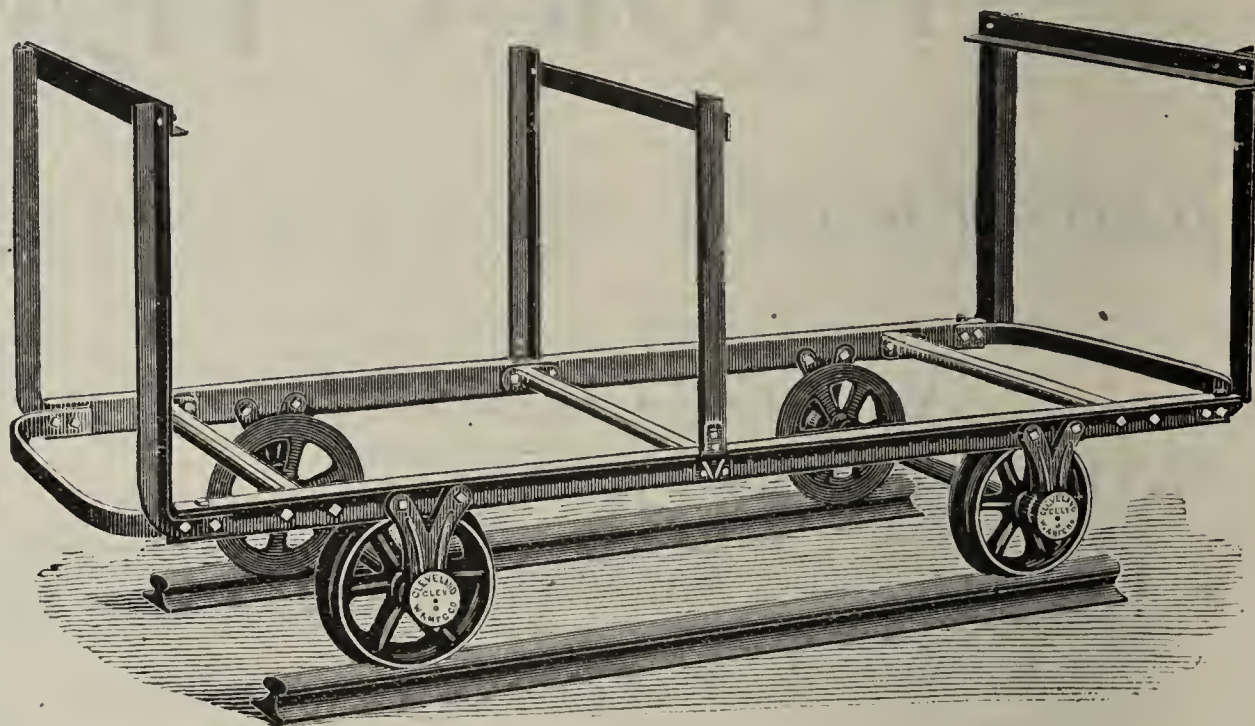
**FOR SALE.**—One Craft Upright, Steam Power Brick Machine. Entirely new. All iron front, iron posts, iron bottom, very heavy and strong. Good machine for pallet brick. Will be sold cheap. s 8. t f. l. THE MCLAGON FOUNDRY Co., New Haven, Conn.

**FOR SALE.**—65 H. P. Westinghouse Automatic Engine. Cylinder 11 in diam Drive pulley 30-inches by 14-inches. Used by a firm having water power and therefore used very little. Was replaced by a larger one. Has been put in good order, and is a bargain. s 8. t f. l. THE MCLAGON FOUNDRY Co., New Haven, Conn.

**FOR SALE.** Brick and tile machinery. One No. 7 Penfield Brick Machine tile dies 3 to 12 inches, brick dies and table complete 2 spring trucks, one portable boiler and engine, 12 horse power. All in good running order and will sell at a bargain if sold soon. Price \$400. Address s t f 8p FRANK LANGRAFF, Albion, Ind.

**FOR SALE.** Odd size moulds; not used. Eighteen  $8\frac{3}{4}$  x  $4\frac{1}{4}$  x  $2\frac{3}{4}$ . Fourteen  $8\frac{3}{4}$  in. x  $4\frac{1}{4}$  in x  $2\frac{1}{2}$  in. Used a few days, but perfectly good: Eleven  $8\frac{3}{4}$  in. x 4 and 1-16 in. x 2 and 7-16 in. All six brick to the mold and 9-16 in partitions. These will be sold cheap. Address s 7 t f. d. WELLINGTON MACHINE Co., Wellington Ohio

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Are the BEST and CHEAPEST.

NO BREAKDOWNS and NO DELAYS.

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MAKE A SPECIALTY OF  
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Fine Printing of all Kinds.

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## BOOKS FOR BRICKMAKERS.

It is pretty generally conceded that wonderful progress is being made in the ancient and heretofore unprogressive art of brickmaking. Among the best evidences of this is the fact that the brickmaking craft is no longer without a literature of its own. There are now some good practical books treating on the manipulation of clay—the making, drying and burning of brick. The list is not so large but that every brickmaker can afford to have them all. Get them and read them.

**"BRICKMAKER'S MANUAL,"**

Morrison and Reep, \$3.00

**"BRICKMAKING AND BURNING,"**

J. W. Crary, Sr., \$2.50

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**"DURABILITY OF BRICK PAVEMENTS,"**

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address **T. A. Randall & Co., Indianapolis, Ind.**

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BELLEVILLE, - - ILL.

UNSURPASSED FOR QUALITY.

OFFICE ADDRESS:

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TELEPHONE BUILDING. ST. LOUIS.

ESTABLISHED 1859.

**ROOFING TILE MAKERS—WANTED.** A first-class workman in early spring. Apply to  
ST. PAUL FIRE BRICK CO.,  
Ottawa, Minn.  
2. 1. d.

**FOR SALE.** At half price. One No. 1 Clay Crusber and Stone Separator with Elevator, manufactured by H. Brewer & Co., of Tecumseh, Mich. In A No. 1 order. Address,  
CONE BROS. & CO.,  
Jasper, Mich.  
2. 1. c.

**FOR SALE.** Two Sword brick machines. Have been used but a short time. Reason for selling, a change of system. Apply to  
MONROE BRICK CO.,  
Monroe, La.  
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**FOR SALE.** One Sword Brick Machine. Has been used two seasons. Also, one Raymond wrought iron tempering wheel used only one month. Will sell same for a reasonable price.  
LINDAUER & ROHDE,  
Kaukauna, Wis.  
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**THE LE MARS BRICK & TILE CO.,** of Le Mars, Iowa, being about to construct a patent kiln, in order to meet the increasing business, is anxious to correspond with a brickmaker who would supply small capital and take the position of manager on a salary.  
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**FOR SALE.** Two horse-power brick machines in good condition. **FRED H BROCKETT,**  
North Haven, Conn.  
1. 1f. 1p.

**WANTED—**Position as manager of brick yard by a practical brickmaker and burner. Reference given. Address  
"C. M. L."  
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**FOR SALE OR LEASE.** The Norfolk Brick and Tile Company's plant. For particulars, enquire of  
DR. F. VERGES,  
Norfolk, Neb  
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**FOR SALE.** One Quaker horse-power and one Hall's Improved horse-power brick machine, will be sold low to close out abandoned brick works.  
M. V. B. WAGONER,  
Albany, N. Y.  
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**FOR SALE CHEAP.** 60 iron cars and track for Sharer's Improved Dryer. Used only one season. For full particulars, address,  
N. A. & J. L. FITZGERALD,  
Danville, Va.  
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**FOR SALE.** One three-mould Andrus Dry Press. Latest, heaviest pattern. In good order. One Little Wonder Brick Machine. One Cyclone Pulverizer. Apply to  
MISSOULA BRICK & SEWER PIPE WORKS,  
Missoula, Mont.  
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**SUPERINTENDENT,** wants position, understands thoroughly dry press, stiff or soft mud system first-class burner, in either up or down draft kilns, a practical engineer, can do own repairs and keep machinery in good running order, a good manager of men. References of the highest order. Address  
"G. B."  
care "Clay-Worker."  
2s 2p tf

**WANTED.** A burner accustomed to burning soft mud bricks, one who understands repairing kilns and has some experience in setting preferred. Apply with list of references from last and former employers and salary expected to  
J. A. BLAFFER & SON,  
Foot Anstedity St., New Orleans, La.  
s tf d

**WANTED.** A party, active or silent to join a practical man in manufacturing street paving brick. The shale has been thoroughly tested and is equal to the very best in the country. A large section of country ready for paving brick, but not now supplied. Address  
PAVING BRICK,  
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s 2d

**A BARGAIN—**A valuable pressed brick plant in the city of Chicago, well equipped with improved machinery, kilns, etc., which has been turning out a very high grade of front and ornamental brick for several years past, is offered for sale, owing to present owners having other interests which demand their entire attention. The plant is also well adapted for the manufacture of terra cotta. Address  
"CHICAGO,"  
Care "Clay-Worker."  
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**W**ANTED A situation as burner. Thoroughly understands the Hoffmann Kiln. Advertiser has had 16 years experience with various designs of kilns and would prefer taking sole charge of damper work. Testimonials can be furnished if desired. Address, F. LOCKYER, 21 d. 57th, above Vine St., W. Philadelphia, Pa.

**P**ACIFIC COAST Offers an exceedingly good chance for a first-class brickmaker who will invest a moderate amount of working capital. Have a new and complete machine plant, patent kilns, good clay, good market. No rains for six months. Hard brick \$8 to \$9. Annual consumption 125 million. First-class connections. Good credit. A better chance never offered. Will meet first-class party in the East, or here.  
SAN FRANCISCO BRICK CO.,  
2 tf. d. Chronicle Bldg., San Francisco, Cal.

**S**ECOND-HAND MACHINES MUST GO.  
1 Acme Brick and Tile Machine.  
1 Wallace Brick and Tile Machine.  
1 Centennial Brick and Tile Machine.  
1 Penfield No. 7 Special Tile Mill.  
1 Ohio Brick and Tile Machine.  
1 New Departure Brick and Tile Machine.  
1 Hoosier Brick and Tile Machine.  
Write for particulars. H. J. VOTAW,  
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**F**OR SALE. One slide-valve engine, 14x24, complete; two boilers 48 inches in diameter by 20 feet long, 12 6-inch tubes in each; mud and steam drums, fire fronts, breeching, sheet iron smoke stack, safety valve, steam gauge and steam pipe connections; one doctor pump suitable to supply above boilers. Also three 'hoser' Clay Mills, made by Turner, Vaughn & Taylor, of Cuyahoga Falls, Ohio, with all necessary gearing and shafting. Also extra heavy mill with revolving bottom, similar to wet pan, but much heavier, for grinding broken brick, sewer pipe and other similar material. The above machinery is in good order, and is to be sold on account of removal. It can be seen running at factory of Blackmer & Post Pipe Co., Ewing Ave., and Pacific R. R., St. Louis.  
Address, BLACKMER & POST PIPE CO.,  
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The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.  
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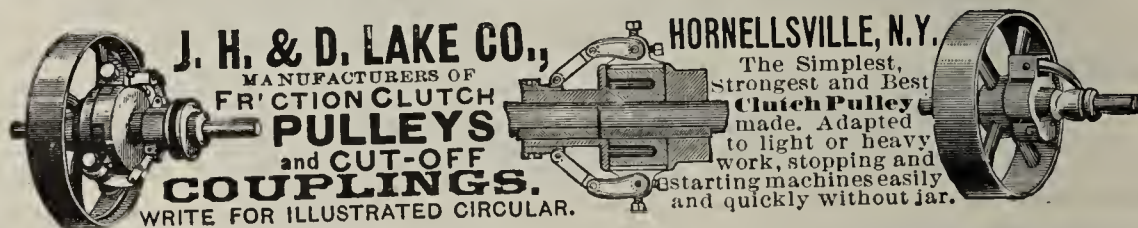
EASTERN HYDRAULIC PRESS BRICK CO.,  
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## THE MAN who put straw IN BRICKS

was an inventor. Were he living, I would procure a **PATENT** for him. As it is, I would be pleased to do your work. Write to me about your device and enclose stamp for reply.

EDWARD C. WEAVER,  
900 F. St., N. W., Washington, D. C.



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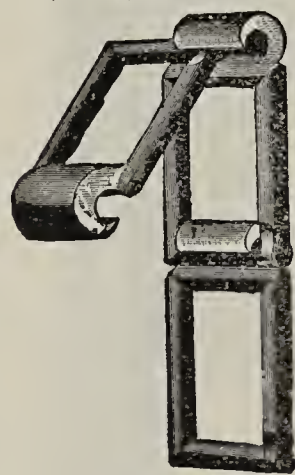
**FOR TIN OR SHINGLE ROOFS AND IRON WORK.** Tin roofs well painted have not required repainting for 10 to 15 years.  
**IT IS ABSOLUTELY WITHOUT AN EQUAL.**

If you need any paint it will pay you to send for circular.

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Clay, Coal, Ores, Sand,  
Grains, Etc.  
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### JEFFREY CHAIN BELTING,

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Malleable, Steel, Cable and Special Chains,  
DESIGNED FOR.....  
Elevators, Conveyors, Drive Belts,  
FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc,  
Send for **REDUCED PRICE LIST.** Address  
**THE JEFFREY M'F'G CO.,**

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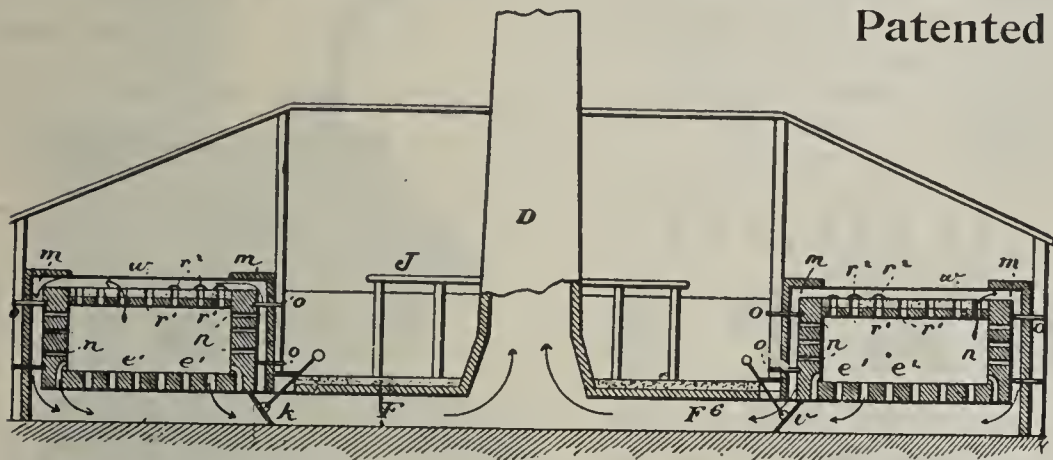


**ESPECIALLY ADAPTED FOR UN-WATERING CLAY PITS.**



# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

[Mention the Clay-Worker.]

CARL F. KAUL, Madison, Neb.

If you have something you don't want,  
Or want something you haven't got,  
Read our "For Sale, Wanted, Etc." ad's.

**S. G. PHILLIPS, Agent and Patentee,**

WOODBRIDGE, N. J.,

DEALER IN

"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.

"Air Dried" Bricks All the Year Round.

A new plan of reducing old, approved methods to a System. This frame enclosure needs no iron pallets.

**THE INSIDE FAN STEAM DRYER.**

A cross, spiral current from fan to fan. Bricks are safely dried in five hours. No "checking" or discoloration.

**NO CHIMNEYS OR BRICK STRUCTURE!**

And only half the doors are required. A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

**MORE FANS! LESS PIPES!**

The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live," as now in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

**"Seeing is Believing,"**

Therefore, "at home," this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

**"Better Than Drying in the Sun."—"Exhaust Steam."**

S. G. PHILLIPS, Woodbridge, N. J.

OTTUMWA, IOWA, July 7, 1892.

DEAR SIR:—Though I have had your Dryer in operation but a short time, it gives me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTDICK.

**"And Met the Requirements in Every Case."**

MR. S. G. PHILLIPS, Woodbridge, N. J.

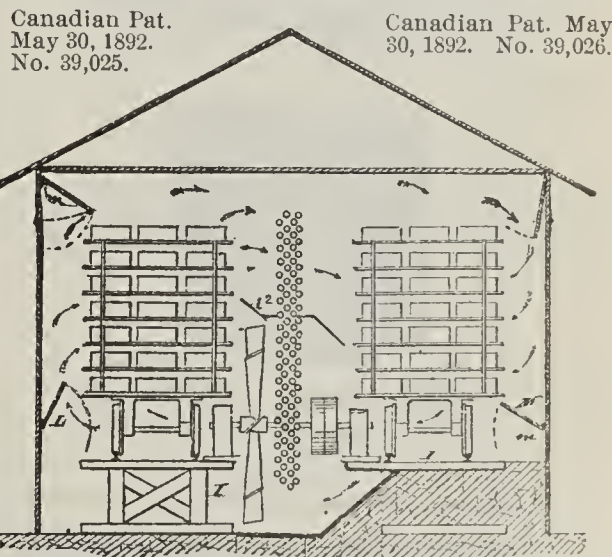
DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,

CHAMBERS BROTHERS Co., J. H. Chambers, Gen'l Mgr.

**THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.**

"I think you have the Dryer the brick people are looking for."—Jno. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently; "Not over 12 hours to make them VERY DRY—the best by great odds of any in the market."—The writer has looked the matter of Dryers up very fully, and been to see about all of any importance.



U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

PHILADELPHIA, December 14, 1892.



Send ten cents in Postage Stamps and get by return mail a handsomely illustrated Christmas Book of Sketches and Poems by Howard Saxby.  
C. B. RYAN,  
A. G. P. A., C. & O. R'y, Cincinnati, Ohio.

## LOCATIONS FOR CLAY INDUSTRIES

Upon the lines of the Illinois Central Railroad Company and the Yazoo & Mississippi Valley Railroad Company, in the South, there are many

## LARGE DEPOSITS OF CLAY

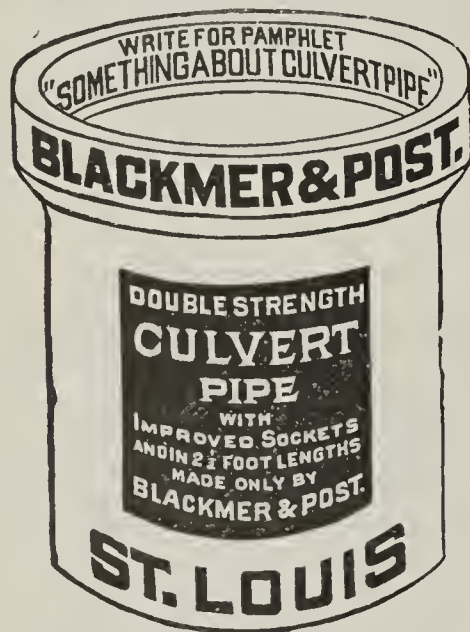
Snitable for Fire Brick, Paving Brick, Drain Pipe, Tile, Terra Cotta and nearly every other manufacture of clay; some of these are being worked in a small way, but many of them have been untouched on account of lack of capital, knowledge and other reasons. It is desired to bring these fields to the attention of manufacturers and capitalists, and to that effect a pamphlet of 150 pages, entitled "Where to Locate New Factories," has been issued and will be sent free on application to the undersigned. Information will also be given upon application as to where the

## BEST SITES

are located, and as to

## INDUCEMENTS OFFERED

to those in the above lines of industry who propose seeking a location. For further information, and for the pamphlet mentioned, address GEO. C. POWER, Industrial Commissioner I. C. R. R., 55 Michigan Ave., Chicago, Ill.



**Brick Moulds**  
GUARANTEED  
STRONGEST MAKE  
**G. GOLDEWE & CO.**  
829 SIXTH ST. MILWAUKEE, WIS. SEND FOR CIRCULAR

## THE ONLY PUMP

For Brickyards, Water Works, Quarries  
Mines, Sewer Contractors, Founda-  
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who desire to raise large  
quantities of Water.

## HAND POWER PUMPS

The Most Powerful, Most Durable,  
Largest Capacity, and Works the Easiest  
of any Hand Power Pump made. Low  
Priced.

Will pump water containing Sand, Gravel, Mud  
Sewerage, Etc., **without choking** the Pump.  
In fact will pump water containing anything but  
rocks.

Full information, Catalogue, Etc., Mailed Free. Write

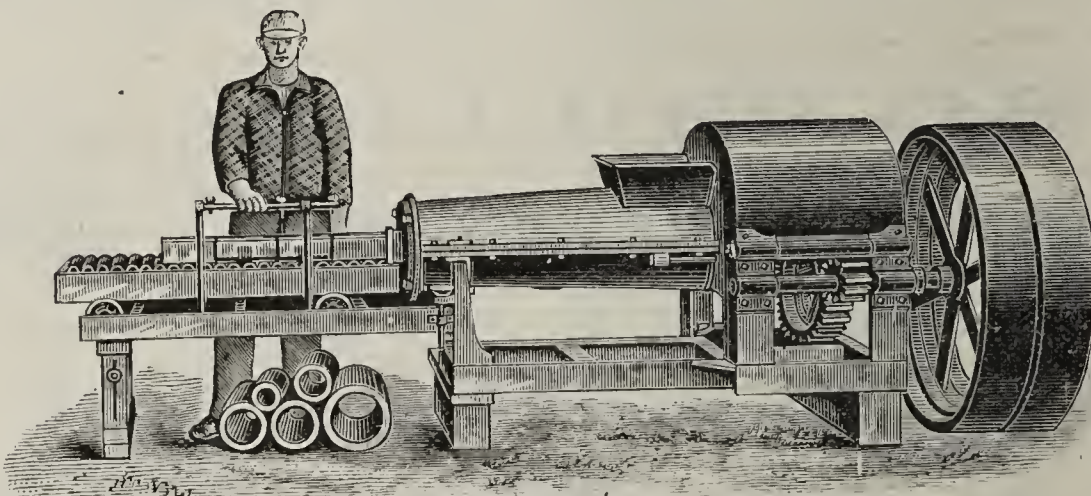
**Boston & Lockport Block Co., 162 Commercial St., Boston.**



KELLS & SON'S IMPROVED

## Brick and Tile Machines.

"Old, Reliable, Time-Tried and True."



P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.

We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

For Illustrated Circulars, Prices, Etc., address

**Kells & Sons,**

Shop near New Court House.

ADRIAN, MICH.

**H. C. BAIRD & SON,**  
PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.

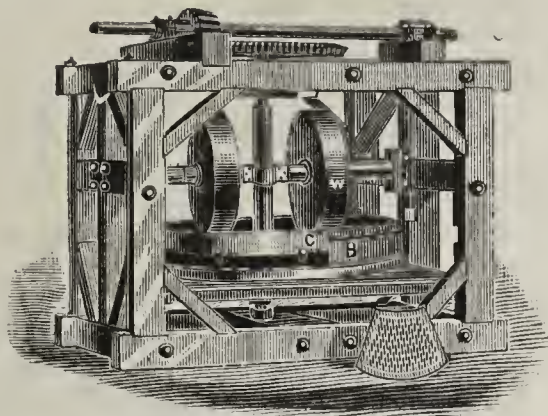
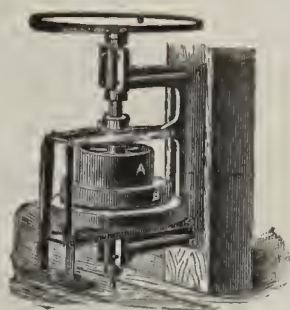
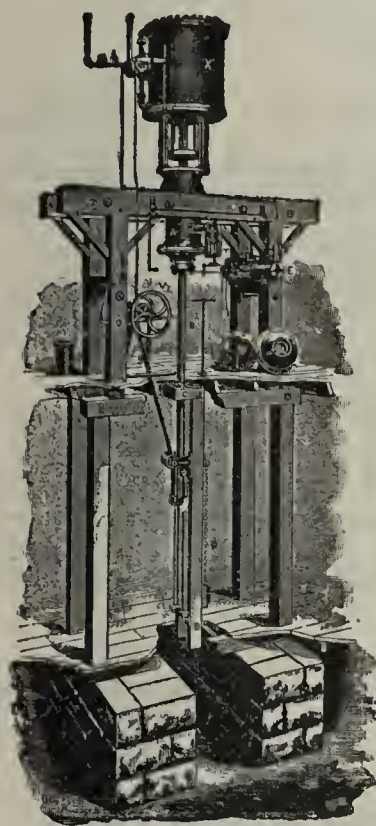


# The TURNER, VAUGHN & TAYLOR CO.

General Machinists.

Clayworking Machinery a specialty.

Builders of Double Acting, Direct Steam, Brick Press.



Write for Catalogue.

Cuyahoga Falls, Ohio

4000 TO 5500  
(Gallons of Water per hour.)

BY HAND-POWER.

## Pumps, Hand-power Pumps.

(LOUD'S PATENT.)

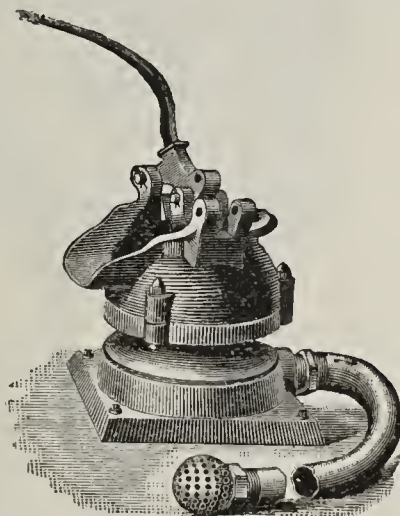
These Pumps are simple, durable and low-priced.

A large capacity and easy working pump for **Brick Yards, Water Works, Sewer Contractors, Foundation Builders, Miners, Quarries** or wherever it is desired to raise a *large quantity* of water by *Hand-power*. The pump has large valves (*accessible by hand*) and will pump water containing *sand, gravel, mud, sewage matter, etc.*, without *choking* or any *perceptible wear*.

Send for circular and price list. Manufactured by

### THE UNION HARDWARE CO.,

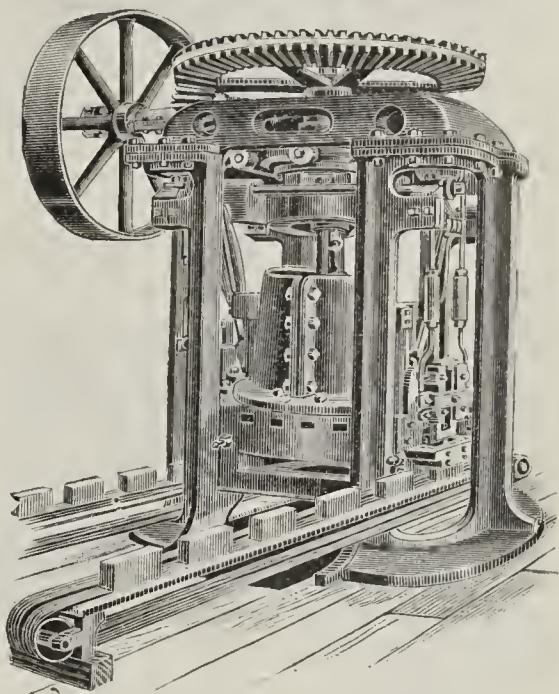
TORRINGTON, CONNECTICUT.



# GRANT BRICK MACHINE

IS THE BEST FOR MAKING

## Street Pavers



The Advantages are Quality and Economy.

The brick are pressed into solid steel moulds, with one direct pressure, making brick absolutely free from lamination. Address,

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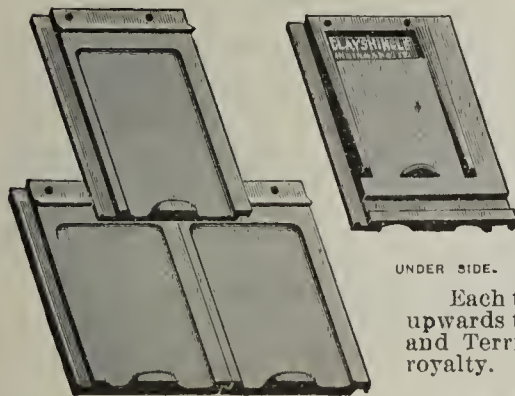
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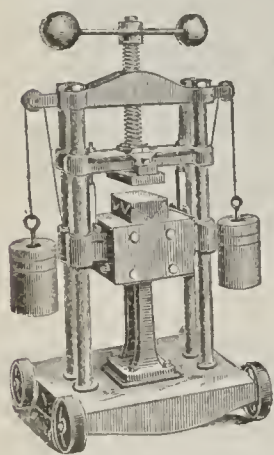


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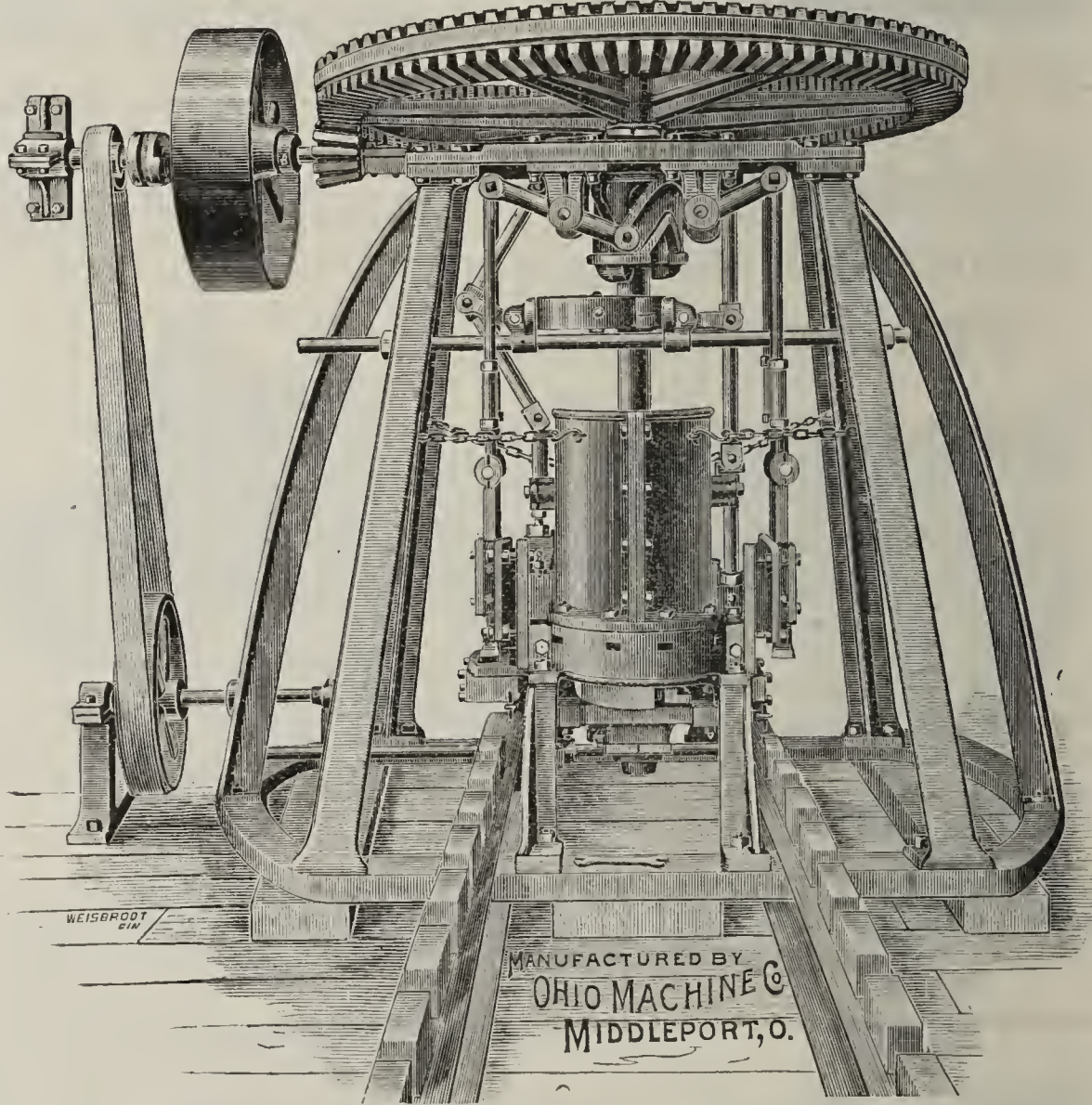
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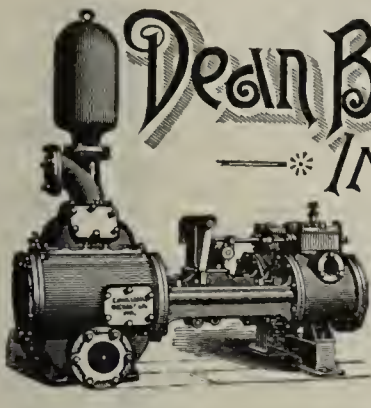
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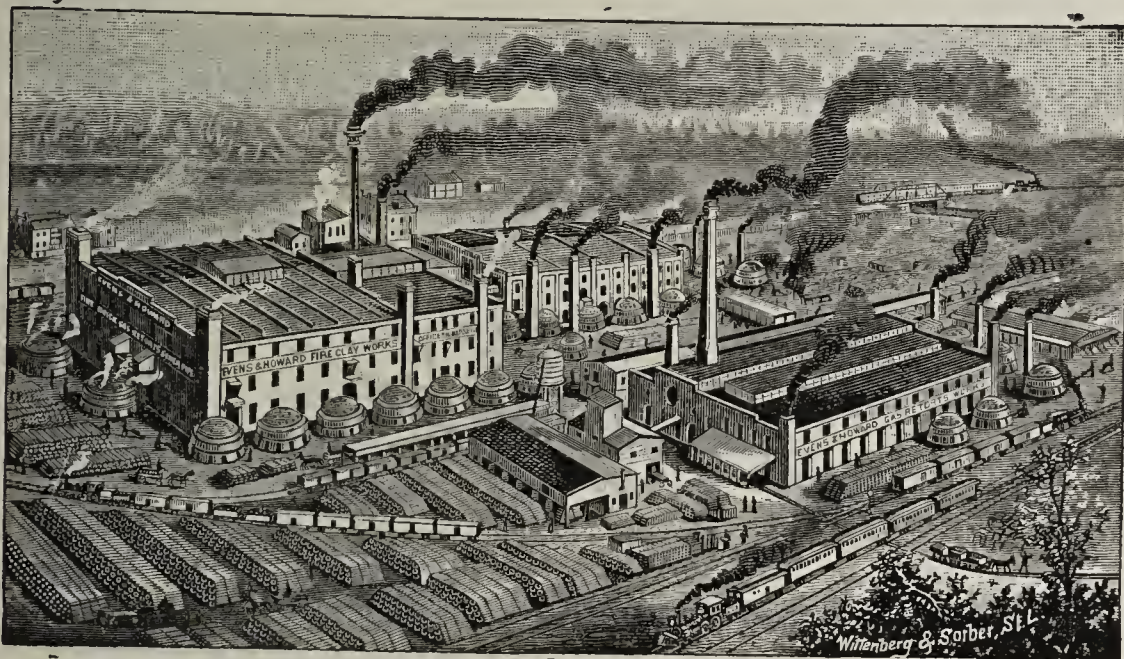
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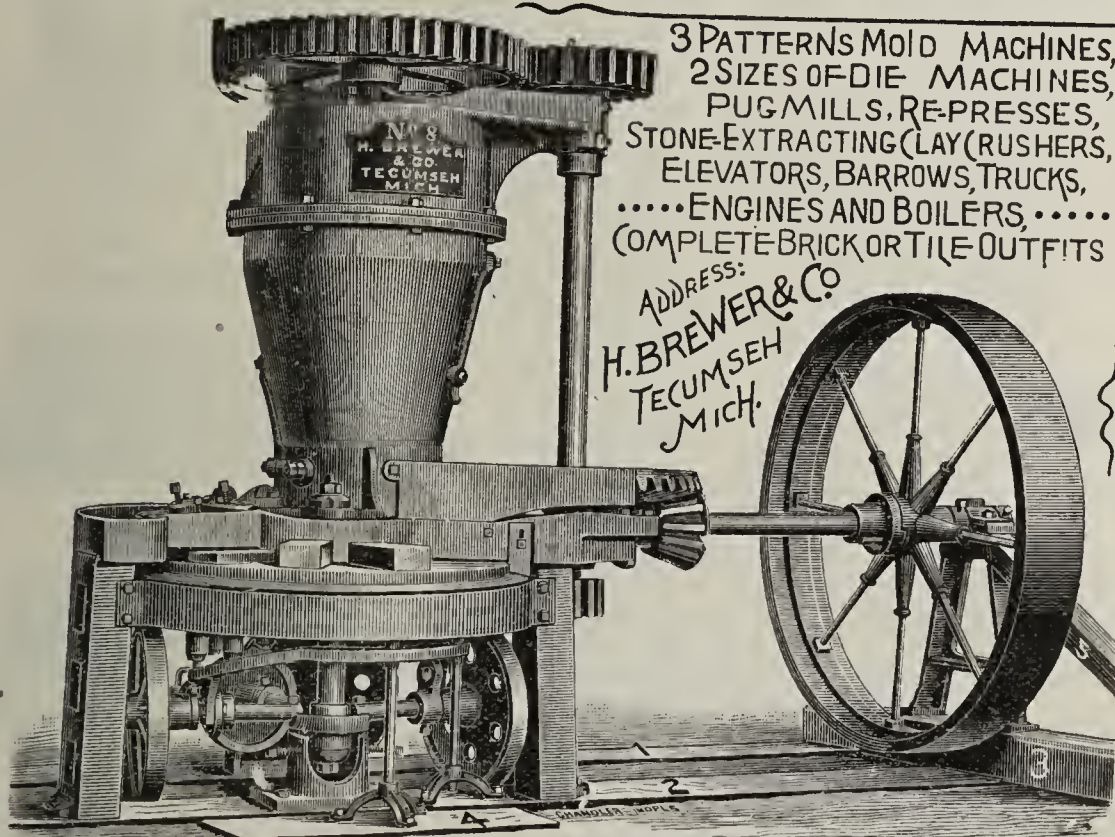
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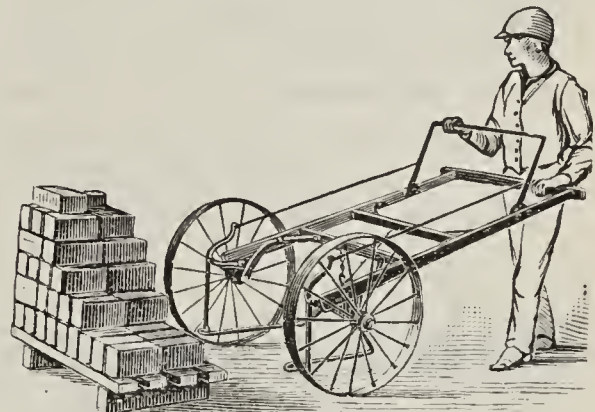


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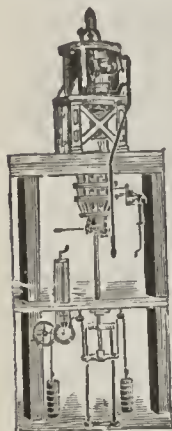
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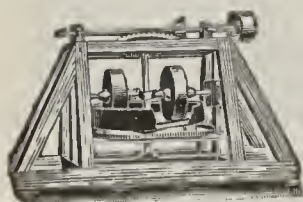
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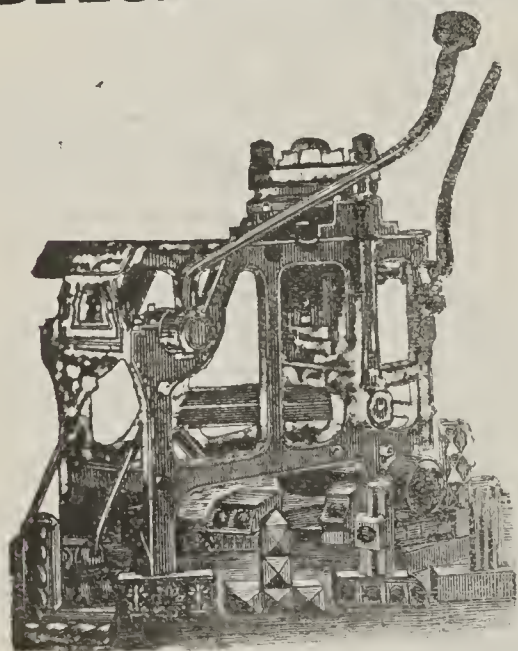
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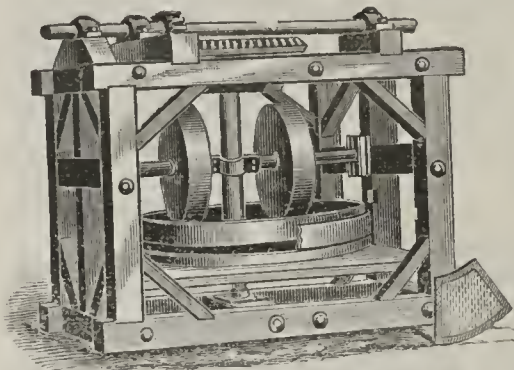
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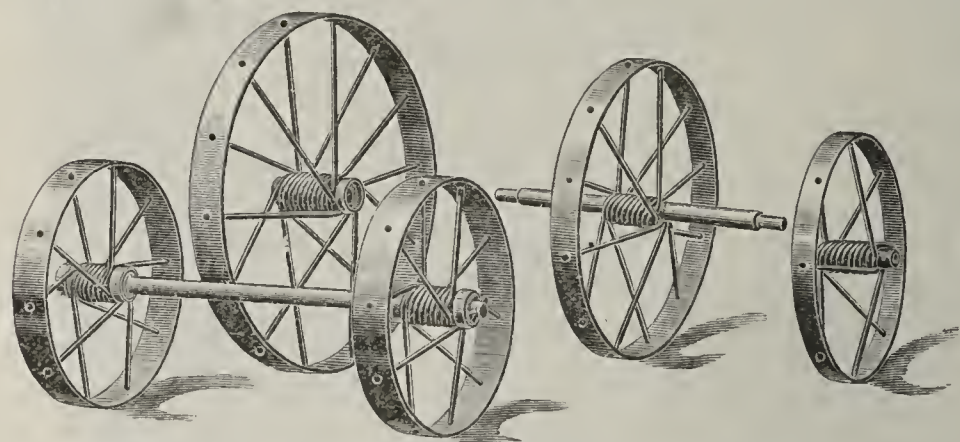
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Make the Wheels  
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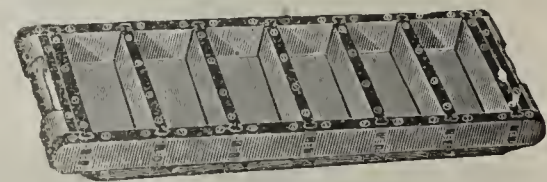
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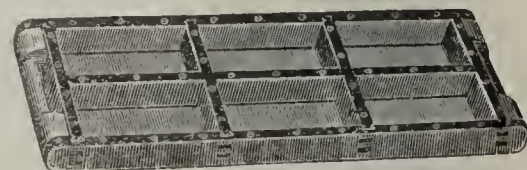
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U. S. Patent, May 17, 1892. Up and Down Draft.

This is the Only Up and Down-draft Continuous Kiln Ever Invented.

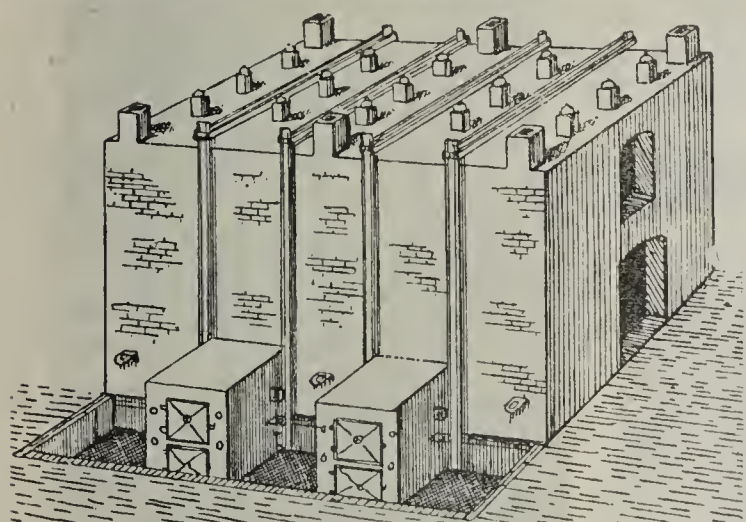
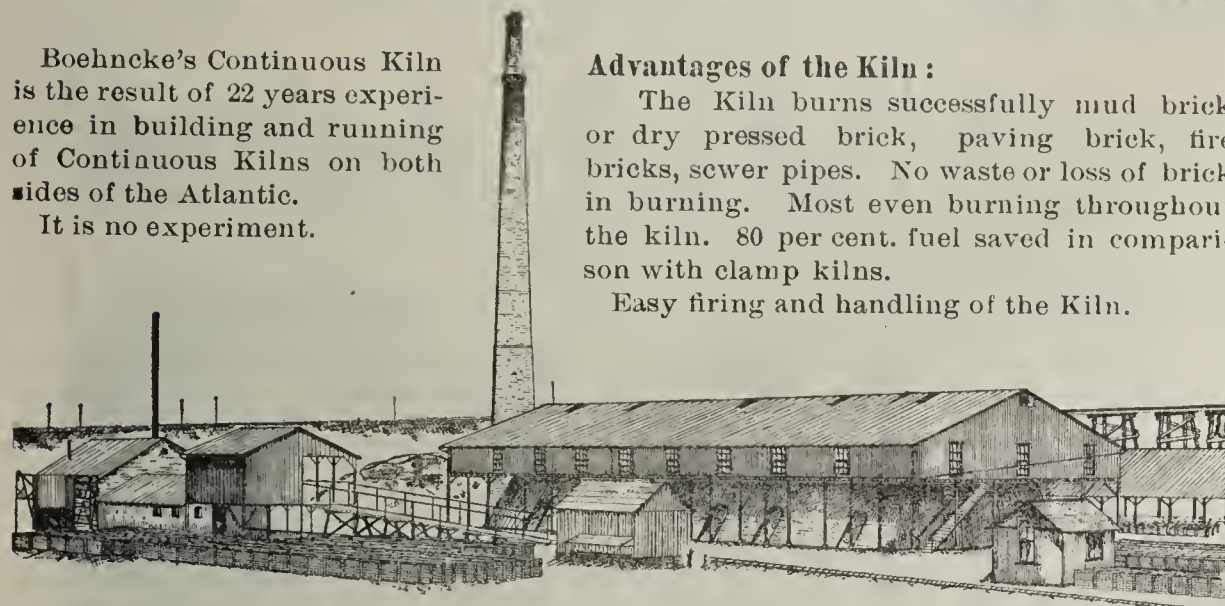
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Up and Down Draft. Pat. May 24, '92

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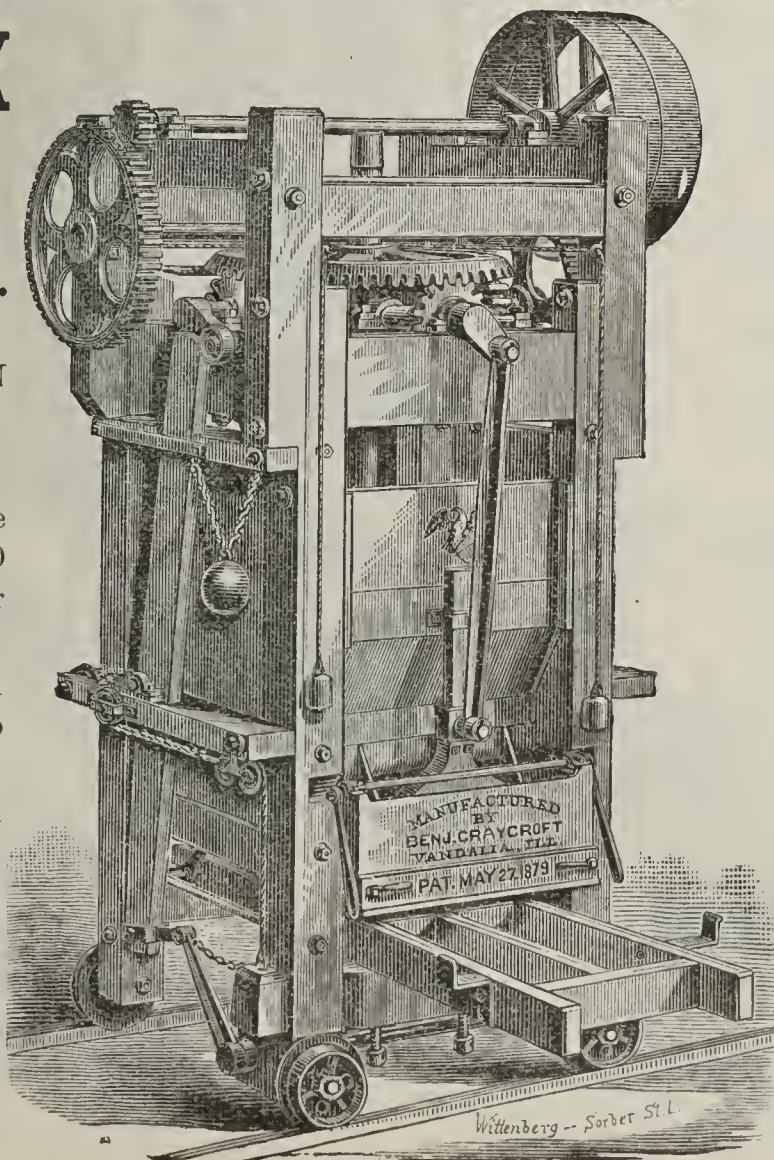
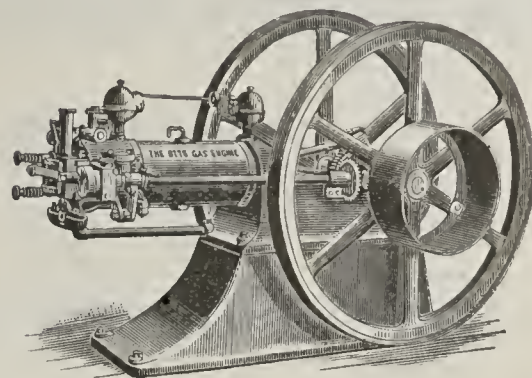
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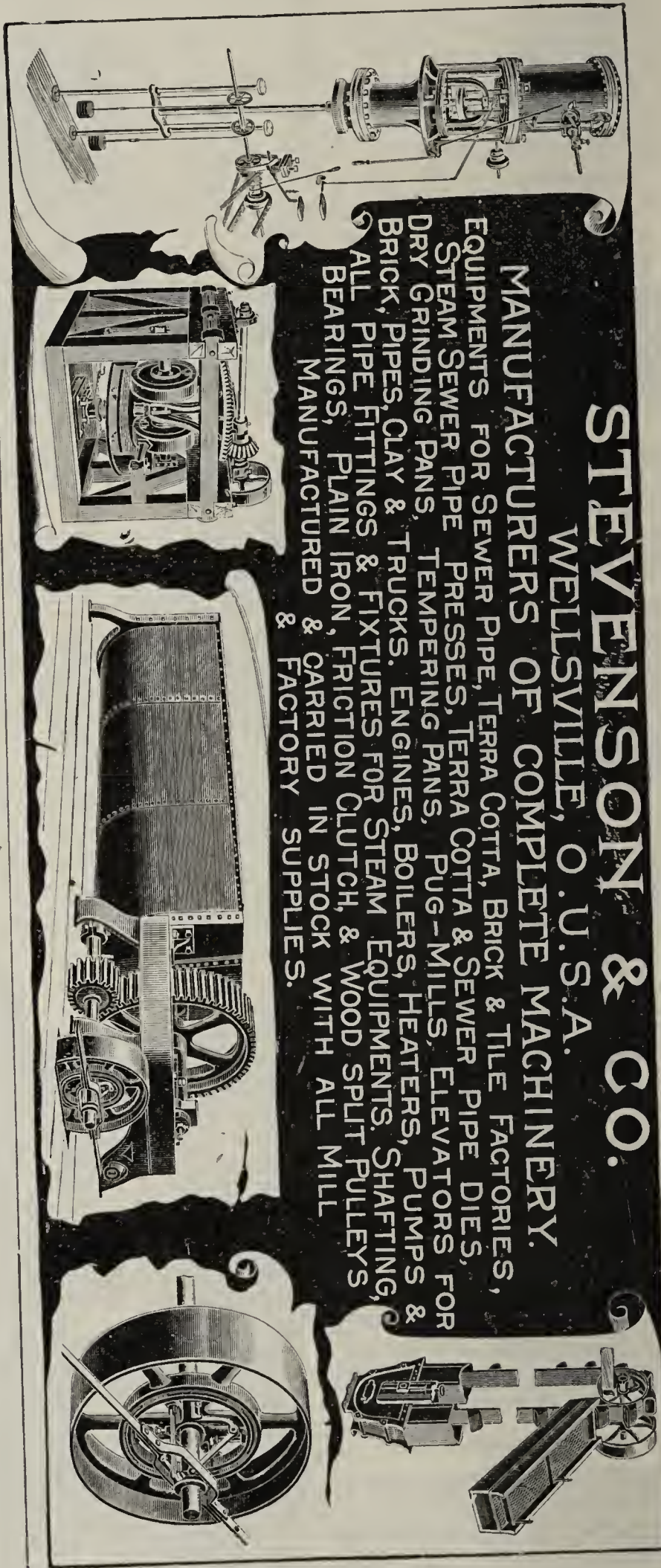
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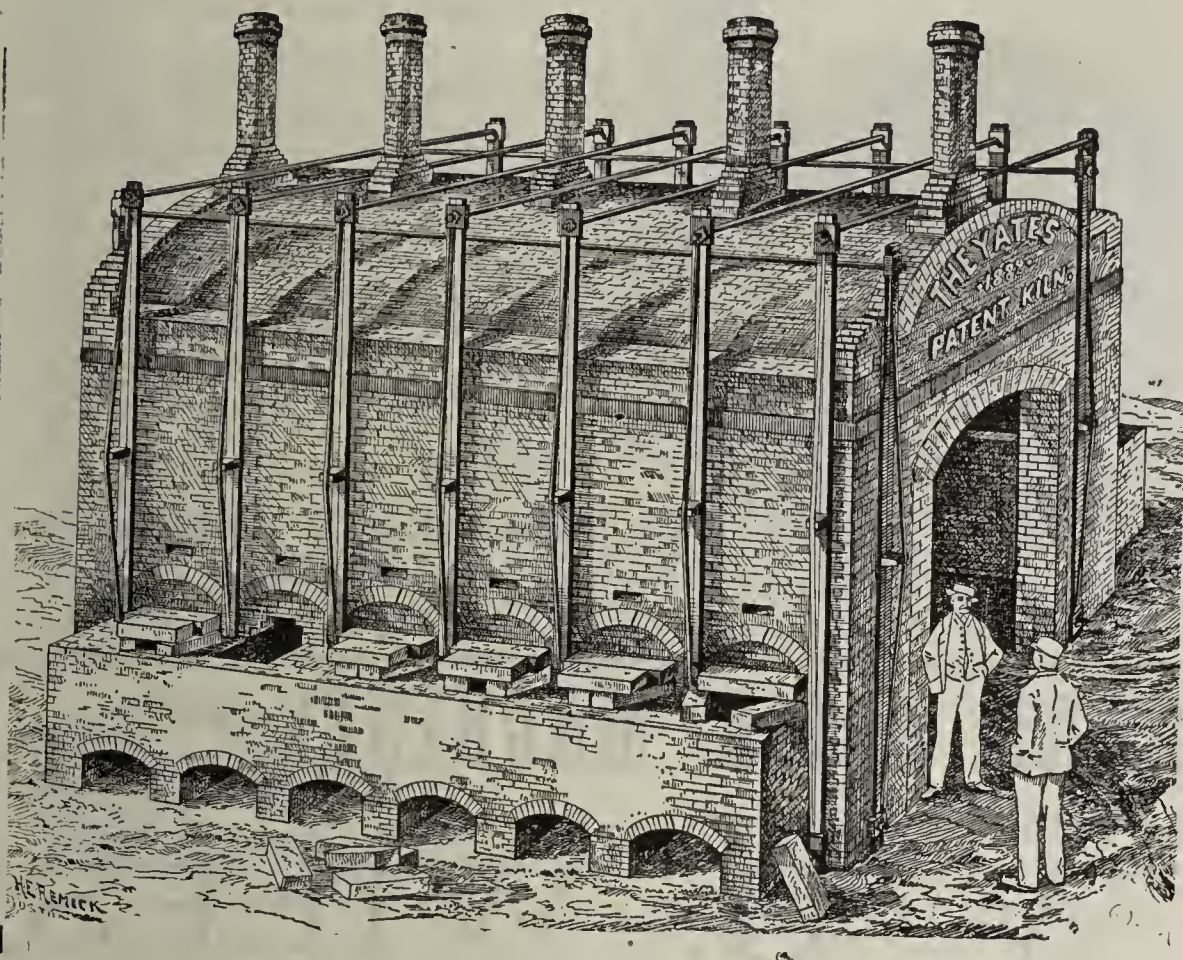
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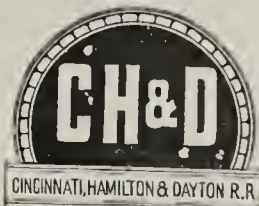
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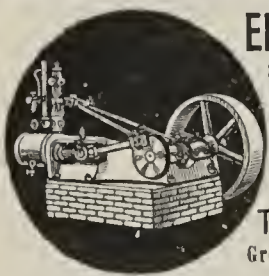
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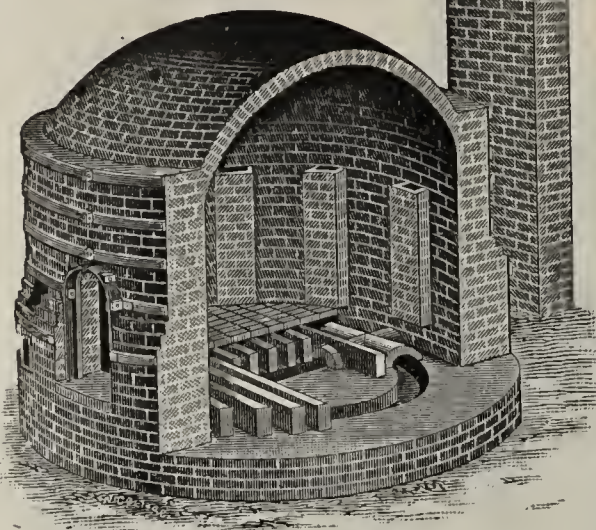
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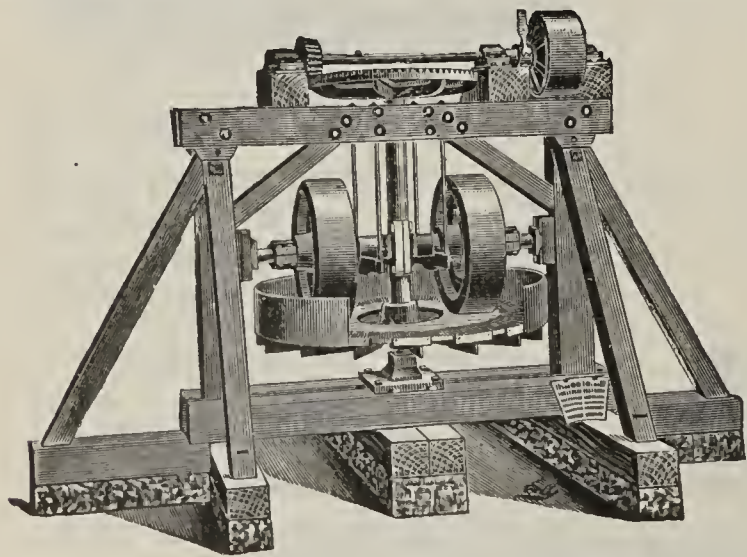
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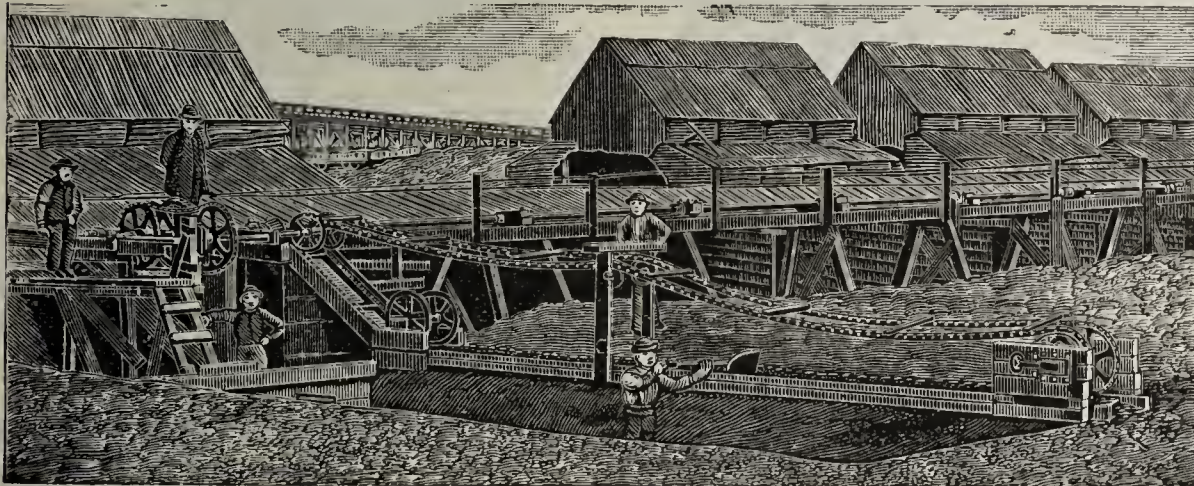
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64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

**T**HIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



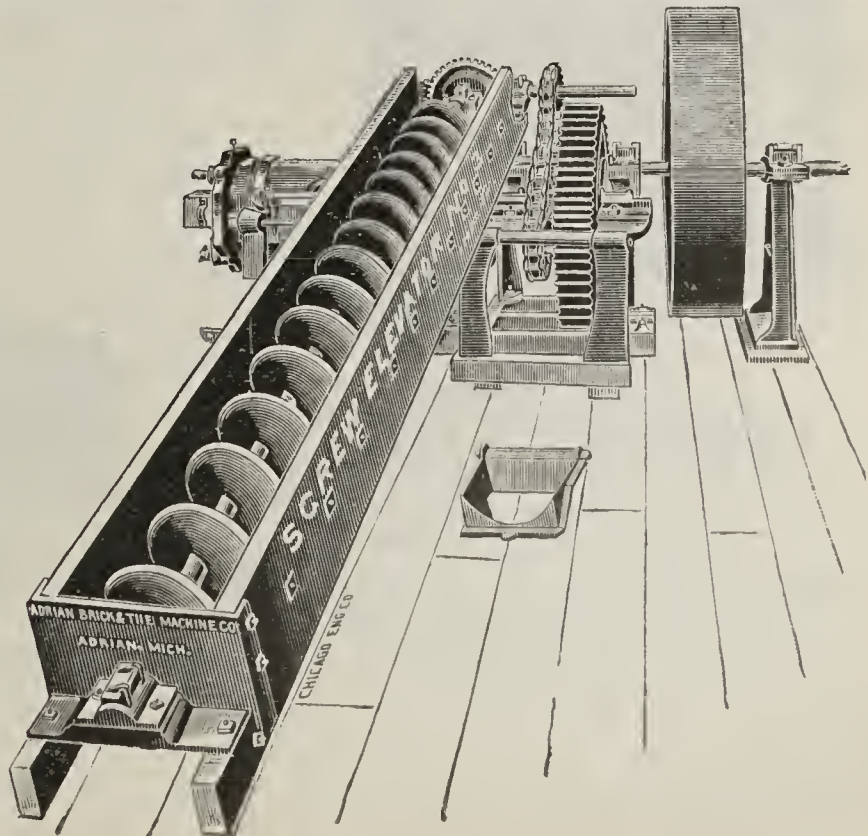
## A LONG FELT WANT SUPPLIED.

### A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**  
ADRIAN, - - MICHIGAN.

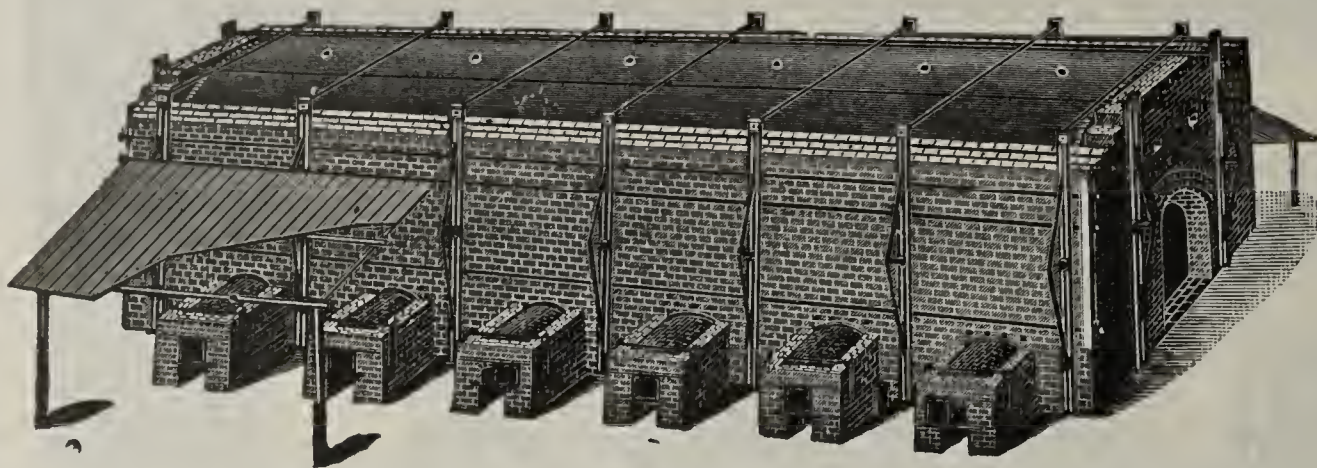




# THE GRISWOLD PATENT IMPROVED BRICK KILN

With  
Its  
Latest  
Improvements  
Has  
No Equal.

For further information and prices for Yard Rights apply to

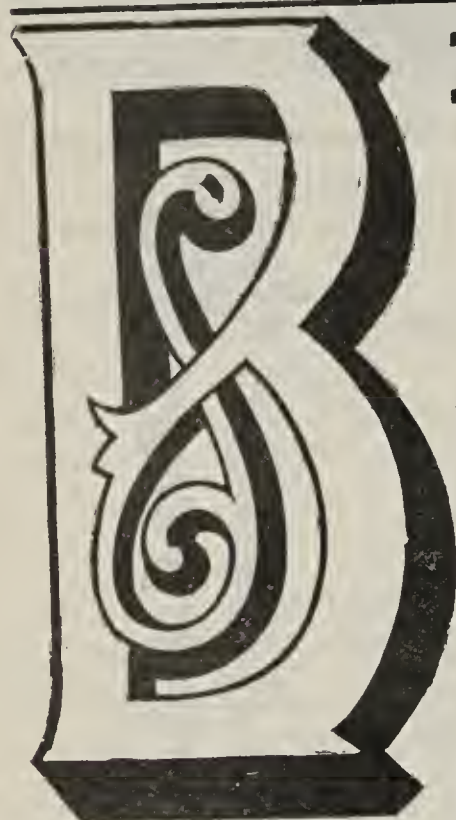


Works  
with an  
Up and Down  
Draft  
Continuously  
with No  
Change of  
Dampers.

J. B. GRISWOLD & CO.,

Box 1419, Zanesville, O.

Reference: The Oakland Press Brick Co., Zanesville, O



## BRICK

48 Styles.

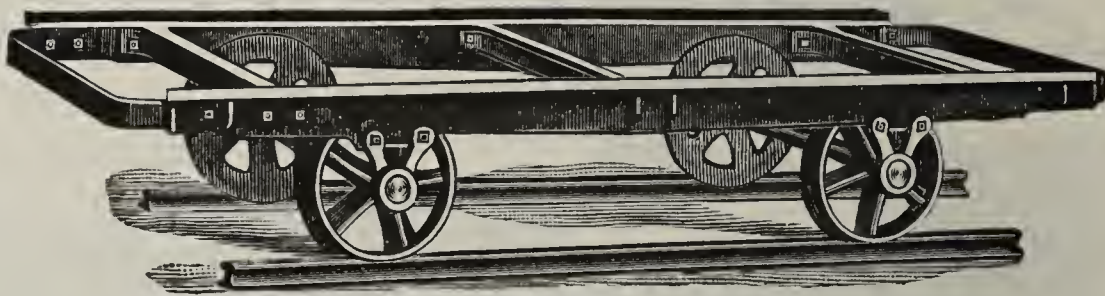


## ARS

Send For Price List.

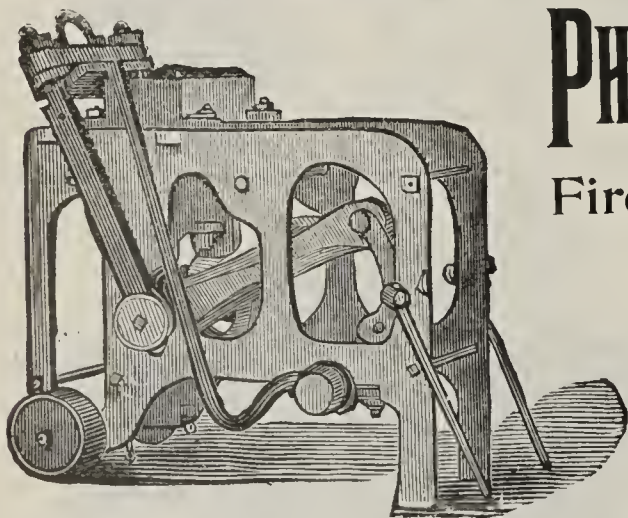
Also

Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



RED BRICK PRESS.

GEORGE CARNELL,

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

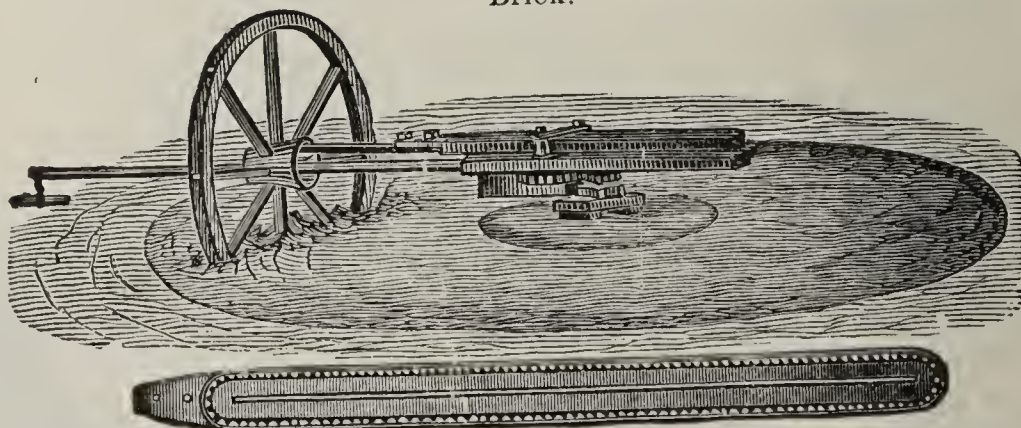
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and is fitted up 10 per cent. cheaper.



# WE CANNOT MAKE WORLD'S COLUMBIAN

## Souvenir Silver Half Dollars,

But we can give information that will enable brick manufacturers to make brick at a large profit and which will be in as much demand as the Souvenir Silver Half Dollar.

Read the following testimonial, then come and judge for yourself:

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

ST. LOUIS, MO., Nov. 29th, 1892.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

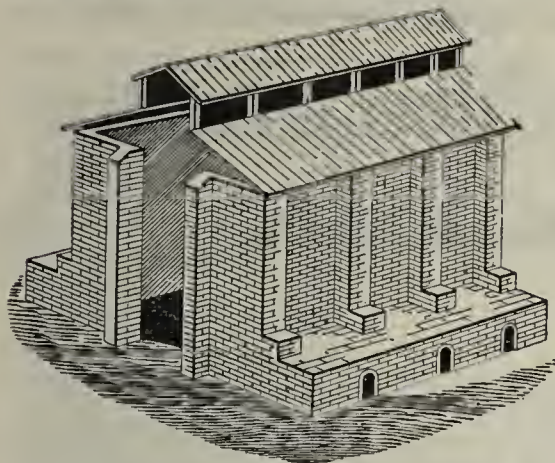
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

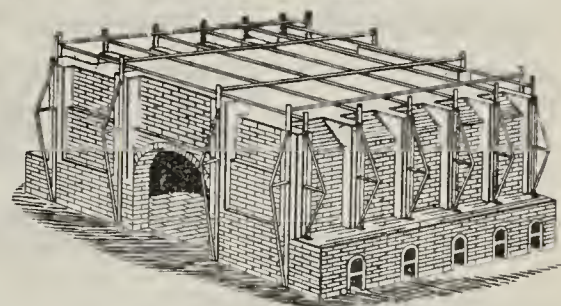
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS



## LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

## TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

L. H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best placed man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eve out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILLY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



## THE THISSEN-ARNOLD CONTINUOUS BRICK KILN AND DRYER.

Taking into consideration all the advantages of this kiln over all others, it is undoubtedly the best. It is the best arranged, the most durable, the simplest, uses the least fuel, and gives the most perfect results in any clay, especially in the production of common building and vitrified paving brick. Only very limited shed room is required when the semi-dry clay process is used. Soft mud brick, of course, must be dried until they become hard enough to sustain their weight when set in the kiln.

This kiln works continuously. In other words, when once in operation, it burns a given number of thousands every day in the year; and when properly operated, there will be no loss whatever in burning. It can be easily arranged for work summer or winter, without additional expense for manufacturing and burning. The escaping heat from the cooling brick is successfully used for water-smoking the brick ahead of the fire, without extra expense for labor or fuel they are dried at the same place where burnt, without moving them.

To burn brick successfully it is necessary to have full control of the draft and perfect combustion of the fuel. Our kiln not only possesses these advantages, but it acts also as a smoke consumer, and the heat can be directed, at will, to any desired point. For vitrified paving brick our kiln has no equal, because no heat can escape, and it can be kept in the brick as long as necessary. This kiln will last a lifetime, with very little expenditure for repairs. We now have a kiln of thirty-thousand daily capacity, in operation, and hereby cordially invite examination.

**DESCRIPTION:**—The kiln consists of an endless tunnel, which is lined with fire bricks on the inside to make it substantial, and divided in a series of compartments (18 preferred) by use of shutters and movable partitions which connect and disconnect in any compartment at any time desired. Each compartment has a draft channel in its door, extending transversely across the compartment and further to the smoke chamber, where it is provided with a damper to open and close it. In the compartments these channels are provided with two plates, shorter than the entire width of the compartment, to slide over the top of each, by which means the draft is regulated from one side to the other or to the center of kiln if desired. The firing is done from top of the kiln, through holes about six inches in diameter, in only one compartment at one time. The draft channel is open five or six compartments ahead of the fire, so as to consume the entire heat in the bricks, allowing none to escape. A shutter is drawn across the compartment in which the draft is open, thus making the burning compartments independent of the rest of the kiln. Ahead of this shutter the drying is done, with the escaping heat from the cooling brick, and the heat which is utilized from the sand filling over the burning compartments, by means of channels or pipes imbedded in the filling and extending the entire circuit of the kiln, being connected with each compartment. The channels are provided with dampers, and so regulated as to connect or disconnect them with any compartments, thus operating continuously with the fire.

The drying is done in the same manner as the burning, and as many compartments are used as will consume all the heat. Then the draft is opened in the last compartment and another shutter drawn across, making the desired compartments independent of the rest of the kiln.

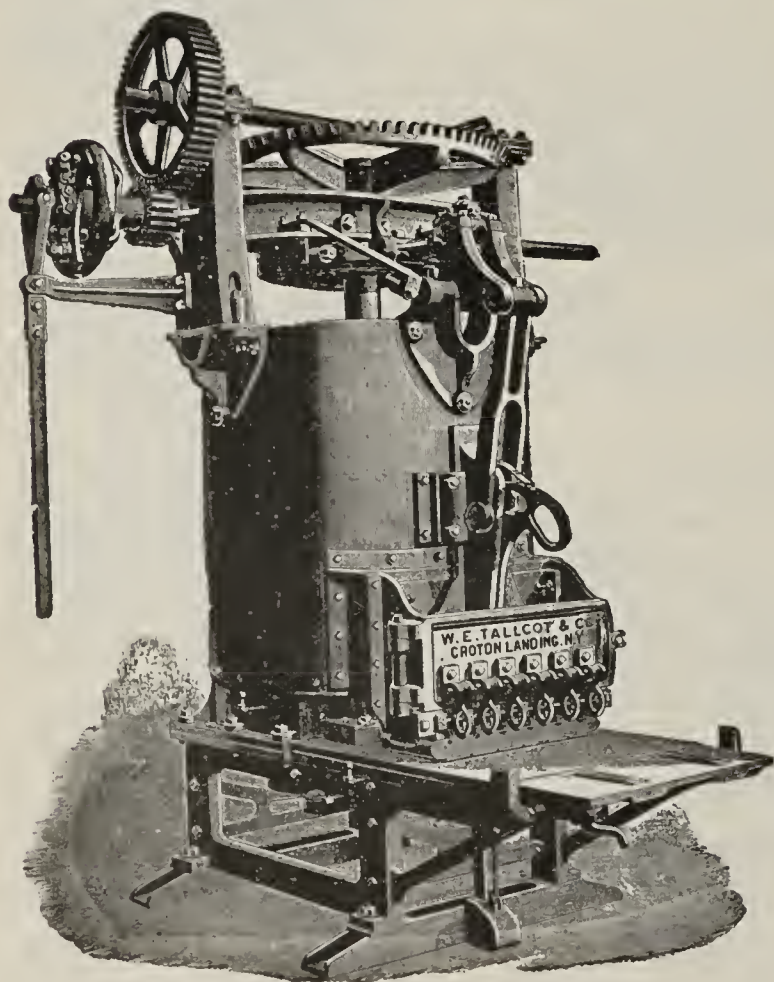
Ahead of the compartments drying, the setting continues, and behind the burning, the bricks are taken out.

The kiln gives the best of results in any kind of clay. It can be built of any daily capacity desired.

For further particulars call on or address,

**THE UNIVERSAL CONTINUOUS BRICK KILN CO.,** 510 New York Life Building,  
or 425 Range Building, OMAHA, NEBRASKA.  
(Mention the Clay-Worker.)

## The "I. X. L." Brick Machine. A Modern Type of Machine.



Extra Strong,  
Handy to Operate,  
Large Tempering and  
Pressing Capacity.

Made in two sizes:

The "Standard" for ordinary brick.

The "Special" for large brick.

Especially Adapted For

**PALLET BRICK WORK.**

Write for Illustrated Catalogue, stating size of brick to be made and if wanted for pallet work.

**W. E. Tallcot & Co.,**

**CROTON-ON-HUDSON, - NEW YORK.**



Good Machinery!

Good Bricks!

Good Money!



AN ENVIABLE COMBINATION.  
ARE YOU IN IT?

The Latest Improvements—operating with convenience and economy. It being impossible to do something with nothing, neither can you make an Auger hole with a gimlet. Another season with poor appliances may settle you. Behold in the "Creager" machinery your salvation!! Amassing wealth and reputation for hundreds. Why not for you? Complete outfits for small or large service. Honest guarantees. Prices very low, considering those benefits available. Write for estimates, catalogues and information to

Jonathan Creager's Sons,

127 W. SECOND STREET,

Cincinnati, Ohio.

**"Leviathan"**

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,

WM. H. ASHWELL.

**MAIN BELTING CO.,**

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

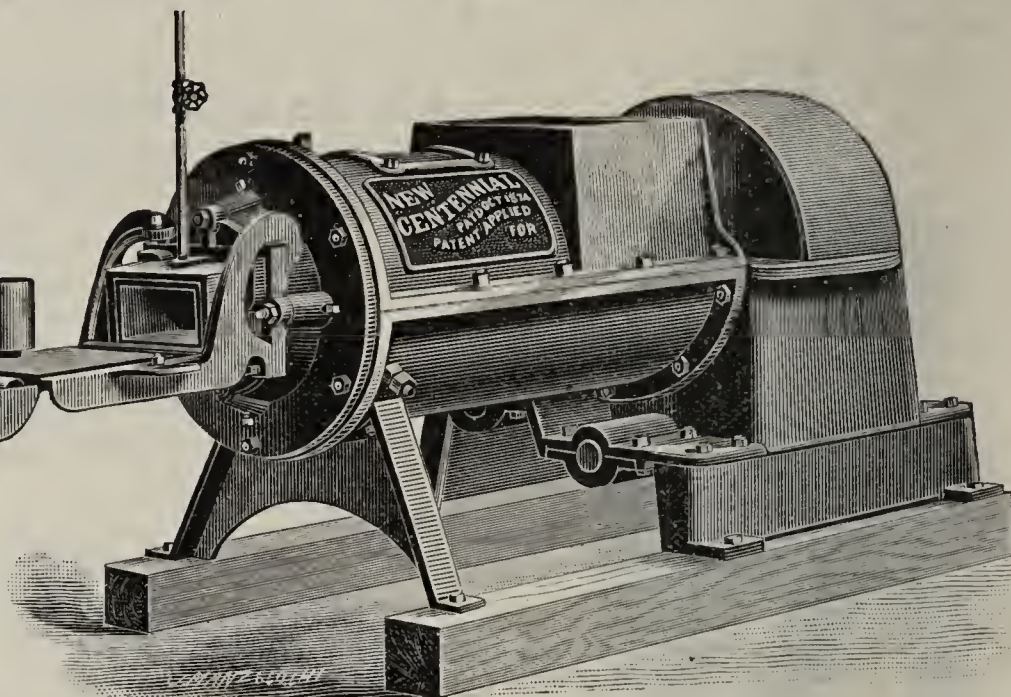
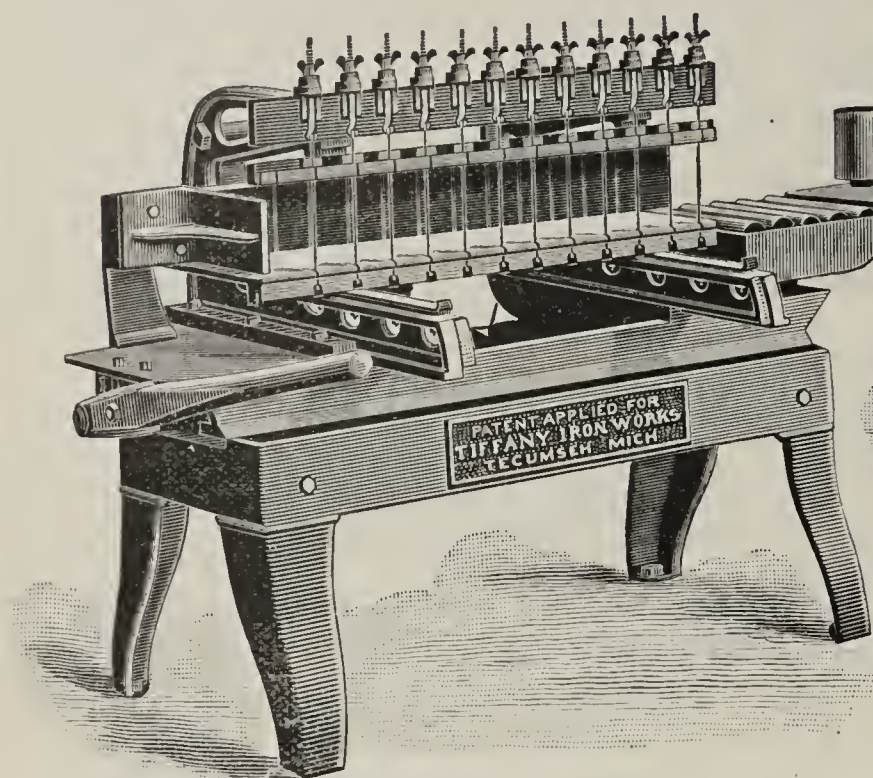
**Thompson's Water-Proof Belt Dressing for****Leather, Rubber and Canvas Belting.****No user of Belting can afford to be without it.**

the End.



# TIFFANY IRON WORKS,

TECUMSEH, MICH.



THE NEW CENTENNIAL.

October 21, 1892—You wrote me that I held the record at 84 brick per minute. Now, how does 108 strike you? We did that often but had not help enough to keep it up.

J. M. IVIE,  
Kirkville, Mo.

The Best Evidence of the Value of a Brick Machine is the Grade of Brick it Makes.

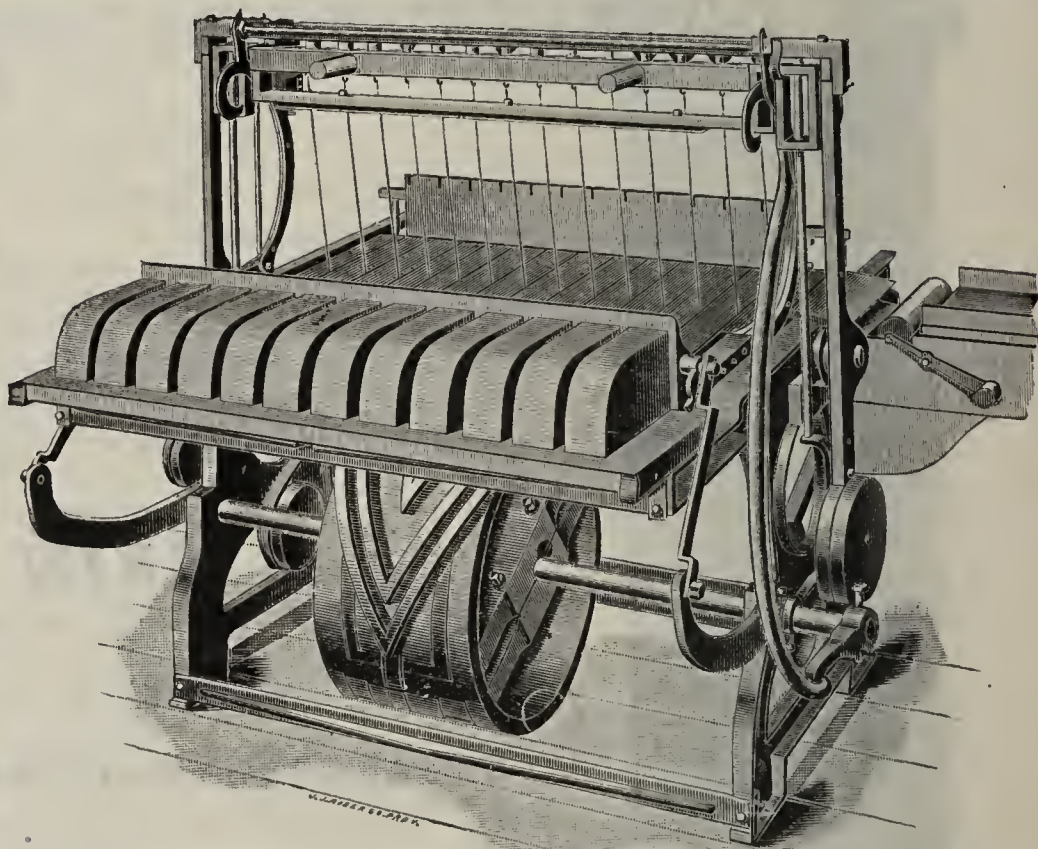
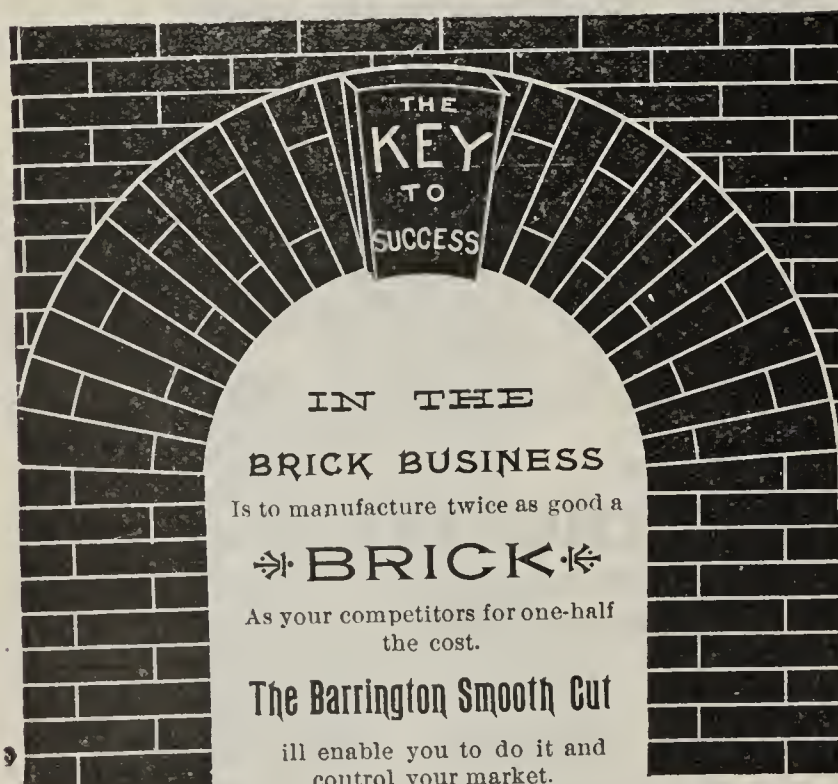
The Board of Engineers that have charge of the Niagara Falls Power Tunnel all say that they are the best red brick they ever saw for their work.

BEAMSVILLE PRESSED BRICK CO.

You ought to see the two houses we are building out of Hollow Blocks. They are fine and look better than anything in Ohio. Our brick will take the first prize sure.

KNOXVILLE SEWER PIPE CO.

## THE ❖ BARRINGTON ❖ SMOOTH ❖ CUT



A Table that cuts clay from an Auger Machine into brick having an edge and finish equal to the best press. After being cut, the bricks are automatically separated and delivered upon pallets, and need never be handled until dry and ready to be set in the kilns.

A machine which is not for sale, but which is placed out upon royalty; and exclusive right given each party having the same, territory contiguous to his market, and thereby keeping out ruinous competition.

Send for a sample brick as cut upon this table, and judge for yourself as to its value for doing work for your market. Please direct all communications to

P. L. MONROE, OMAHA, NEB.,

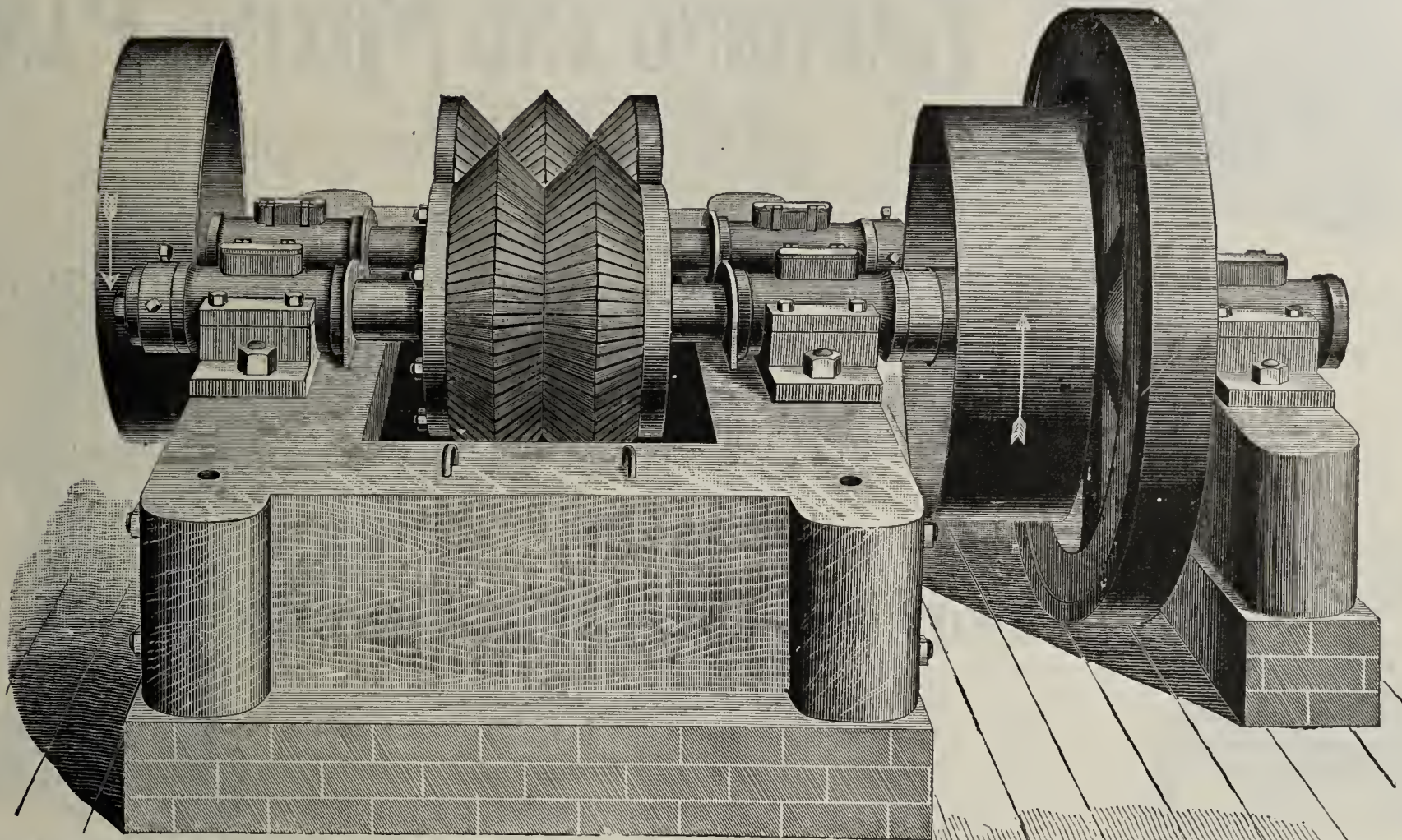
OR

J. A. SNELL, BARRINGTON, R. I.



# NEWELL IMPROVED CLAY PULVERIZER

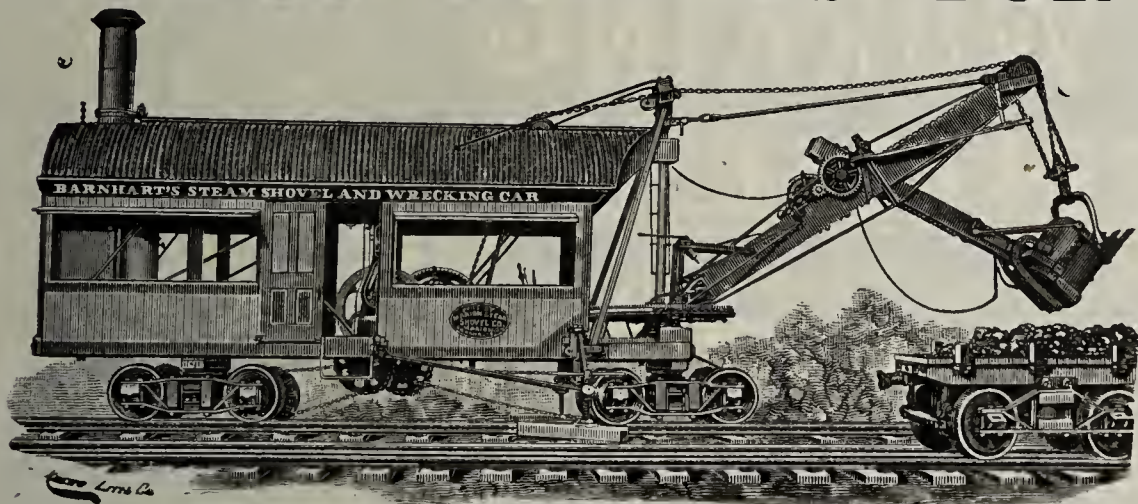
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Electrical Ex. Bldg., 136 Liberty St., N. Y.

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

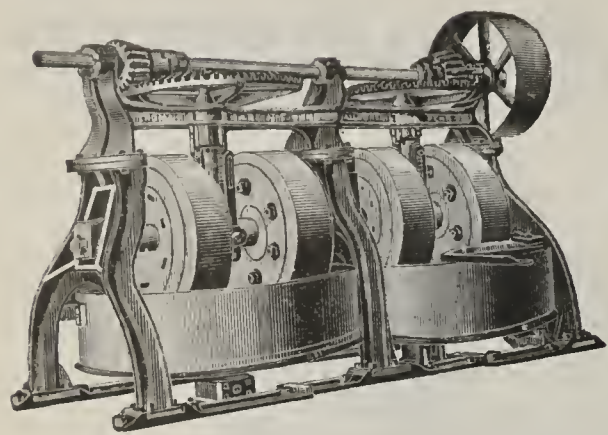
yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION, OHIO.**



STYLE C—¾ YD





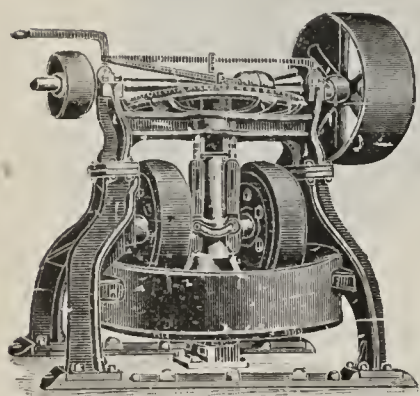
OUR SPECIALTY.

# GRINDING AND MIXING PANS

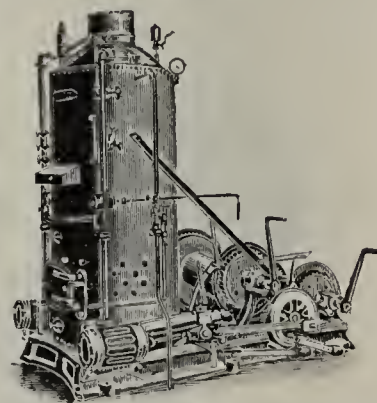
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot guage Dump Cars.

MANUFACTURERS OF  
 IMPROVED

## CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

# TAPLIN RICE & CO.

(CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.)

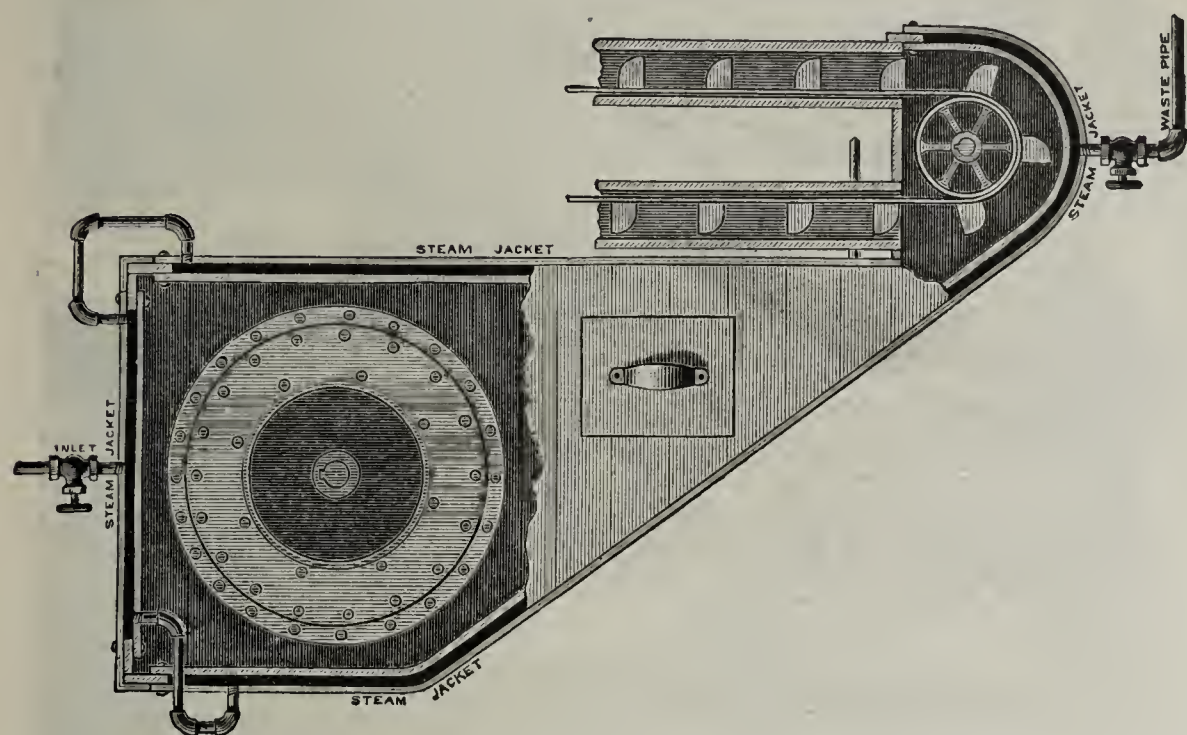
## AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



# Williams' Cyclone Clay Pulverizers



and Little's Patent Steam Jacket,

FOR CLAY PULVERIZERS.

There is no known machine that will so thoroughly disintegrate and pulverize clays and other substances as *Williams' Cyclone Mill*. It thoroughly disintegrates all kinds of clays and shales.

When the clay is damp or wet it adheres to the housing and sometimes causes choking of the mill. To obviate this we have introduced clearance rakes which answer all purposes as long as they last; but they soon wear out. We now have found a remedy for all these evils. It is *Little's Patent Steam Jacket*, represented in above cut. It encases the Pulverizer entirely and at the same time

forms the Elevator Boot. By the use of this combination, clays can be worked directly from the bank; but it is preferable to cure them in a dry-shed for dry-press brickmaking. By the use of the above combination it is *absolutely impossible to choke the Pulverizer or Elevator Boot*, and, therefore, no dry-press brickmaker can afford to do without it when he once knows its value. Patented 1890. Other patents pending.

- WILLIAMS' Clutch Pulleys and Couplings.
- WILLIAMS' Cyclone Clay Pulverizer, 30 inches diameter.
- WILLIAMS' Cyclone Clay Pulverizer, 36 " "
- WILLIAMS' Cyclone Shale Pulverizer, 36 " "
- WILLIAMS' Cyclone Clay Pulverizer, 40 " "
- WILLIAMS' Cyclone Shale Pulverizer, 40 " "
- WILLIAMS' Cyclone Clay Pulverizer, 48 " "
- WILLIAMS' Cyclone Shale Pulverizer, 48 " "
- WILLIAMS' Revolving Clay Screen.
- WILLIAMS' Automatic Feeder for Dry Presses.
- WILLIAMS' Automatic Feeder for Pulverizers.
- WILLIAMS' Brick Trucks, 3 sizes.
- WILLIAMS' Clay Elevators.
- WILLIAMS' Triple Roll Clay Crushers.
- WILLIAMS' and Little's Patent Steam Clay Screen.
- WILLIAMS' Sizing Machine for Radial or Angular Brick.
- WILLIAMS' Pony Pulverizer for Testing Clay and Shale.
- WILLIAMS' Complete Outfits for Dry Press Brickmakers.

LITTLES' Steam Jacket for Pulverizers.

Write to

**M. F. WILLIAMS & CO.,**

2705 and 2707 North Broadway.

**St. Louis, Mo.**



# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

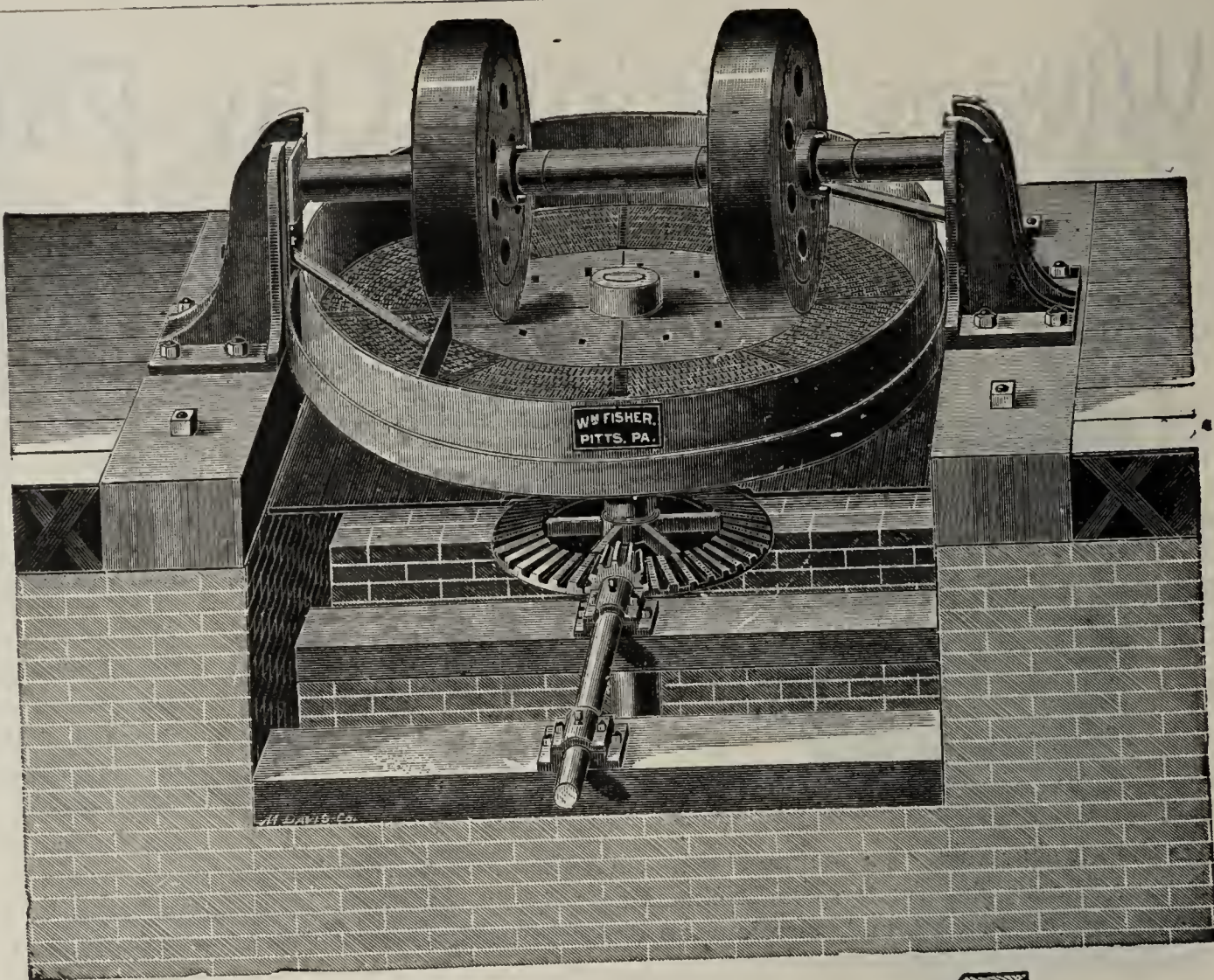
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

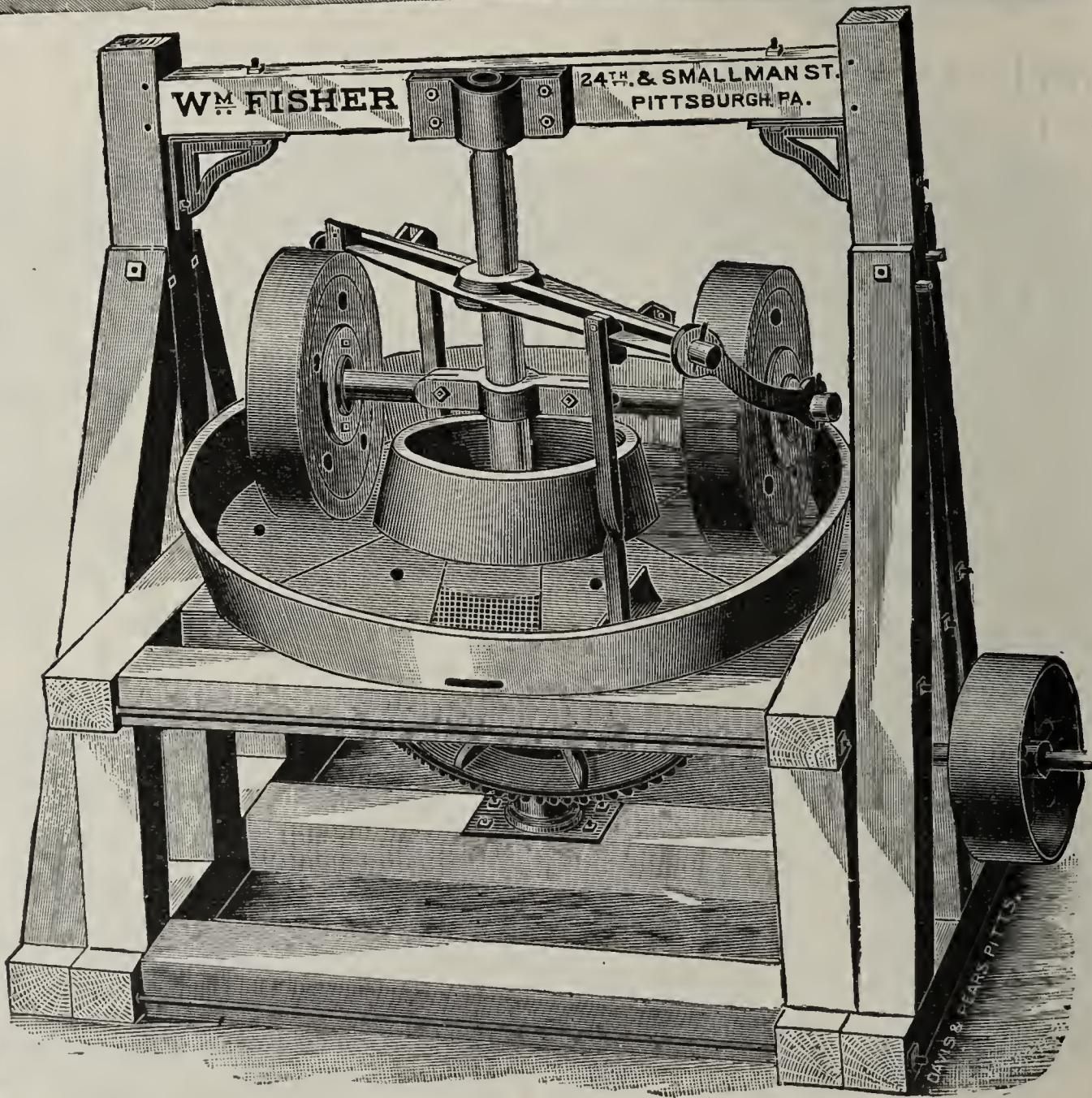
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



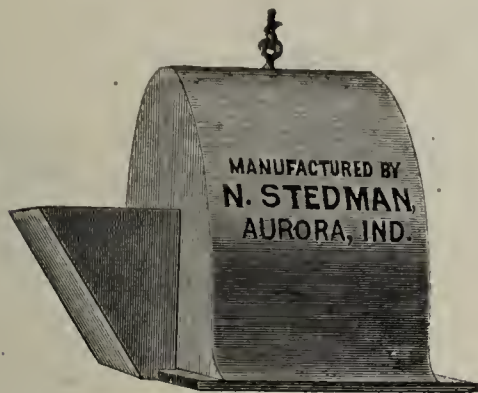
PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.



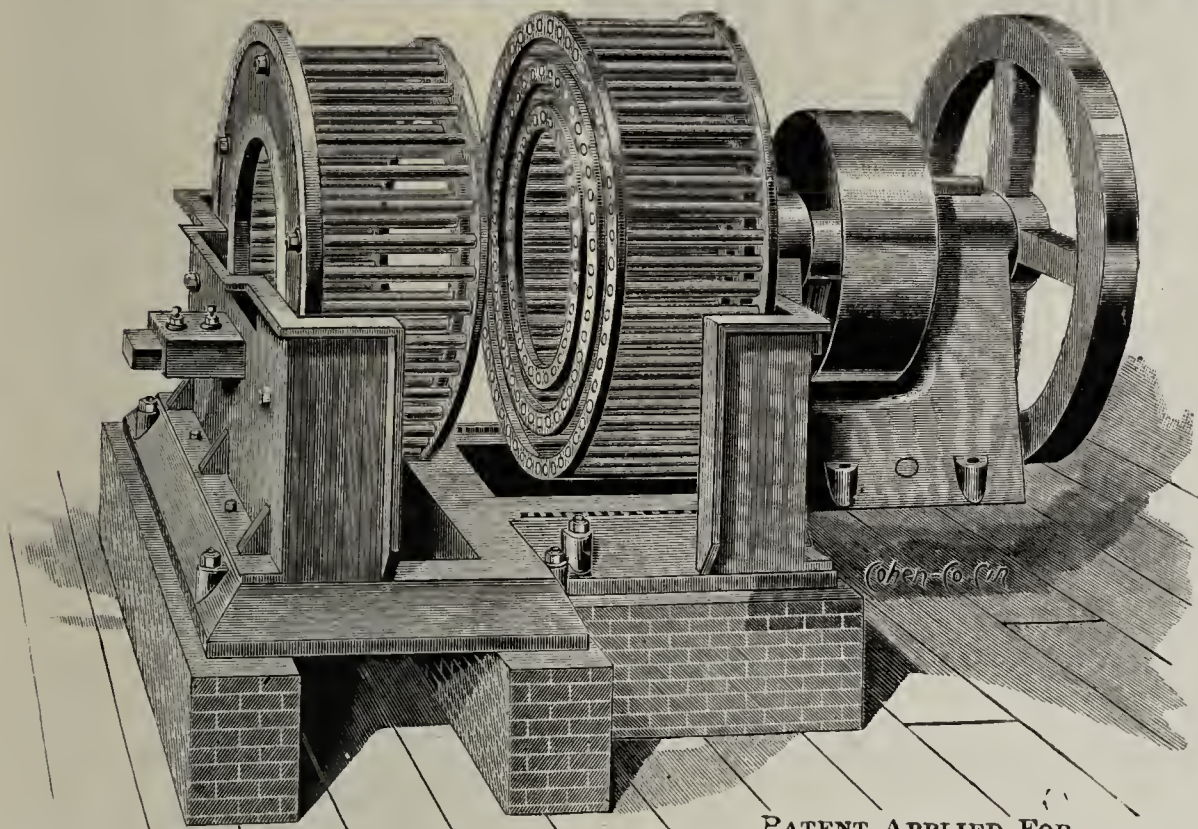
## Description.



This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

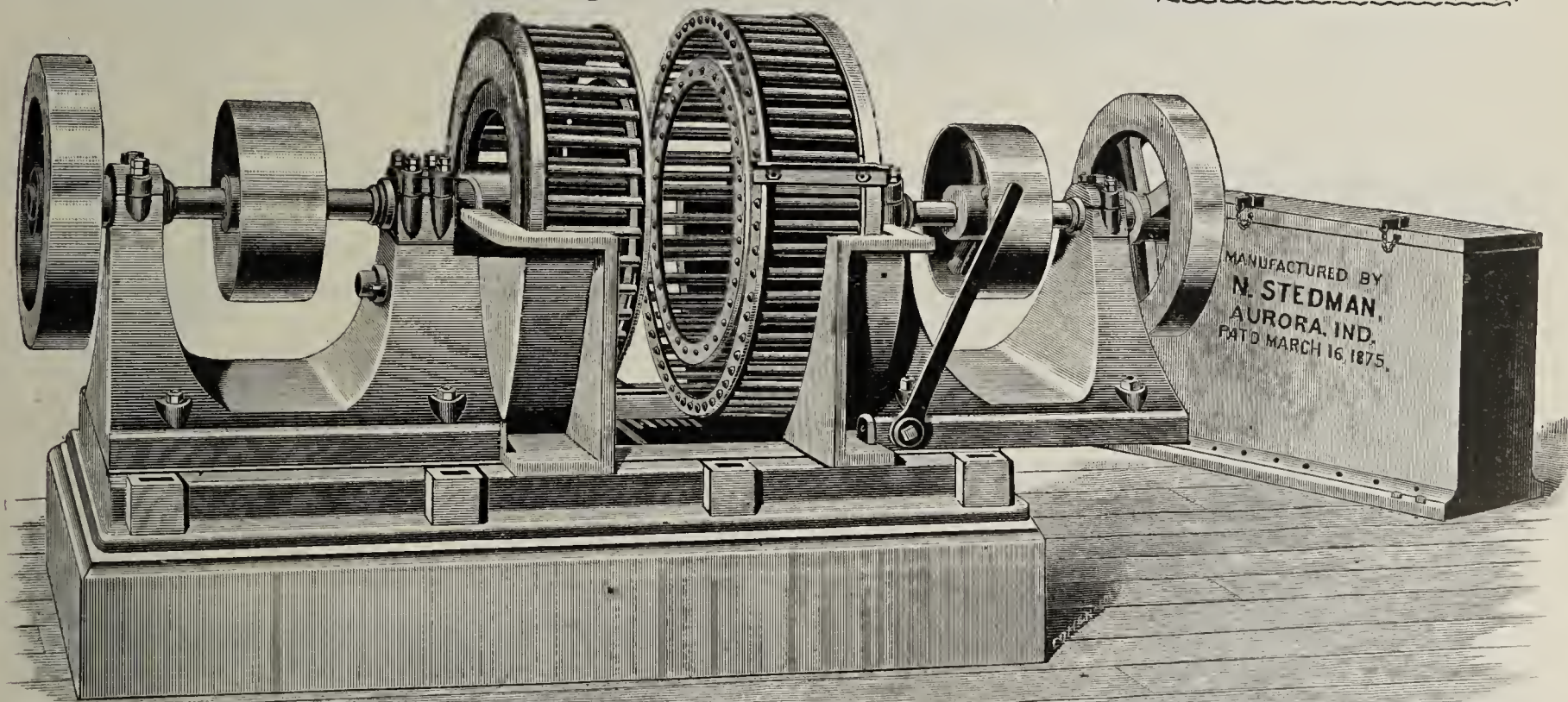
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



## WITH 40 YEARS' EXPERIENCE HAS NOT FOUND ITS EQUAL.

BERLIN, CONN., Dec. 18, 1892.

THE McLAGON FOUNDRY CO.:

GENTLEMEN—After the long experience of forty years in the brick business I find your machine (the "NEW HAVEN"), superior to any I have known for making perfect brick. Having used it with great success for the past season I have been able to test its qualities. It turns out 42,000 brick daily which are unexcelled. I would recommend it to any one about to purchase and am sure it would prove a success as it saves both time and money.

Yours very truly,

RICHARD MURRAY.

Formerly of Haverstraw, N. Y.

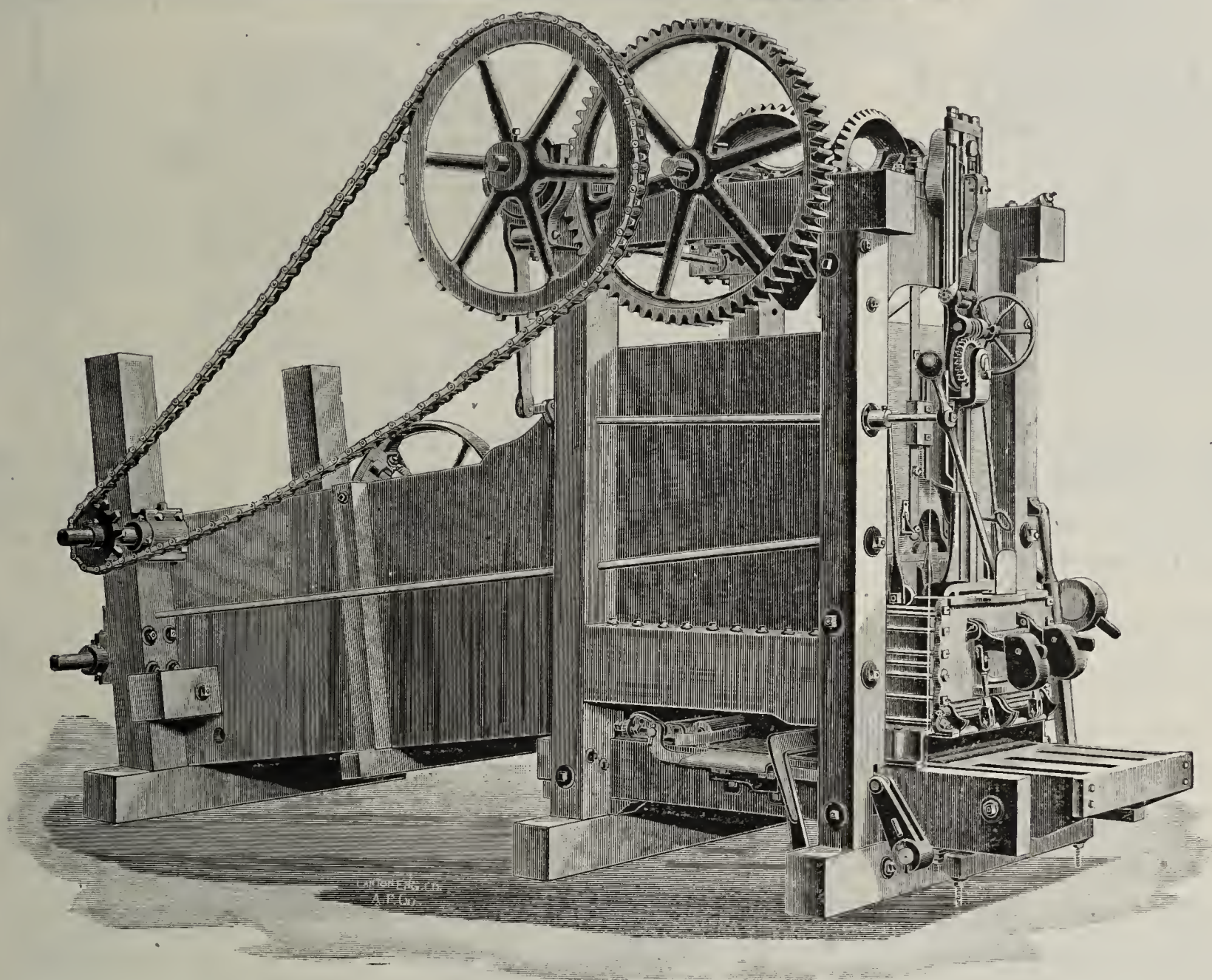
For Others Like This, Write

**THE McLAGON FOUNDRY CO.,**  
NEW HAVEN, CONN.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



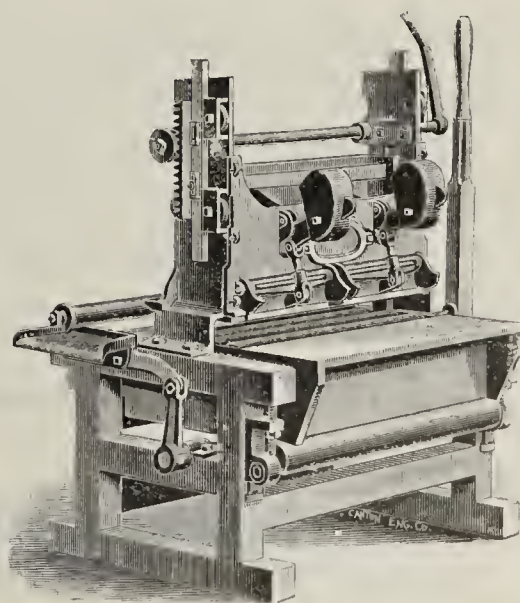
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# No. 10 Upright Machine

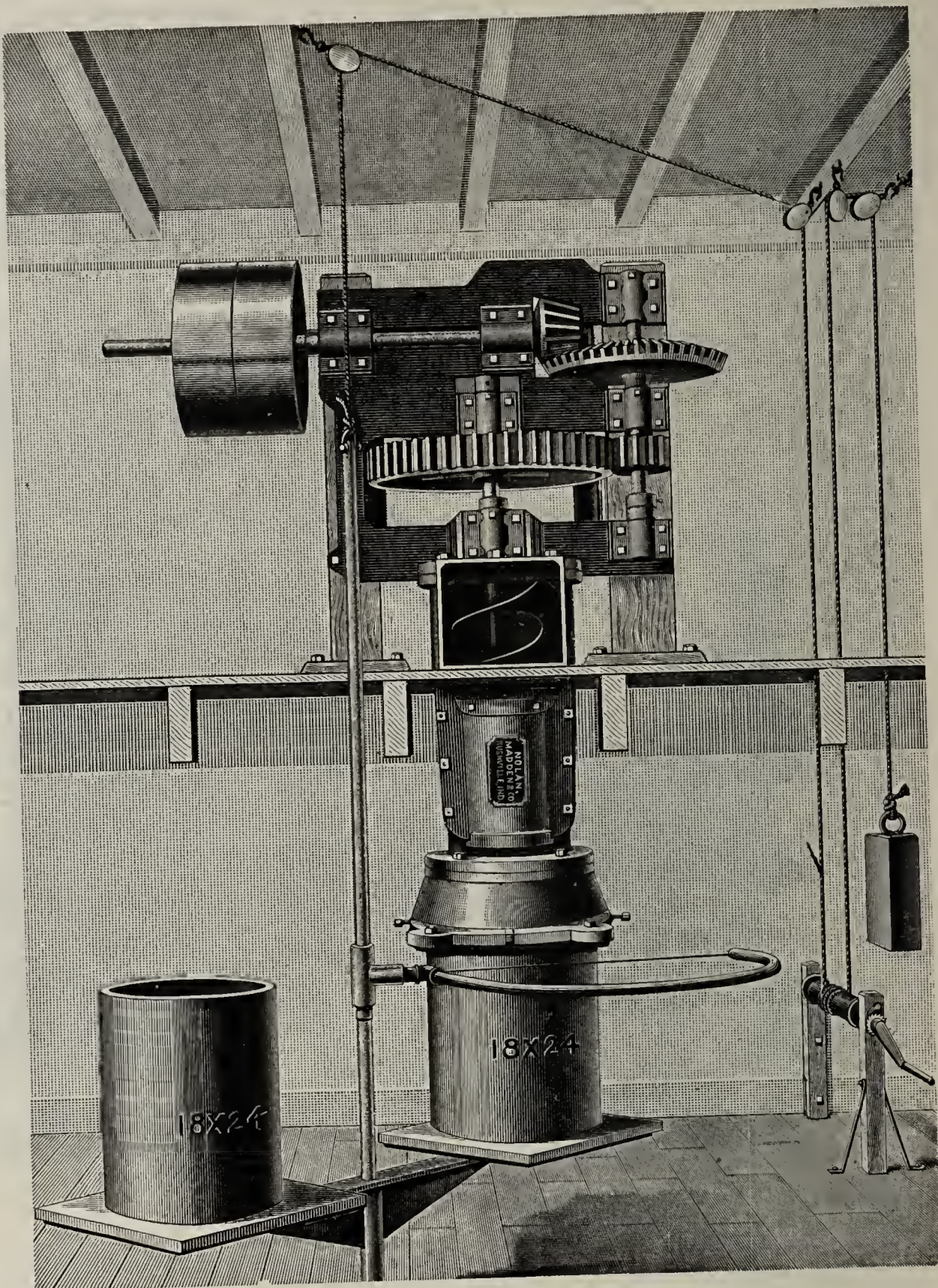
For the Manufacture

—OF THE—

## Larger Sizes of Tile

Including Tile from 10 to 20 Inches.

This Machine has been on the market for three years and has been a success beyond all expectations. It is made from the strongest pattern and built after the most improved style.



Any parties wishing to add a Machine for large tile to their factory will find this is the one that will give them the most and best work with the least power and no breakage. We have seven sizes of Horizontal Auger Machines for Tile, six sizes of Brick Machines with Side Cut Board Delivery Tables, and three sizes of soft clay Brick Machines. Also line of Crushers, Pug Mills, and the best Disintegrator in the market.

We will make it to your interest to write us before you buy and get our prices.

FOR PARTICULARS, ADDRESS,

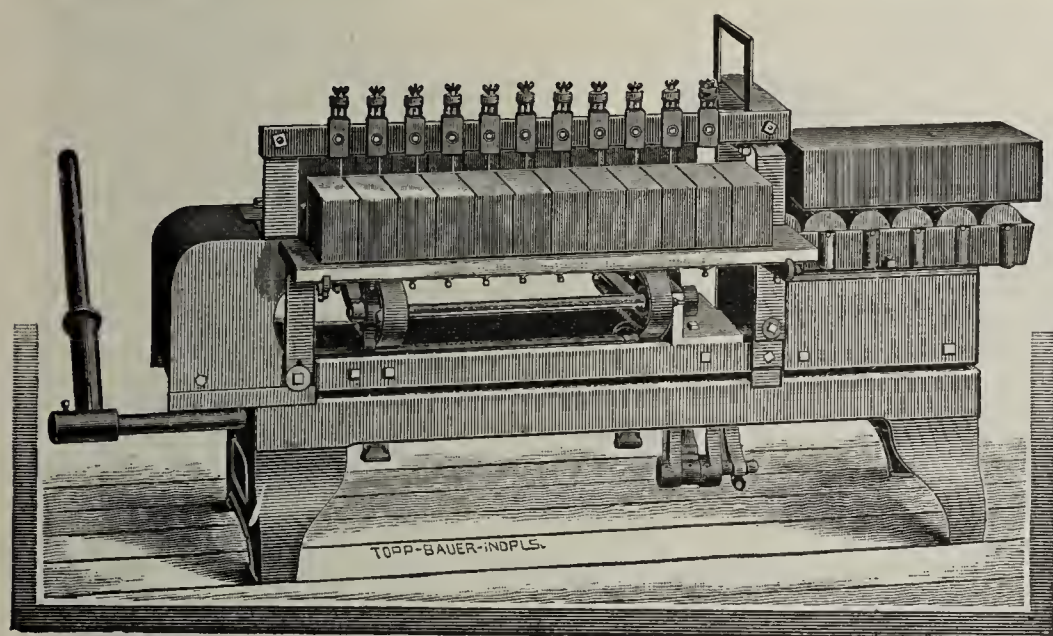
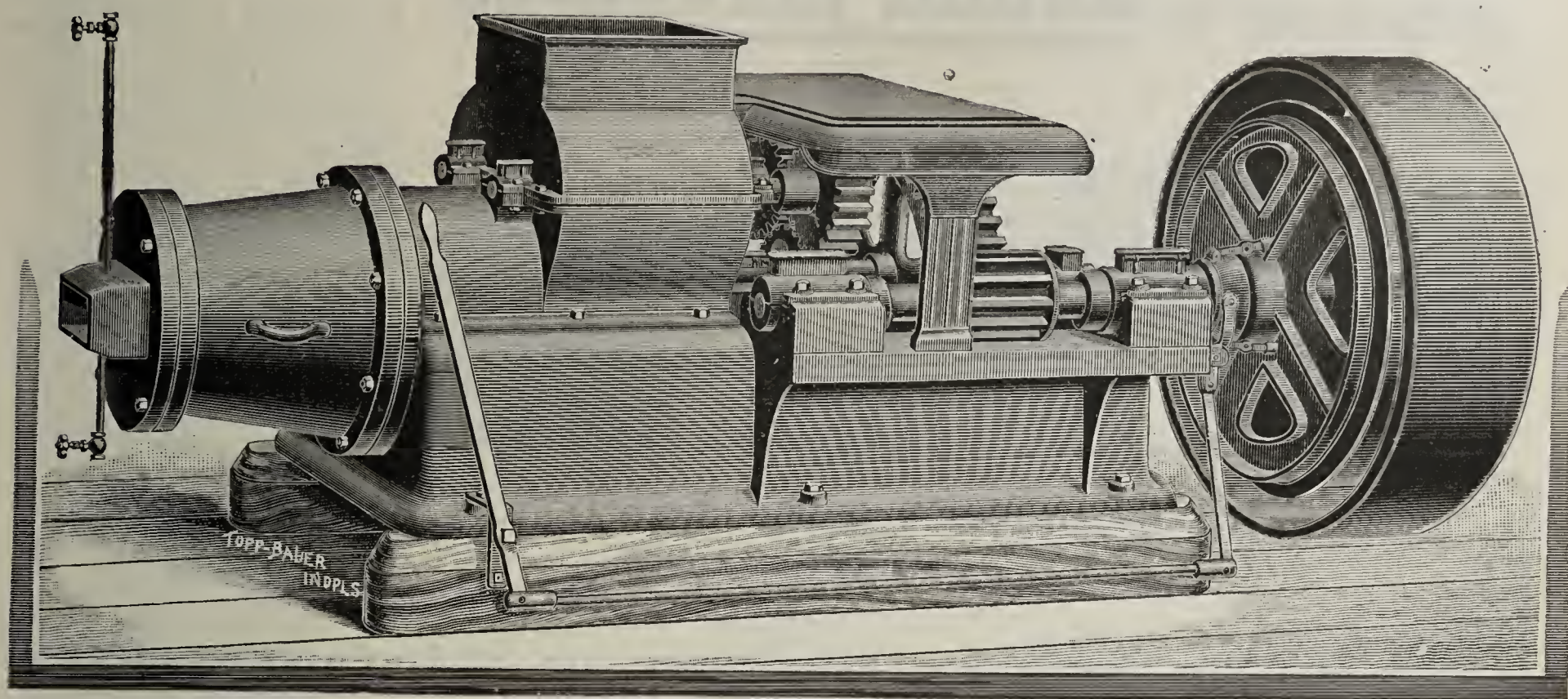
# Nolan, Madden & Co.,

## RUSHVILLE, IND.

[Mention the Clay-Worker.]



# SAVE YOUR MONEY BY BUYING THE BEST.



## THE "PLYMOUTH"

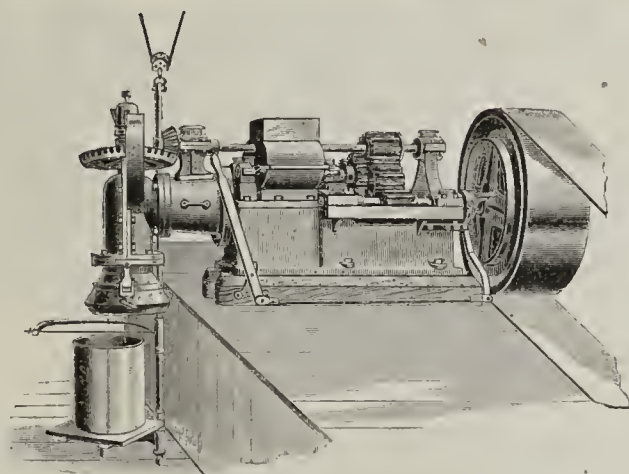
Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and puging device.



We build our Machines  
for  
STRENGTH  
... and ...  
DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

It will Tell You  
All About It.

# The Fate-Gunsaulus Co.,

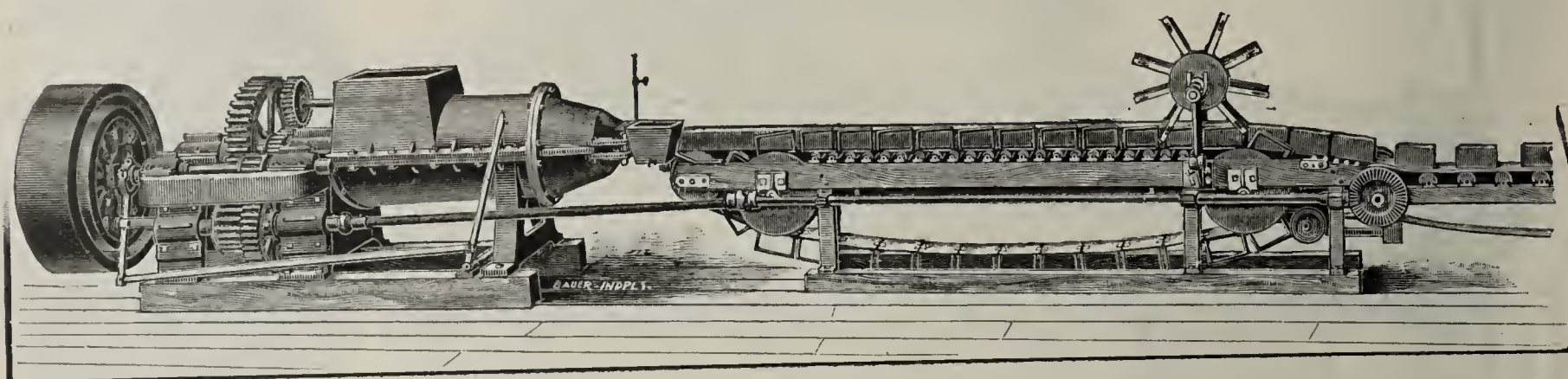
PLYMOUTH, OHIO.

[Mention the Clay-Worker.]



The Best Results are  
Obtained by Using Our

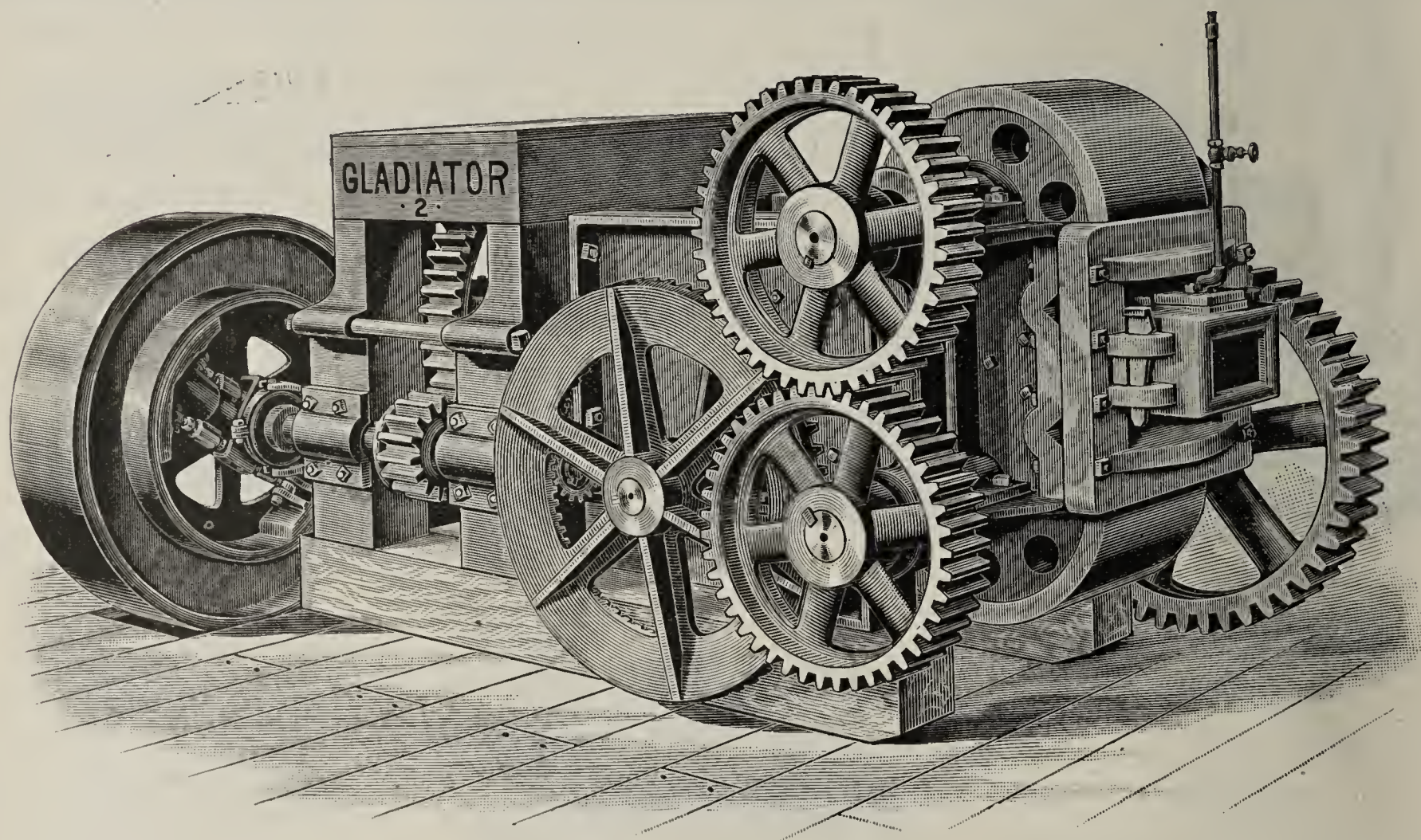
# **AUGER MACHINES** FOR END-CUT BRICKS.



The DECATUR with Automatic Cut-off

AND

Our Roller Delivery Machine for Side Cut Bricks.



THE GLADIATOR.

Full Factory Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,  
Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

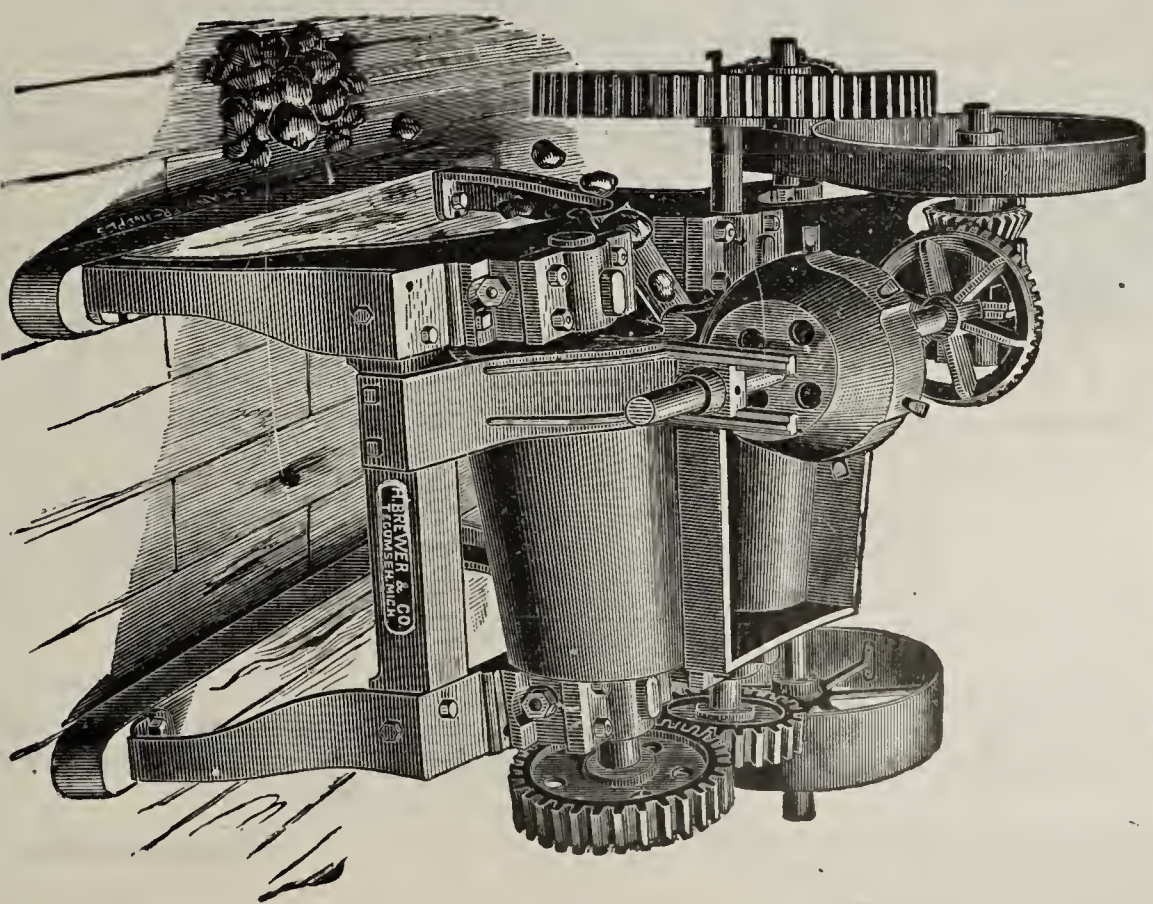
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

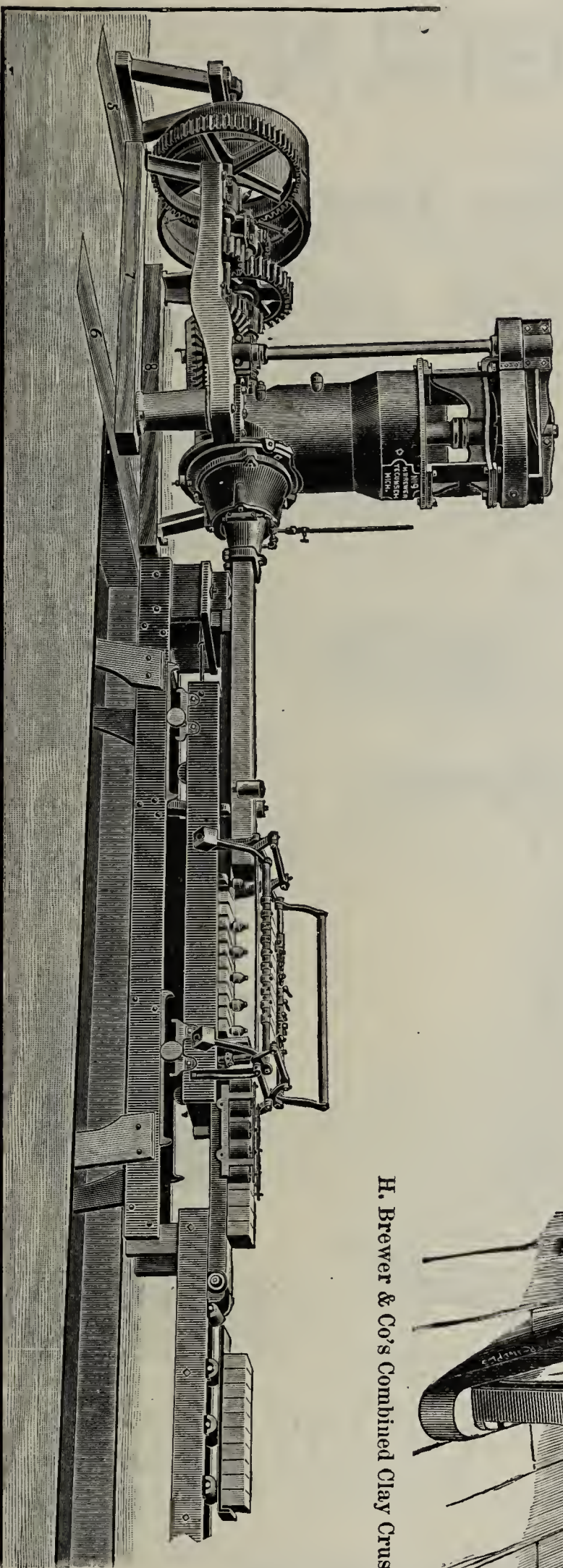
### H. BREWER & CO.,

[Mention the Clay-Worker.]

### Tecumseh, Mich.



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

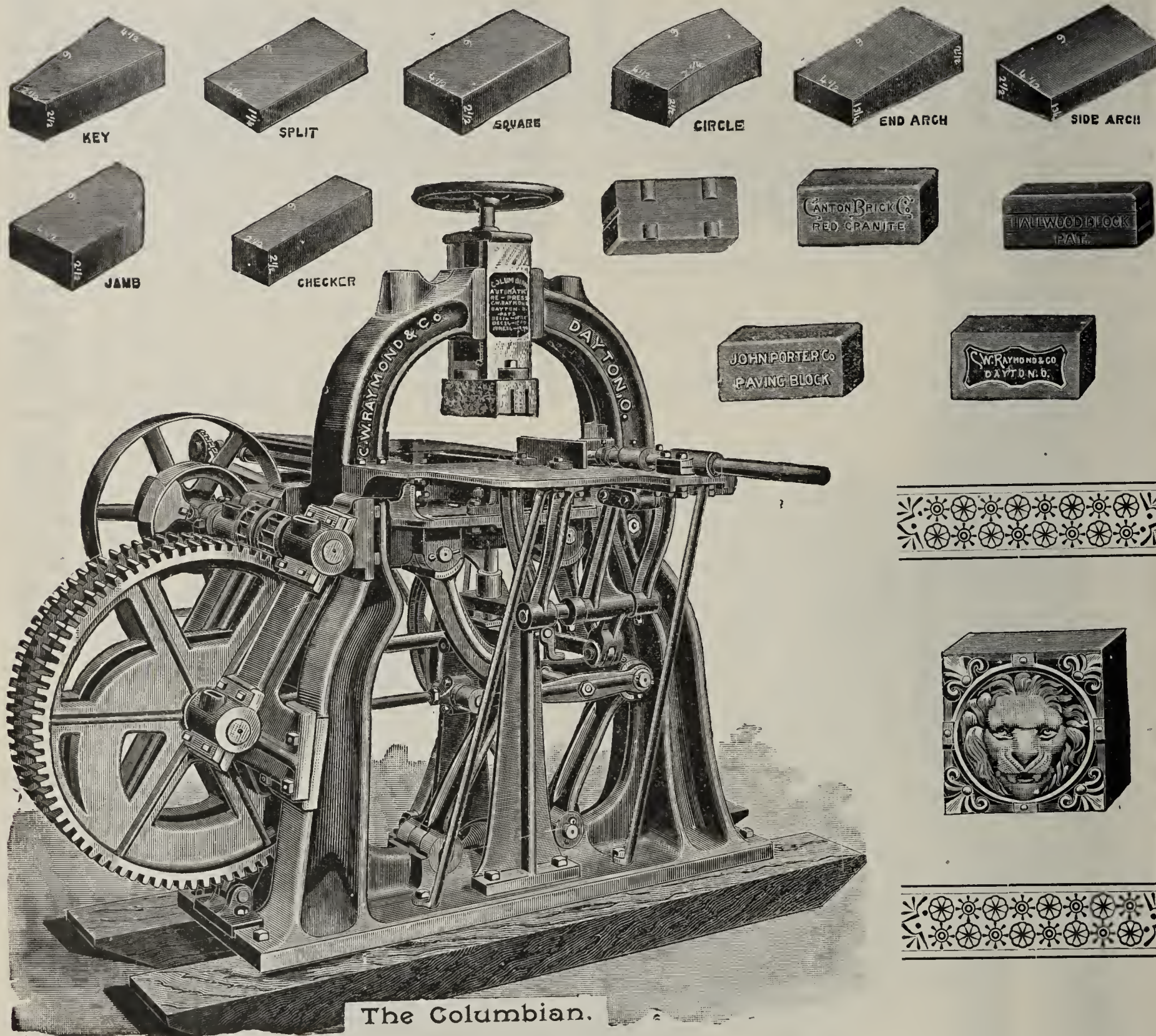


The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



# The COLUMBIAN.

⚡ The One Press Will Press Them All. ⚡



The Columbian.

**"That Tired Feeling"** which a brickmaker experiences when he has invested \$600 in an experimental re-press and \$2,580.32 in repairs can be entirely obviated by purchasing

**== A COLUMBIAN, ==**

The only press that made a record of its own, hence, the only one that offers a secure investment for a practical brickmaker.

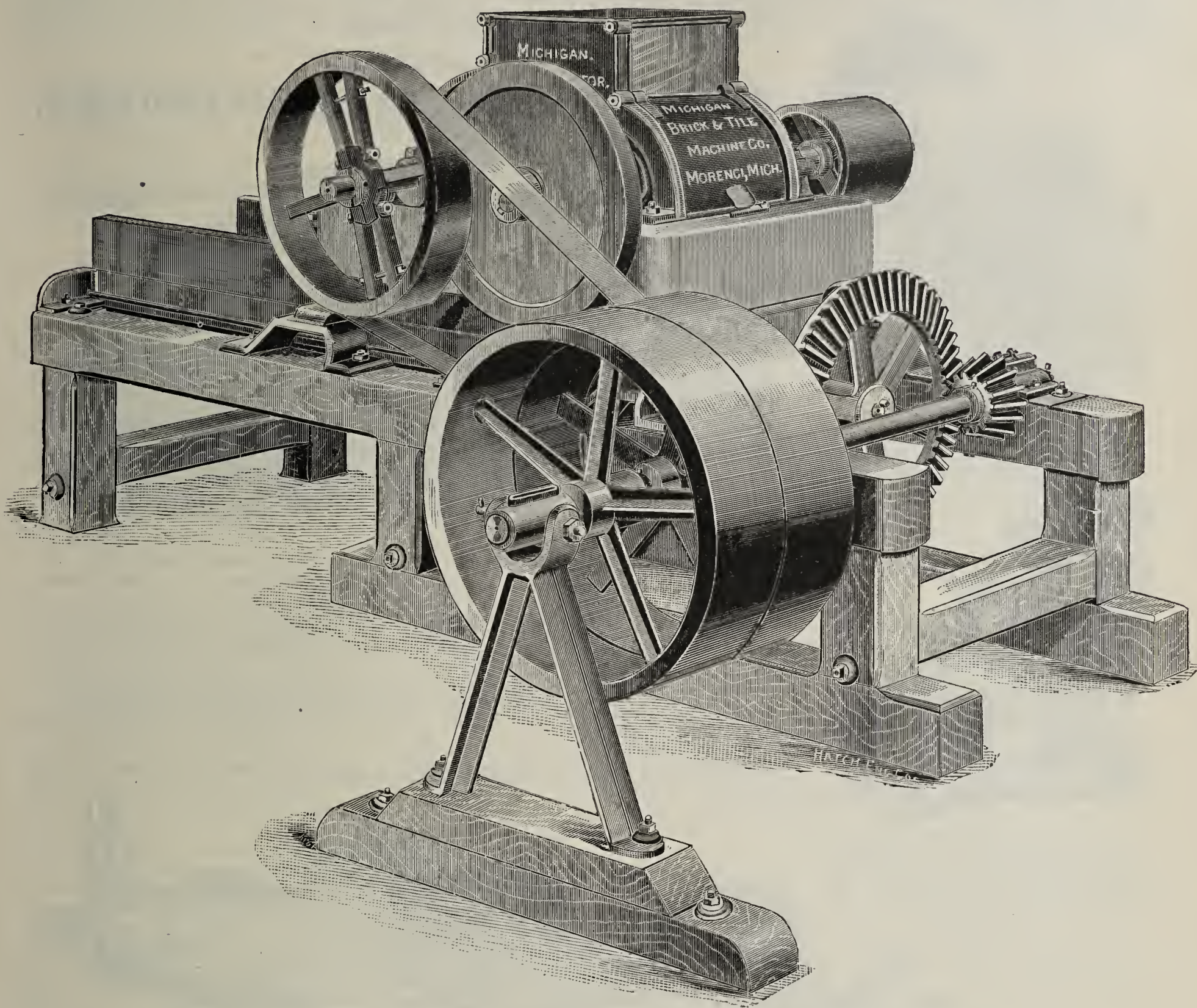
**Manufactured by C. W. Raymond & Co.,**

**Dayton, Ohio.**

[Mention the Clay-Worker.]



# No. 5 Michigan Disintegrator AND No. 2 Conveyor Combined.



WE MANUFACTURE A FULL LINE OF

## CLAYWORKING MACHINERY

CONSISTING IN PART OF

AUGER MACHINES, UPRIGHT PUG MILLS,  
HORIZONTAL CONVEYORS, DISINTEGRATORS,  
REPRESSES, WINDING DRUMS, ETC.

Send for 1893 Catalogue of above Machinery.

MICHIGAN BRICK AND TILE MACHINE CO.,  
MORENCI, MICH.,

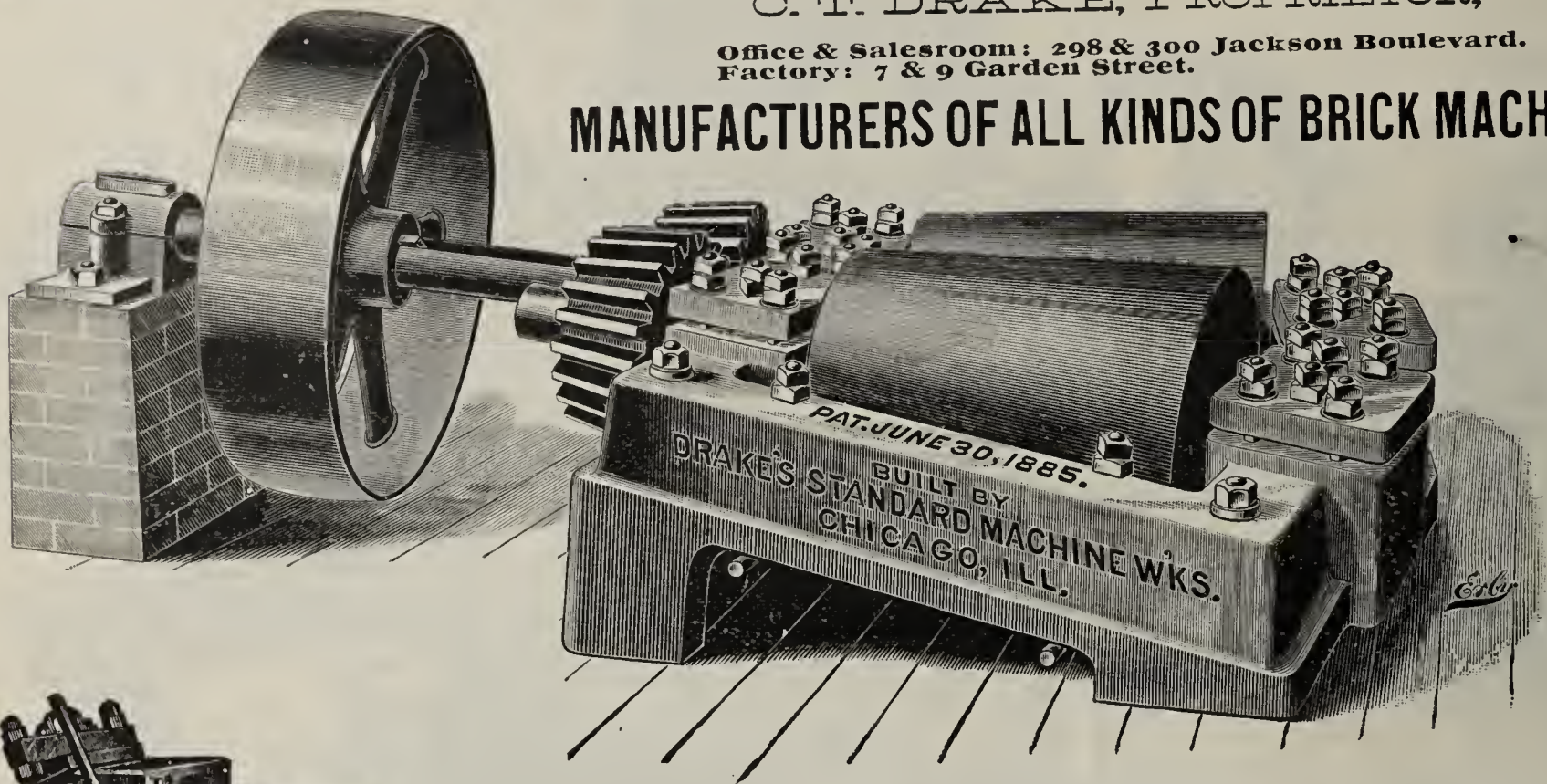


# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY

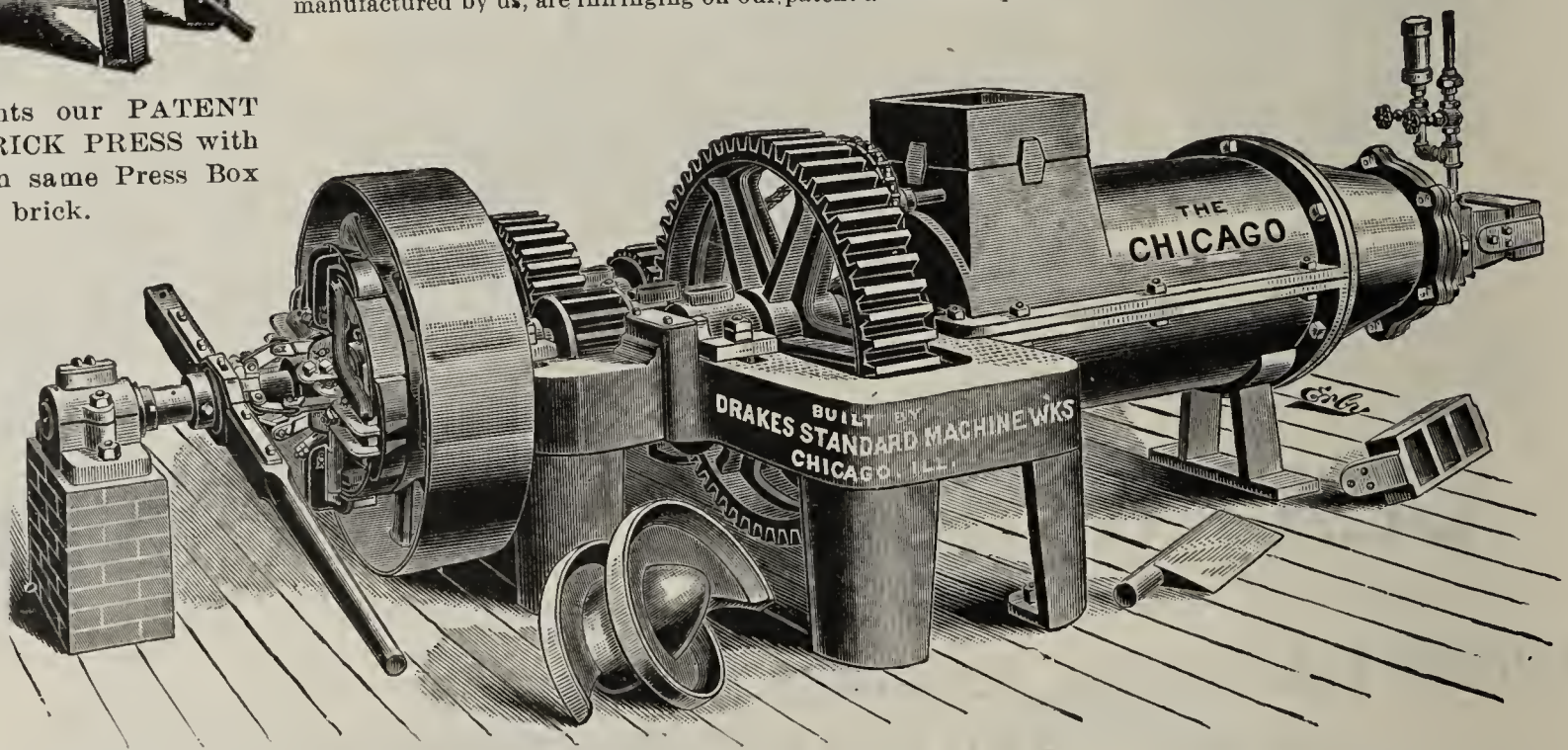


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 6 Crushers; Hayt & Alsip Co. is running 4 Crushers; Purington, Kimbell Brick Co. is running 8 Crushers; May, Purington & Bonner B. Co. is running 4 Crushers; J. B. Legnard is running 4 Crushers; Weckler Brick Co. is running 1 Crusher; Adam J. Weckler is running 1 Crusher; Weckler Prussing Brick Co. is running 1 Crusher; Chicago Brick Co. is running 3 Crushers; Union Brick Co. is running 2 Crushers; M. Myers is running 2 Crushers; Wahl Bros. is running 2 Crushers; Pullman Brick Co. is running 2 Crushers; Fred Zapel is running 1 Crusher; Myers & Toll is running 2 Crushers; Harms & Schlake Brick Co. is running 1 Crusher; L. Wehrheim & Son is running 1 Crusher; Alexander Burke is running 1 Crusher; John Sexton is running 1 Crusher; John Busse, Jr., & Co. is running 1 Crusher; Star Brick Co. is running 1 Crusher; John Busse is running 1 Crusher.

**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

This cut represents our PATENT RED and FIRE BRICK PRESS with change of liners in same Press Box for different style of brick.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 40,000 brick per day. Surpassed by none.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, ETC., ETC.

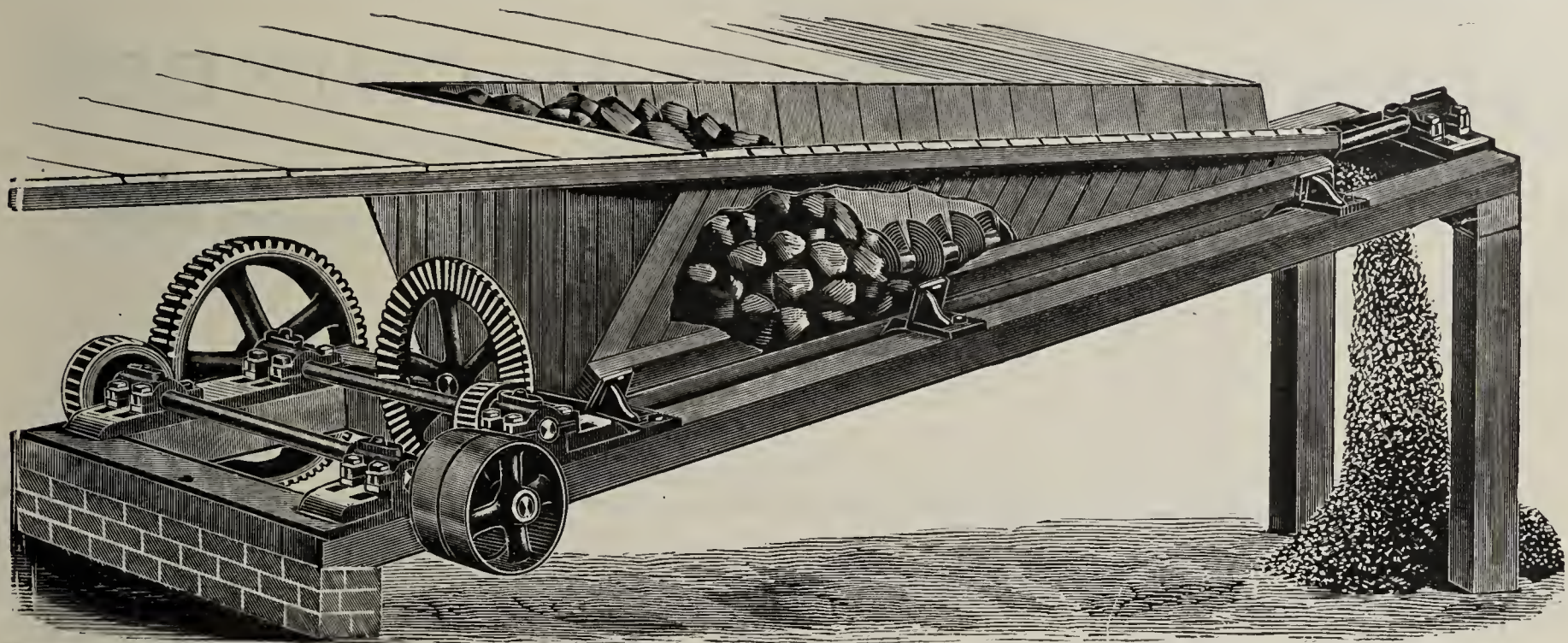
Send for circular of our GRANULATOR, it is the leader in Chicago, so says: Alsip Brick Co., Hayt & Alsip Co., May, Purington & Bonner Brick Co., Kimbell Brick Co., Purington-Kimbell Brick Co., and others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED.**



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.



✧ ED. H. CALLAWAY, ✧

CONSTRUCTING ENGINEER AND BRICK MANUFACTURING EXPERT,

— WITH —

PHŒNIX FOUNDRY & MACHINE CO.

Manufacturers of Brick Drying Cars, Transfer Cars, Turn Tables,

and full Dryer Equipments. Engines and Boilers and General Machinery.

SYRACUSE, NEW YORK.



General Agent for Sharer's Improved Brick Dryers and Calorific Kilns. Will construct Brick Manufacturing Plants Complete, furnishing all necessary Machinery. Plans and Estimates furnished. CLAYS TESTED. NO TROUBLE TO ANSWER INQUIRIES.

Ten years practical experience.

PAVING BRICK PLANTS A SPECIALTY.

We are wedded to no particular Brick Machine or system of manufacturing bricks, but will examine your clay, location and all conditions, and put in the machinery on system best adapted to your clay and locality. We will build the plant and turn it over to you and guarantee it to make first-class bricks, as economically as they can be produced in that particular section.

WE TAKE ALL THE RISK.

New beginners should not fail to consult us before erecting a plant.

And "old timers" might get some good points from us.

Correspondence solicited.

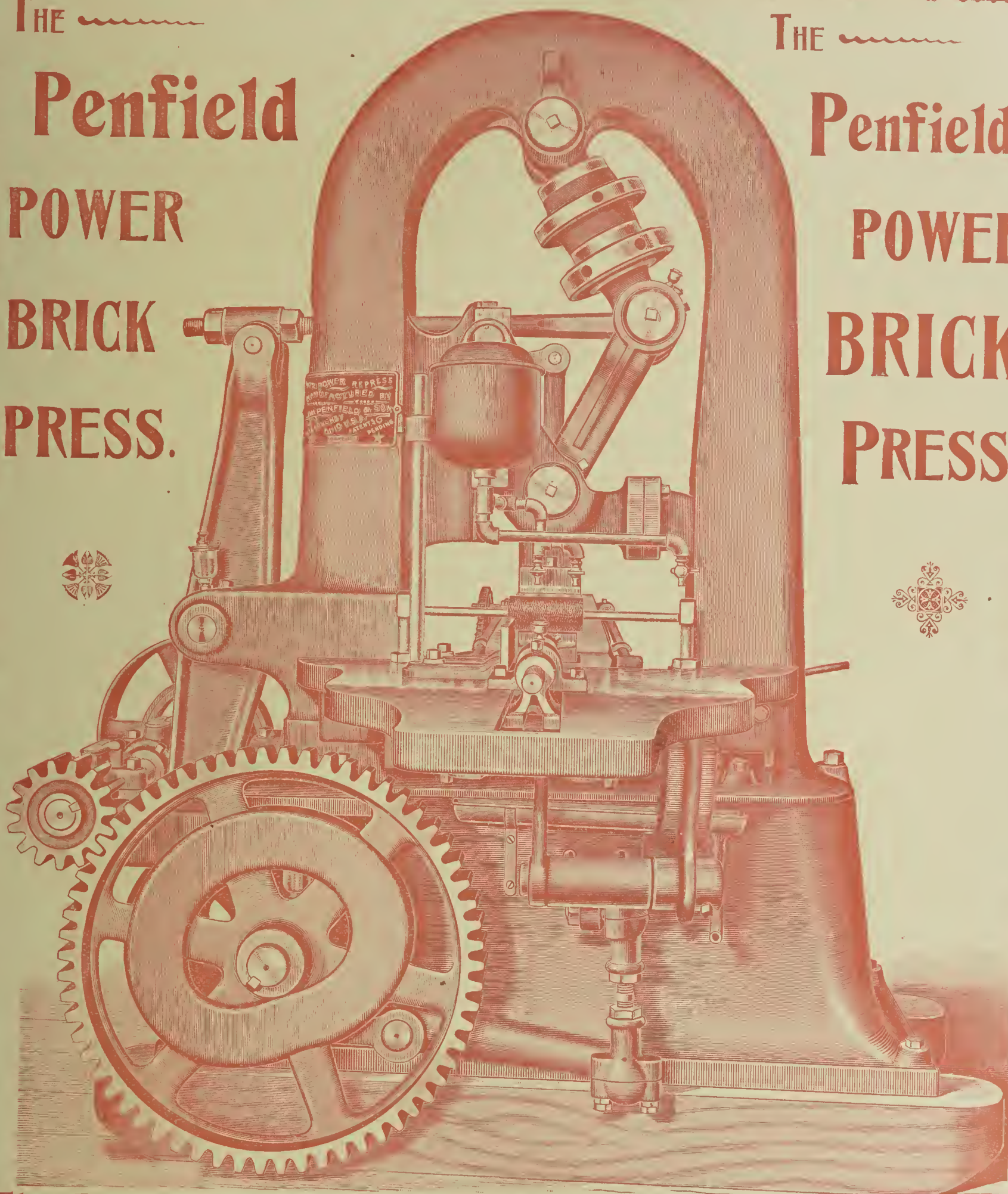
500 EAST WATER STREET,

SYRACUSE, N. Y.



THE  
**Penfield**  
**POWER**  
**BRICK**  
**PRESS.**

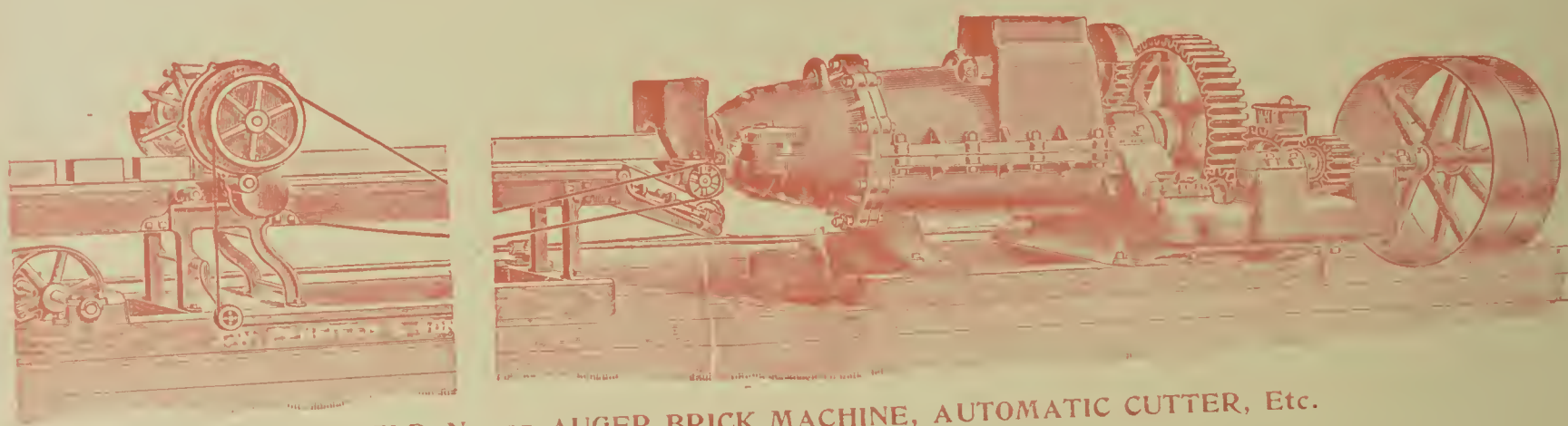
THE  
**Penfield**  
**POWER**  
**BRICK**  
**PRESS.**



**The Penfield Power Brick Press,** with pressing toggles out of the grit and dirt, with counter-balance spring securing steady, jarless operation, and with lifting of entire die and die table obviated, combines speedy and automatic operation with simplicity and greatest freedom from wear. It is the most powerful repress made. Send for details.

— J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A. —





PENFIELD No. 15 AUGER BRICK MACHINE, AUTOMATIC CUTTER, Etc.

## In a Watch,

Jewelled bearings and a fine case will not atone for a poor main spring; if it gets deranged, inaccuracy results; if it breaks, a stoppage.

## In Brick Making,

Convenient buildings and fixtures will not supply the lack of a good brick machine. If the brick machine is defective, the product is insufficient or unsatisfactory; if it breaks everything comes to a standstill.

## You Should Choose

Your brick machine as you would a watch: Not for cheapness but for reliability. Then, when you contract to supply a million or five million brick at a stated time, you can have some certainty that your brick machine won't leave you in the lurch when you need it most.

A poor brick machine—a prime ingredient of failure—would be dear as a gift; a good brick machine is the mainspring of your success.

If you wish reliable brick machinery, tried and approved by experienced brickmakers, we can serve you satisfactorily. Our new catalogue of Auger Brick Machinery may enlighten you somewhat as to our progress and products.

**THE MAIN SPRING OF SUCCESS**  
SHOULD BE WELL CHOSEN.

**J. W. PENFIELD & SON,**  
WILLOUGHBY, OHIO, U. S. A.



# BRICK PALLETS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,  
PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

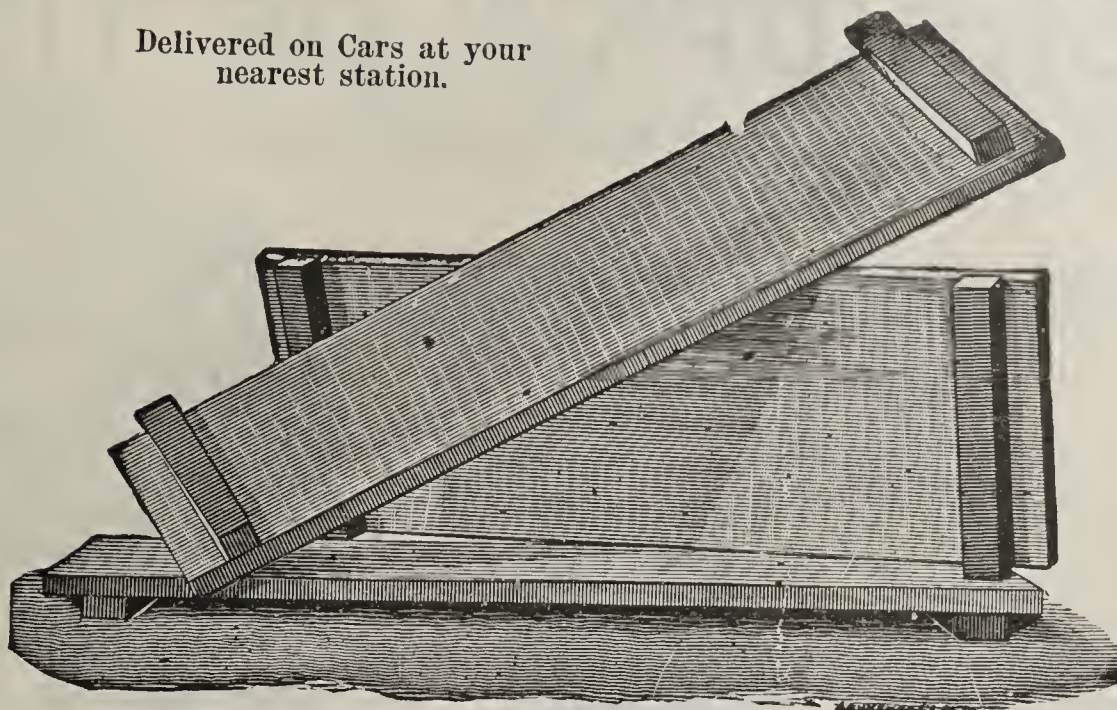
W. B. MERSHON & CO.,

East Saginaw, Mich.

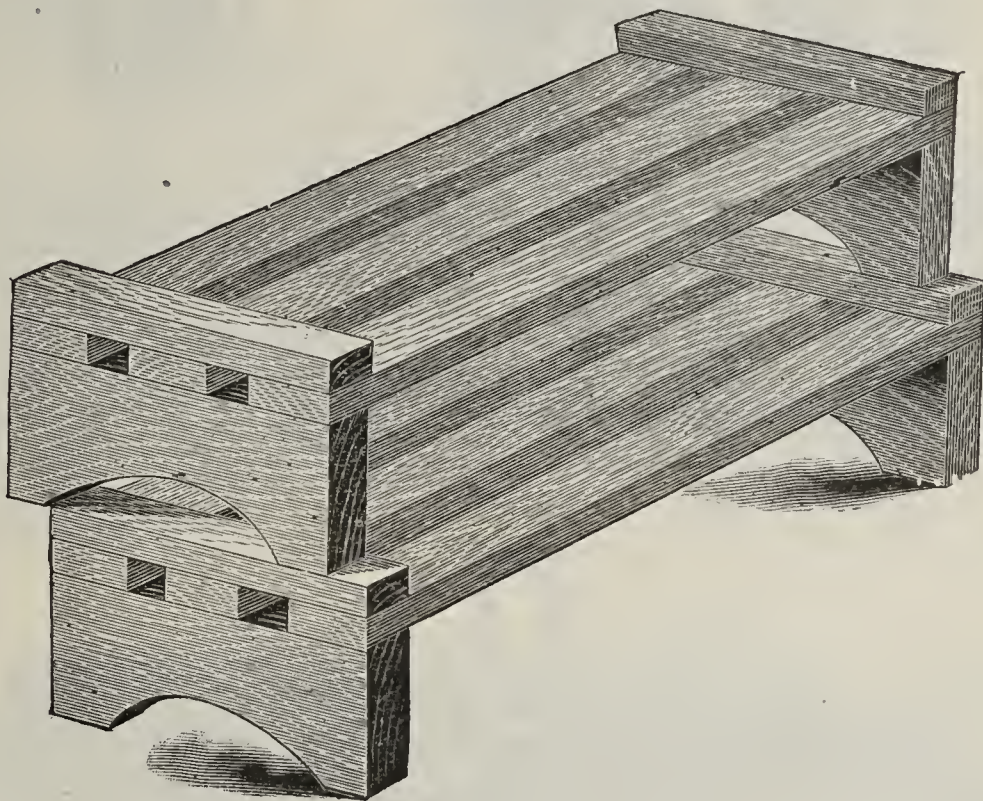
THE CLAY-WORKER.

331

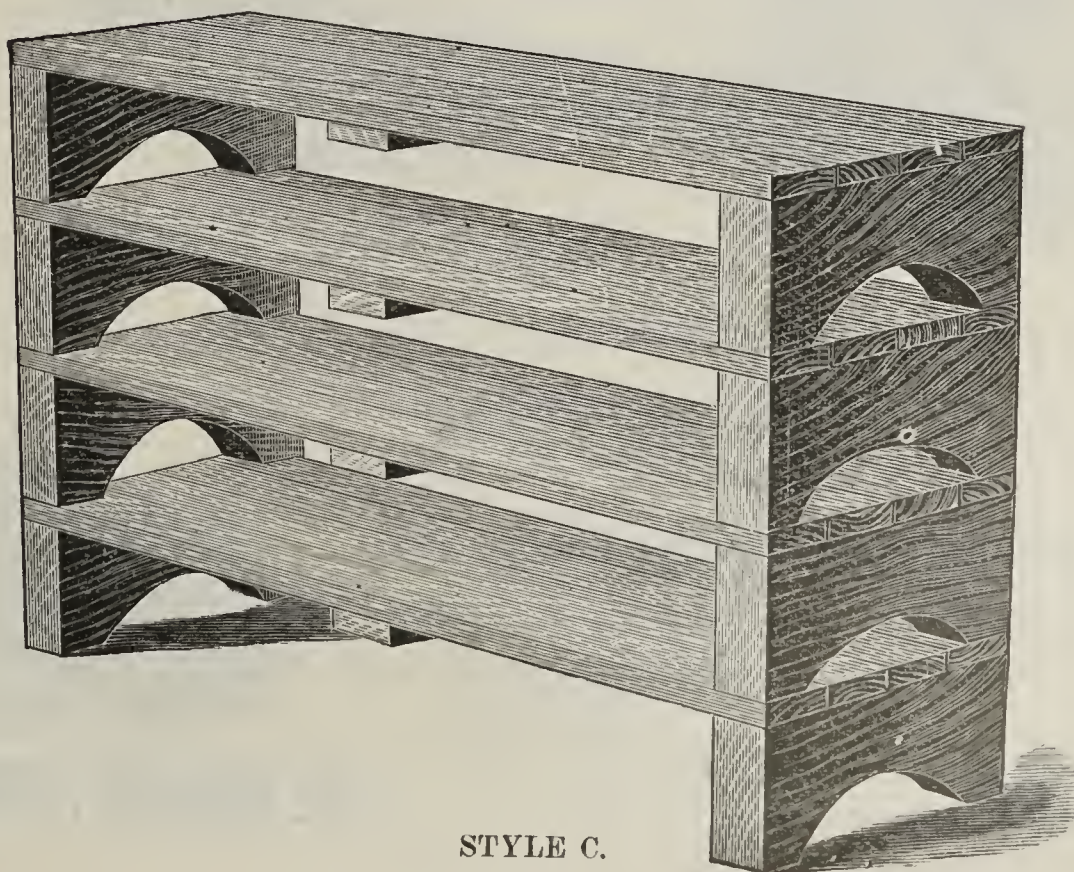
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.

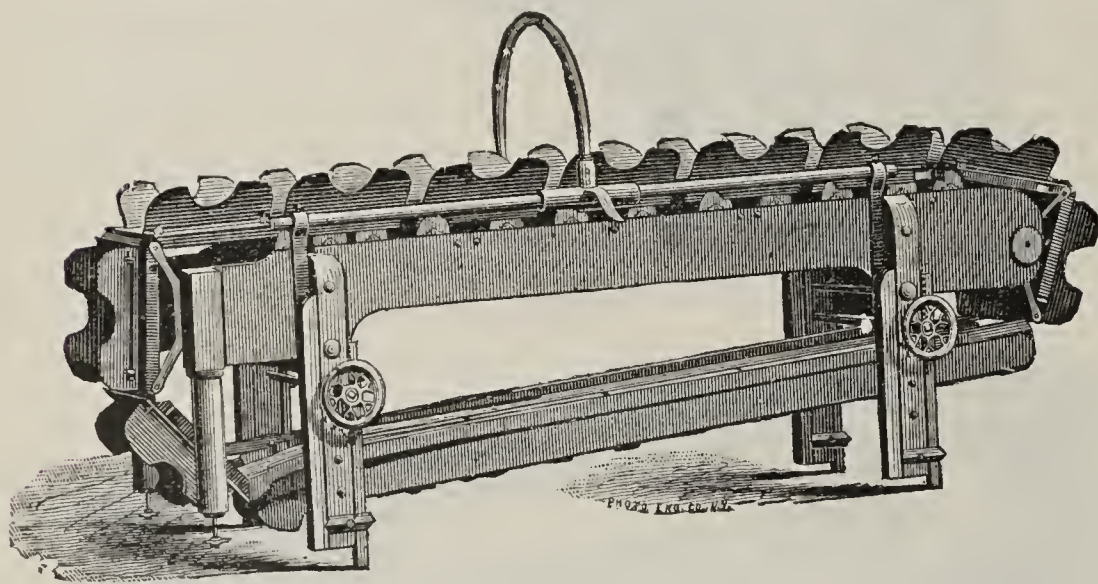
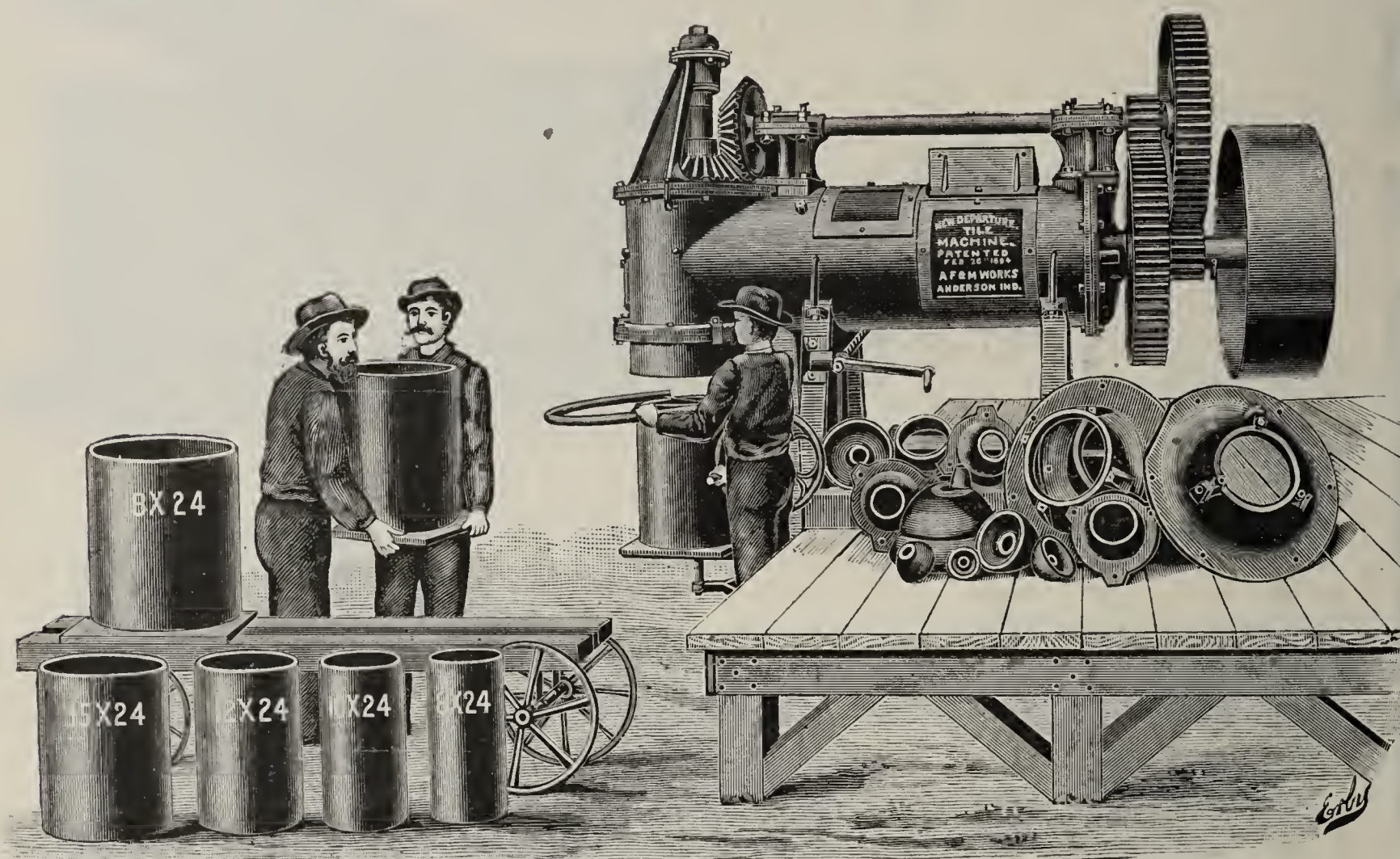


STYLE C.



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

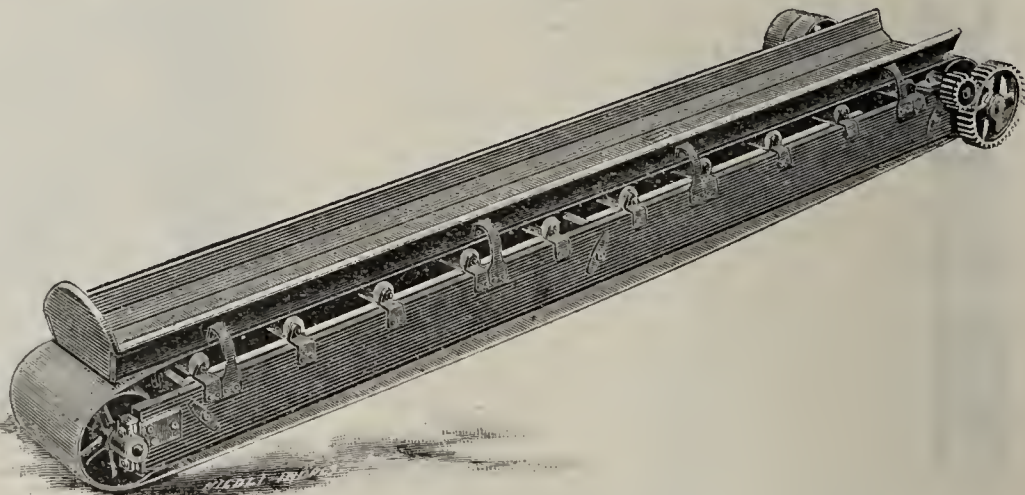
[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 20 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**



\* THE \*

## New • Anderson • Brick • Machine

MANUFACTURED BY

THE Anderson Foundry &amp; Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



DUBUQUE, IOWA, Oct. 29, 1892.

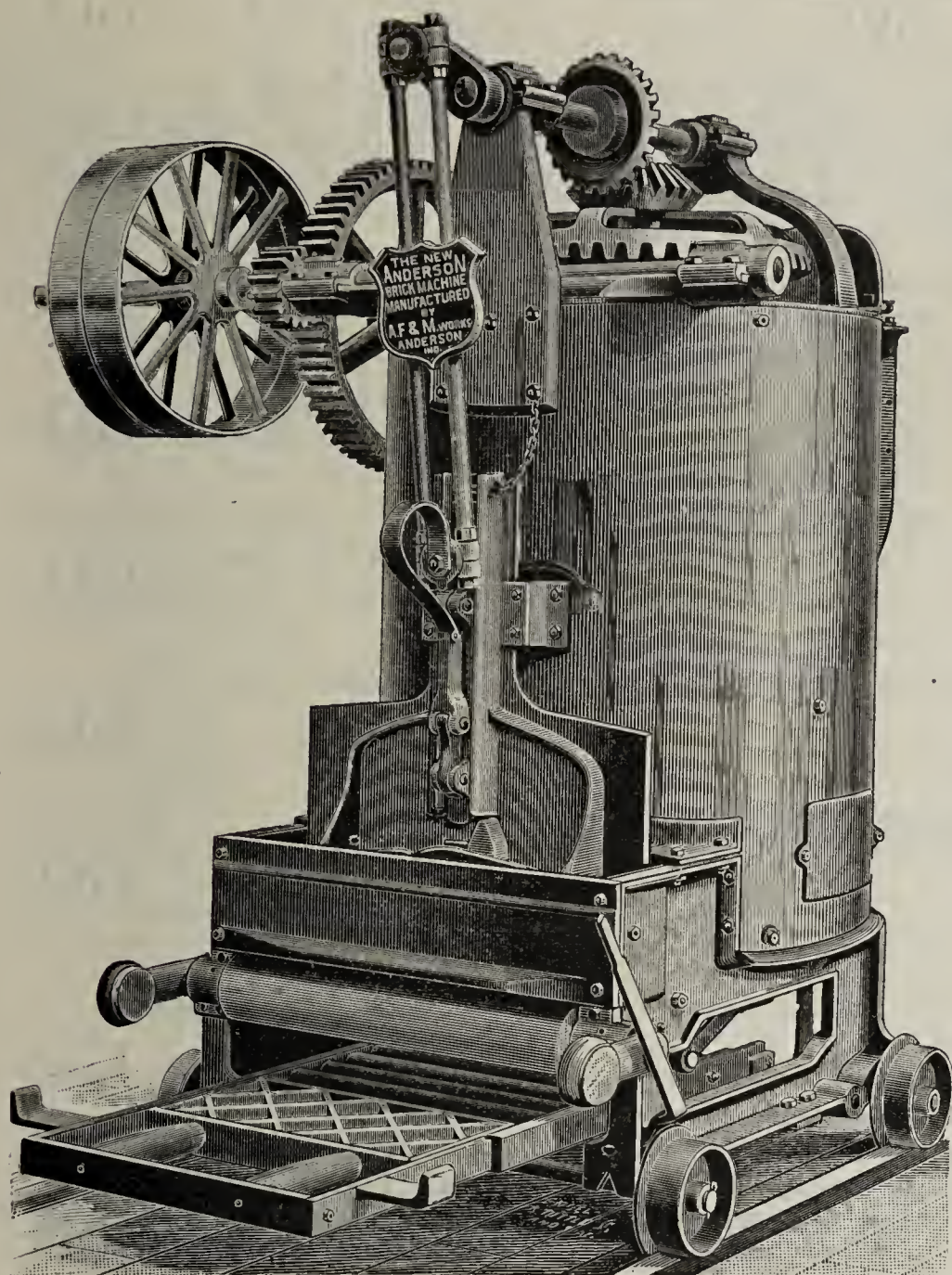
A. F. &amp; M. WORKS.

GENTLEMEN:—I have worked with the New Anderson Brick Machine and I have turned out 3,000,000 of good, square-edged brick. Before I had this Machine I was troubled right along. I have tried nearly all the machines now in operation and none were a success until I got a New Anderson, now I can depend on 30,000 good brick per day, and if any of you brother brickmakers want a machine, I would recommend the New Anderson Machine,

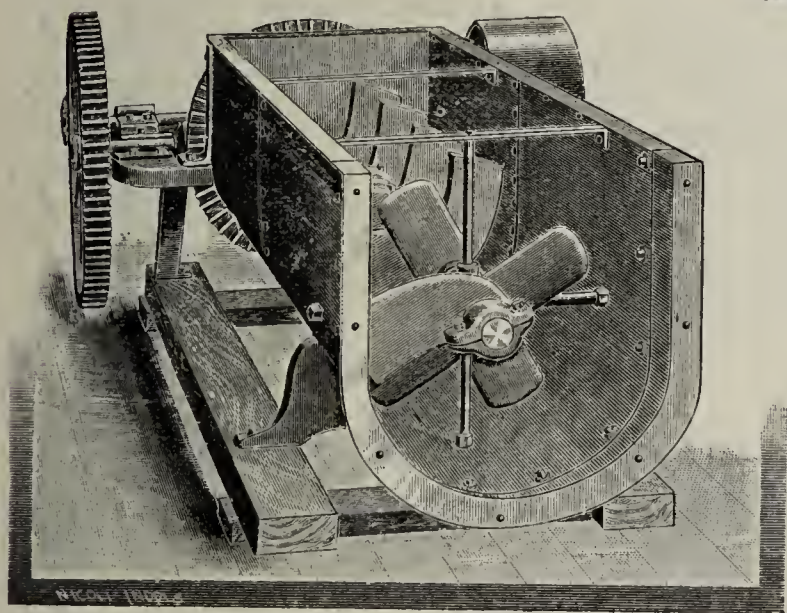
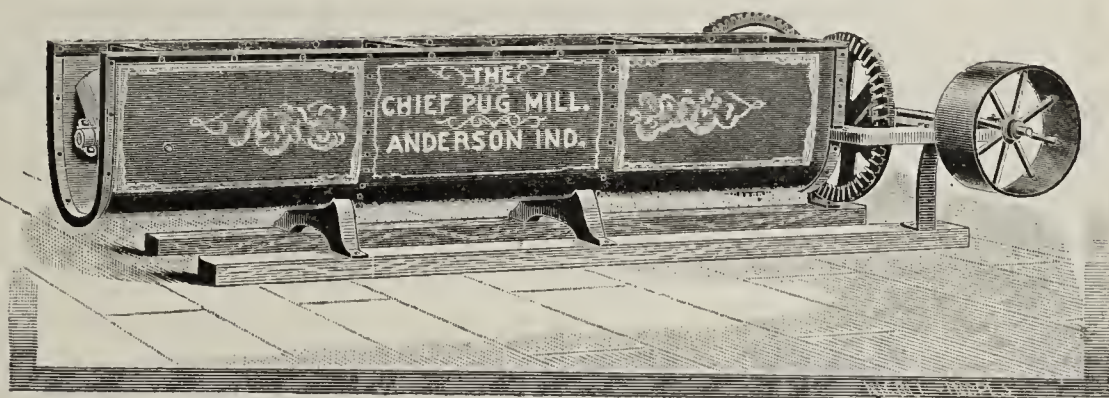
Yours truly,

A. HEIM, Proprietor.

JOHN HEIM, Gen'l M'g'r.



We also manufacture the  
NEW IMPROVED CHIEF BRICK MACHINE.



End View of Pug Mill.

PUG MILLS, . . .  
DISINTEGRATORS,  
. . . TRUCKS, . .  
. . . BARROWS,  
AND ALL BRICKYARD SUPPLIES.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



GO! GO! GO! GO! GO! GO! GO! GO!

GO!

GO!

GO!

WILL YOU

Read the letter below?

Study it and the others we have presented and appreciate what they mean?

In justice to your own interests, not GO AND SEE the "Monarch in operation?"

Let this fact burn itself into your memory,—that we have a **WONDERFUL MACHINE**, surpassing all others in every requisite point, and that **YOU WILL ACKNOWLEDGE THIS** if you will only GO AND SEE IT.Remember that all we want is to get Brick Manufacturers to actually **SEE** it? They will do the rest.

Not heed this common-sense invitation?

Sit in the rocking-chair, and let the procession go by?

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

GO!

Watch this page next month. Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y. January, from Utica, N. Y.

THE WELLINGTON MACHINE CO.,

WELLINGTON, OHIO.

GENTLEMEN:—Your "Monarch" Machine has proven highly satisfactory to us. We firmly believe that it is the only machine made that could handle our clay in such a satisfactory manner. We have had quite an extended experience with several soft mud machines, and until we purchased the "Monarch" we could not make brick as we believed that they should be made. **WE CAN HANDLE THE CLAY TWICE AS STIFF; PUG IT IN A MUCH SUPERIOR MANNER, AND FILL ALL CORNERS, WITH ONE EIGHT-INCH BELT, WHERE FORMERLY TWO EIGHT-INCH BELTS WERE OVERWORKED,** and this with no increase of belt speed. We have thoroughly examined its mechanism even to the most minor details, and must say, that in our estimation it is the **ONLY SOFT MUD MACHINE** on the market to-day. We cheerfully and honestly recommend this Machine to all intending purchasers, feeling confident that it will give them the same satisfaction, that it is now giving us.

Yours respectfully

MCGRAW BROS.

YOU CAN

See the "Monarch" Machine, in operation this month at the winter yards of Simon Kline at Reading, Pa., and McGraw Bros., 34th and Liberty

Sts., Pittsburgh, Pa. If not located near enough to reach these winter yards write for the nearest one to you and go and examine it, and inspect the brick it has made, and talk with the man who ran it, and you can form a reliable opinion of its merits.

THE WELLINGTON MACHINE CO.,

WELLINGTON, OHIO.

GO! GO! GO! GO! GO! GO! GO! GO! GO!



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.



Established 1857.

Incorporated 1887.

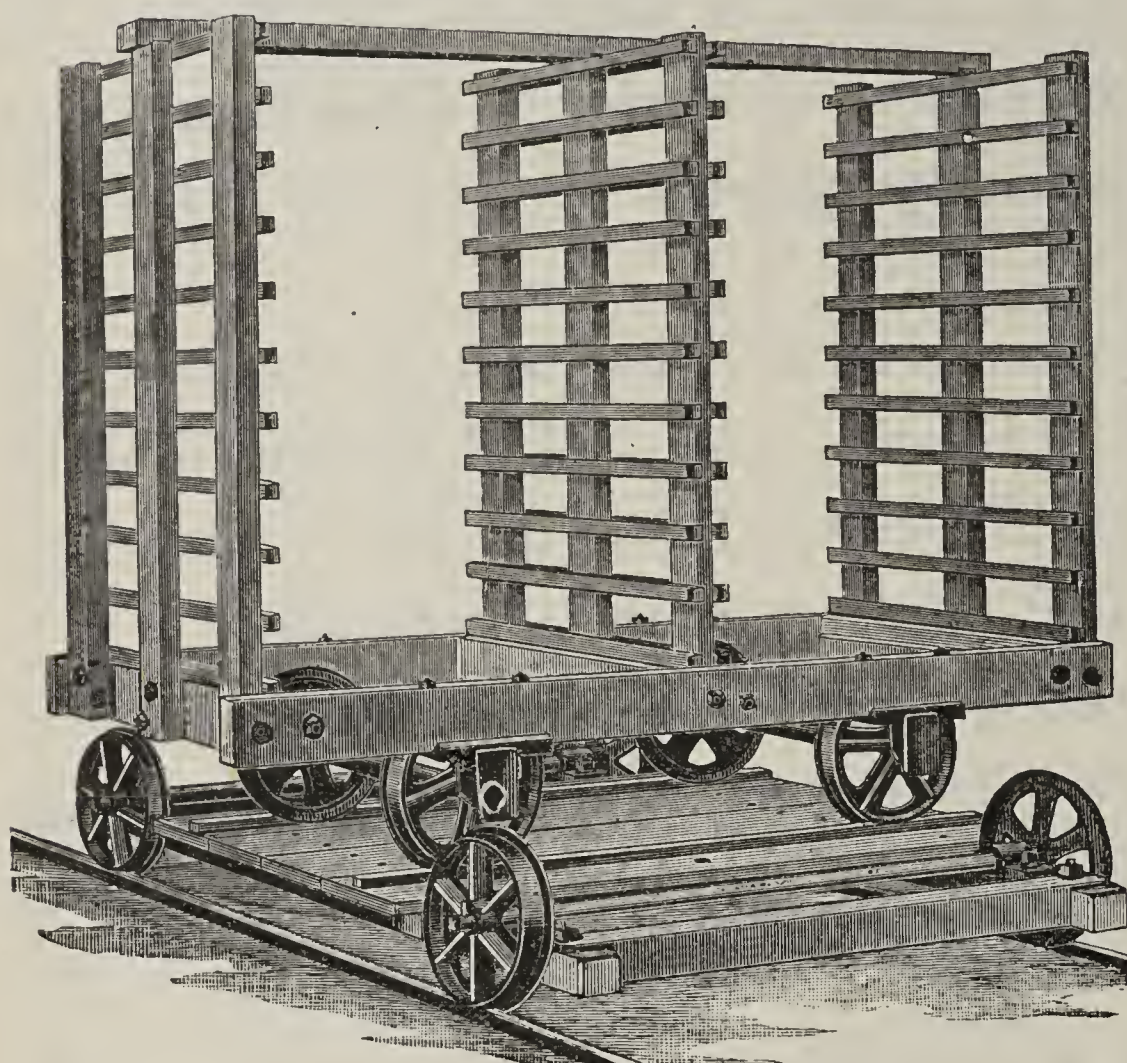
# The Henry Martin Brick Machine Mfg. Co.,

(INCORPORATED.)

LANCASTER, PA., U. S. A.

MANUFACTURERS OF

All Kinds of Dryer Cars,  
Wooden or Iron,  
Transfer Cars,  
Turn Tables, &c.

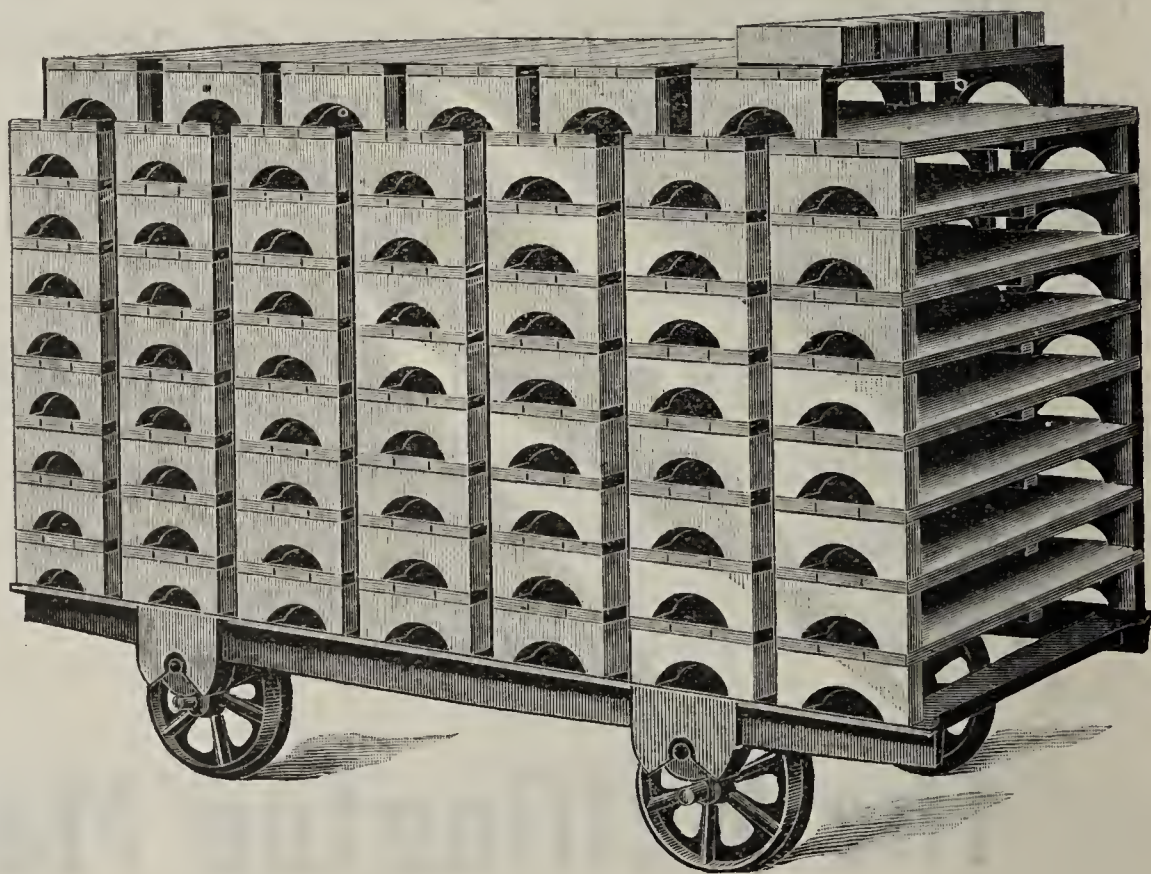


Rack and Transfer Car.

We have facilities for turning out this work very fast and at a reasonable figure. Let us make an estimate for you.



THE  
Latest Improved  
**BRICK MACHINERY**  
AND  
Brick Yard Supplies.

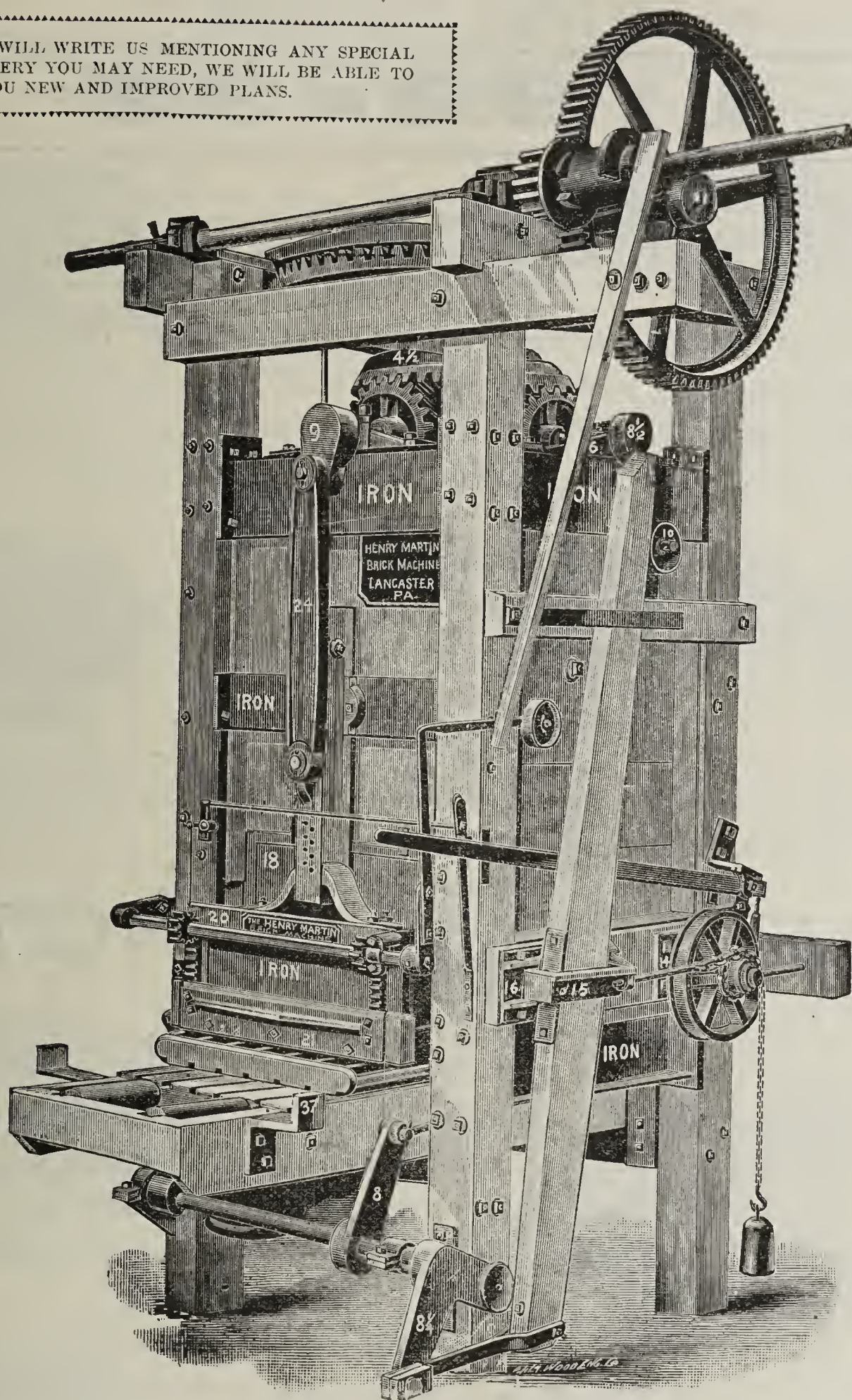


**WROUGHT IRON CARS A SPECIALTY.**  
Low Prices and First-class Work.



# "MARTIN" BRICK MACHINERY.

IF YOU WILL WRITE US MENTIONING ANY SPECIAL  
MACHINERY YOU MAY NEED, WE WILL BE ABLE TO  
SEND YOU NEW AND IMPROVED PLANS.



Easy to Manage  
Perfectly  
Automatic  
Self-Striking  
Simple  
Strong  
Can be Worked  
even with the  
Least Skilled  
Labor  
Our General  
Catalogue is  
at your Service  
Don't Fail to  
Look it up.

3,000  
in Use in the  
United States  
and Canada  
Results  
due to  
Superior Merit  
Works where  
others fail  
Cheapest  
in the long run  
Greatest in  
Public Favor.

WEIGHT, 8,000 LBS.

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

(INCORPORATED.)

LANCASTER, PA., U. S. A.





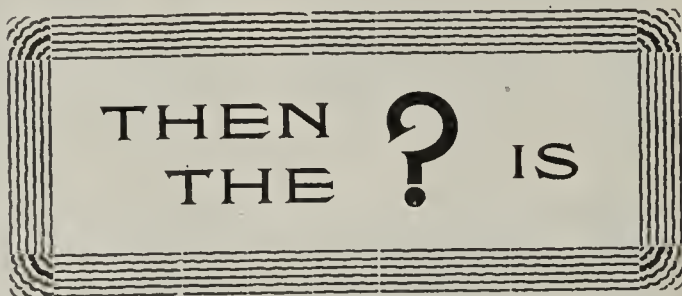
THE



$$1 \times 32 = 32$$

IS SOLVED

By the above number of *Potts Horizontal Stock Brick Machines* being put into operation the past year, every machine being shipped on trial and every one giving entire satisfaction. We have never had one of our machines fail to do the work, or to take one back. Every Machine built is working to-day.



Are you using a Machine that does not do your work, or gives you endless trouble by breaking—one that will not make clean, square brick ?

IF SO, WHY NOT

Purchase a *Potts Horizontal*? This machine will work the clay direct from the bank without the use of an extra Pug Mill. It has one-half more tempering capacity than any vertical machine and extra pug mill made. It has no light, complicated parts to wear or break. It will work the clay stiff, and fill a six-brick mould perfectly, without giving each mold a double press, as is done by the vertical machines.

The brick made have *clean, sharp corners*, and *smooth surfaces*. They are as straight and square as the molds they were made in.

You cannot afford to start your plant this year with machinery you know will not meet the demand made upon it. It will pay you to purchase a Potts Horizontal and start right. Every machine guaranteed to do as claimed for it.

# C. & A. POTTS & CO.,

414 and 428 W. Washington St.,

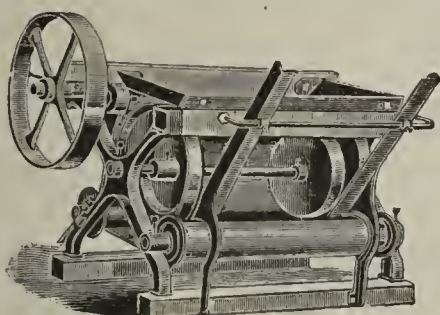
INDIANAPOLIS, IND.



# Brick - Making Machinery,

## AND BRICKYARD SUPPLIES. —

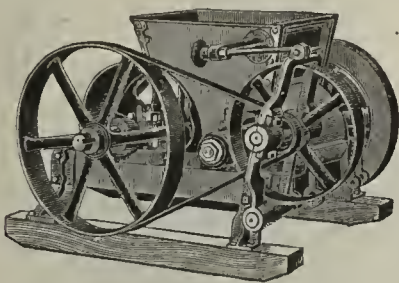
### THE POTTS MOULD SANDER.



**Simple in Construction.  
Strong and Durable.**

It sands the moulds perfectly and will save from \$1.00 to \$1.50 per day.  
Every machine guaranteed and shipped on trial.

### THE POTTS DISINTEGRATORS.



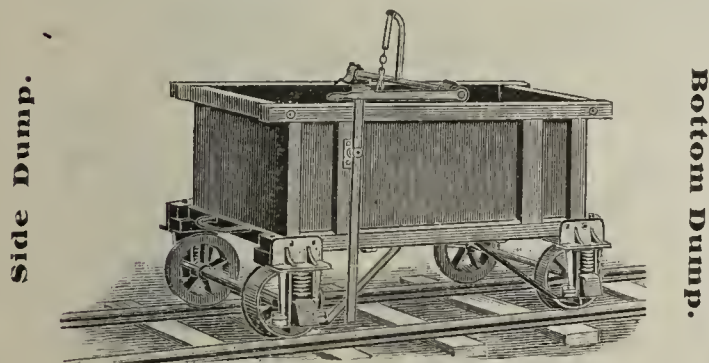
**Having Chilled Rolls**

Are the **Best, Strongest, and most Durable**  
Made in 12 sizes. Having capacity from 15 to 150 M. brick per day.

You cannot afford to use any other.

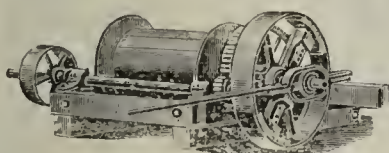
### CLAY CARS.

**Three Styles.**



**Revolving Car.**

### WINDING DRUMS.



Made with Spur or Bevel Gear to suit location.

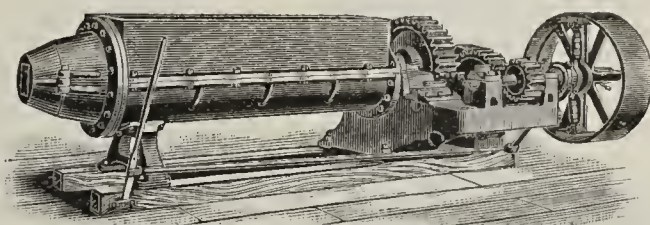
### Auger Machines and Automatic Cutting Tables.



• • • For the Manufacture of Paving Brick. • • •

These machines are strong and well built, having all the latest improvements. They are without a doubt the best machine of the kind ever put on the market.

### OPEN TOP TAPER PUG MILLS.

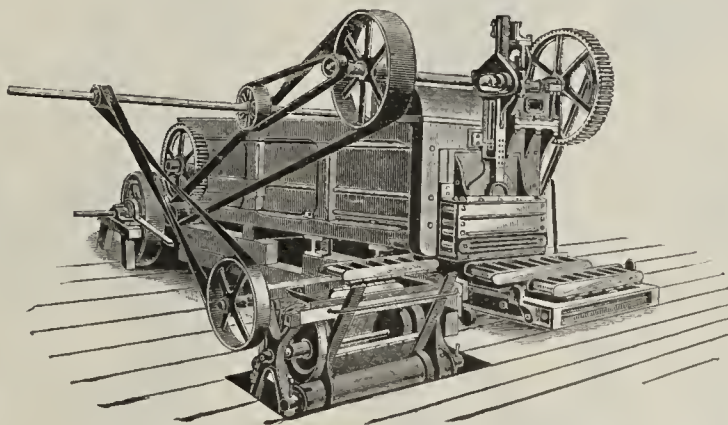


These mills are built especially for tempering clay for the Auger mills. They are strong and durable and will do hard service. We make the Auger mill and Pug mill in three sizes. Guarantee them to do good work.

We claim our Horizontal Stock Brick Machine will make **more and better** brick, with less cost for **labor** and repairs, than any other machine on the market.

If you want a machine that will make **six perfect stock brick** in each mould, the Potts Horizontal is what you need. It has no equal for

### STRENGTH.



**QUANTITY AND QUALITY.**

Every machine is guaranteed to do as claimed for it and is shipped subject to trial.

If you are in need of Clayworking Machinery or Yard Supplies of any kind, we keep them in stock and can ship promptly. We will be pleased to give further information and prices.

**C. & A. POTTS & CO., Indianapolis, Ind.**



"IT SURPRISES EVERYONE."



No. 1 Bueruys Giant Brick Machine with Automatic  
Cutting Table.

The Frey-Sheckler Co.,

Manufacturers of Clayworking Machinery,

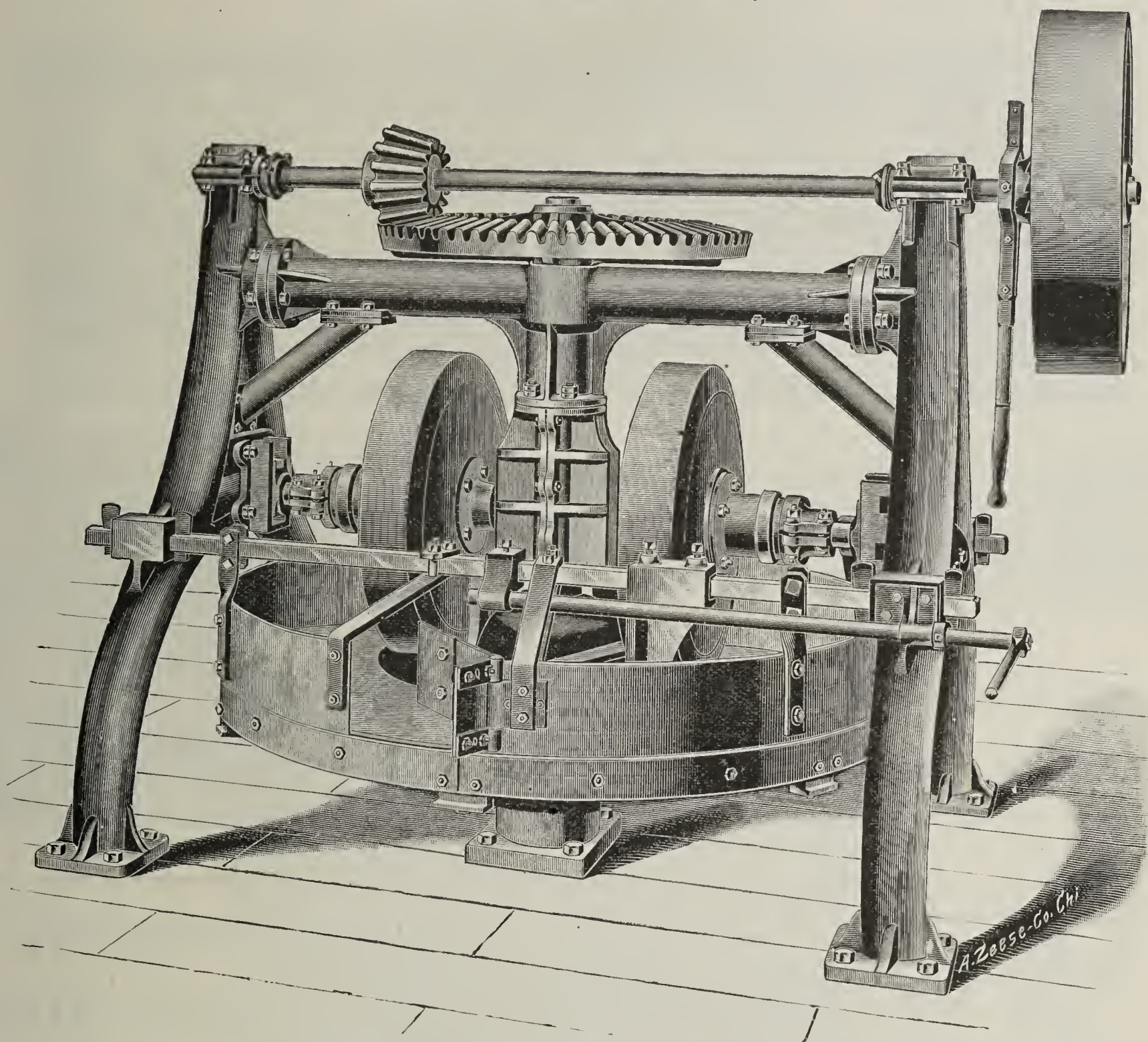
Send for New 1893 Catalogue.

BUGYRUS, OHIO, U. S. A.



# HERE WE ARE AGAIN. ❖

Our SEVEN, EIGHT and NINE FOOT Diameter WET-PANS Cannot be Equalled in Point of Construction, Efficiency and Output.



The Frey-Sheckler Co.,  
Bucyrus, Ohio, U. S. A.

Manufacturers of EVERY APPLIANCE NEEDED in a . . . .

BRICK, TILE, . . .

HOLLOW BLOCK,

❖ or, TERRA COTTA Plant,

Write for our HANDSOME and VALUABLE

1893 ❖❖

CATALOGUE

❖ Now ready for Distribution

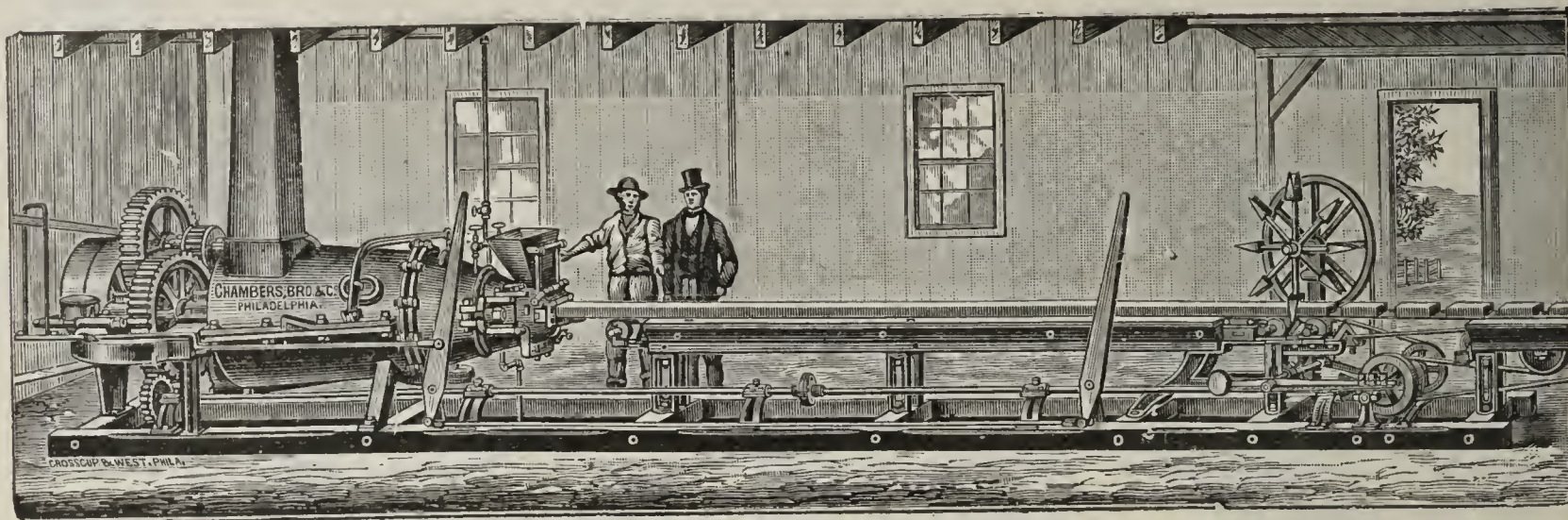


# CHAMBERS BROTHERS Co.,

FIFTY-SECOND ST., BELOW LANCASTER AVE.,

PHILADELPHIA, PA.

## IMPROVED BRICKMAKING MACHINERY.



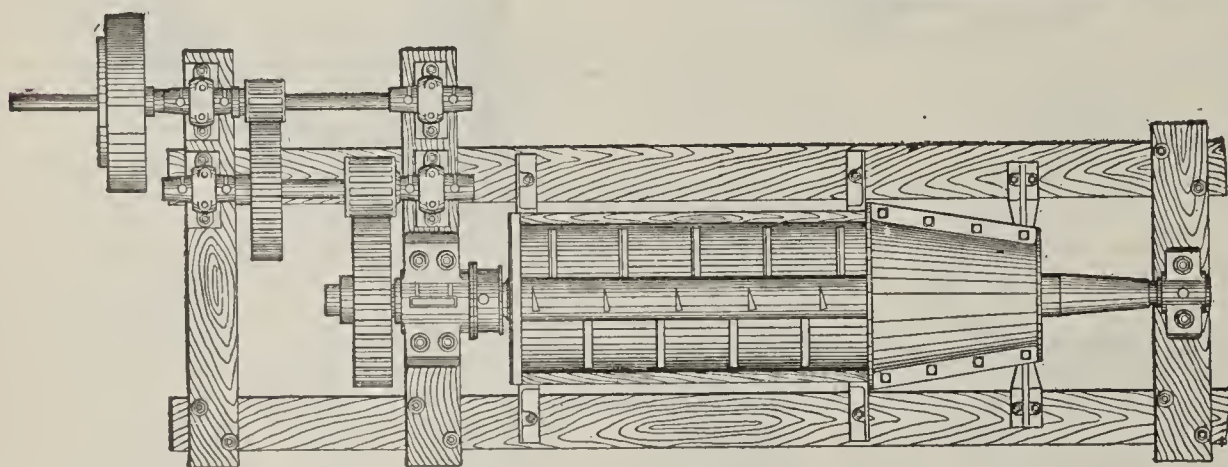
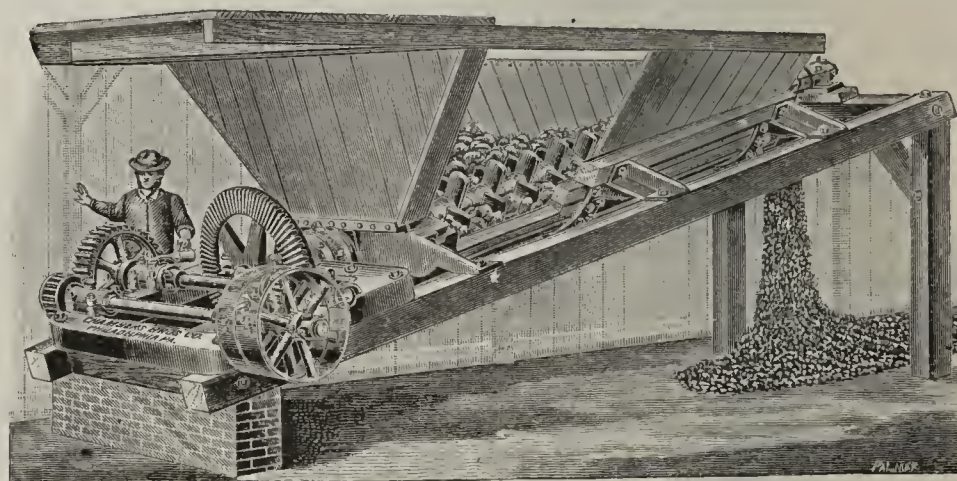
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS,  
CRUSHING ROLLERS,  
CLAY ELEVATORS.

Kiln Castings of All Descriptions.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS Co.,

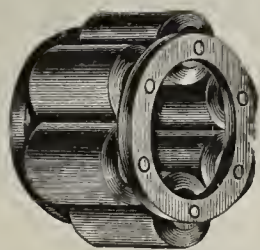
FIFTY-SECOND ST., BELOW LANCASTER AVE.,

PHILADELPHIA, PA.

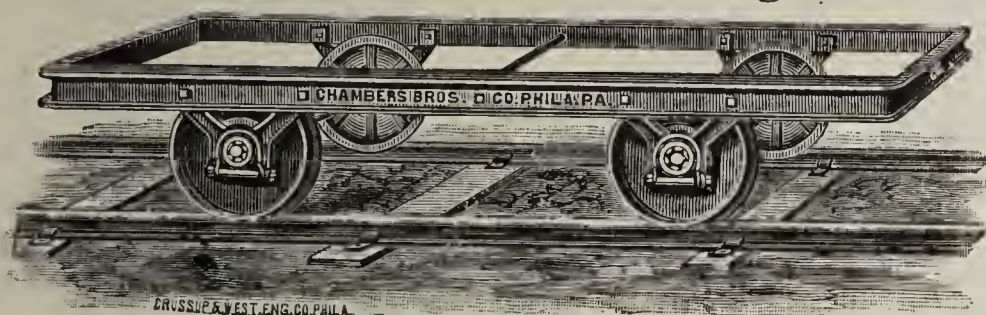
## Improved Tunnel Dryers For Common Brick

Cars and Complete Equipment for Artificial Dryers of all Kinds.

## STEEL PALLETS.



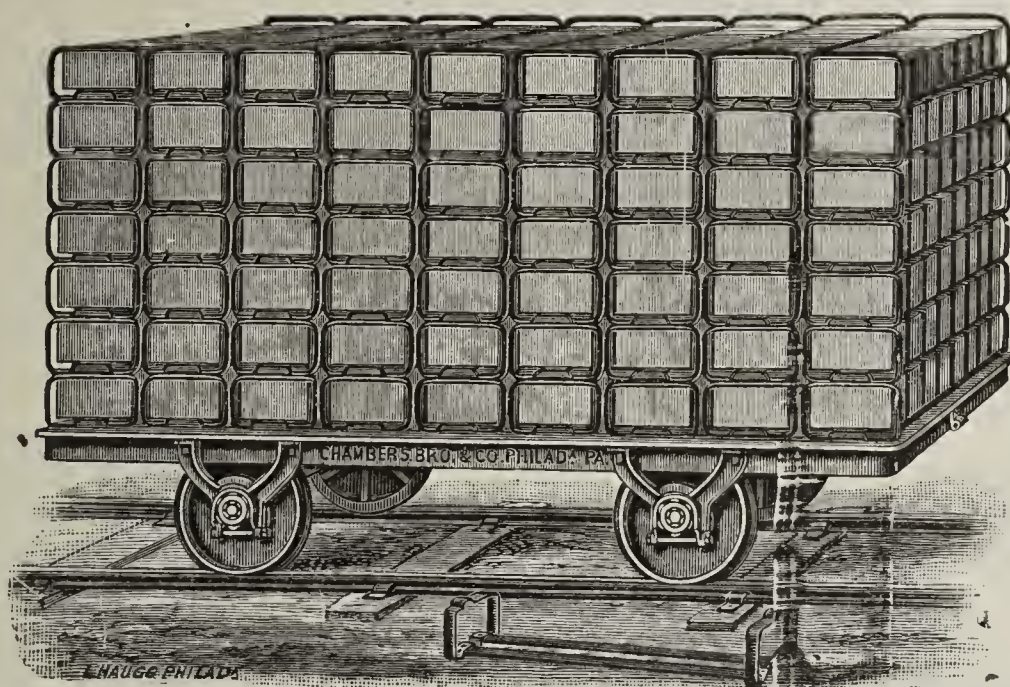
The Anti-friction Cage Roller Bearing used on our Cars.



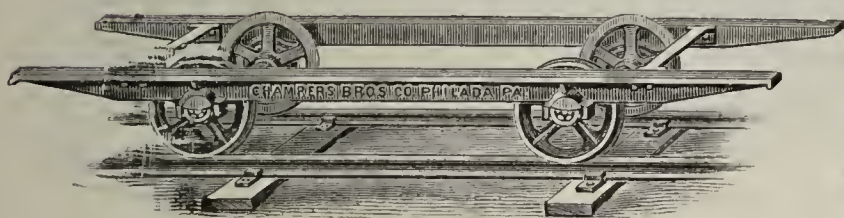
(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)



Car loaded with 63 pallets and 504 Chambers' Machine Brick.



(No 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

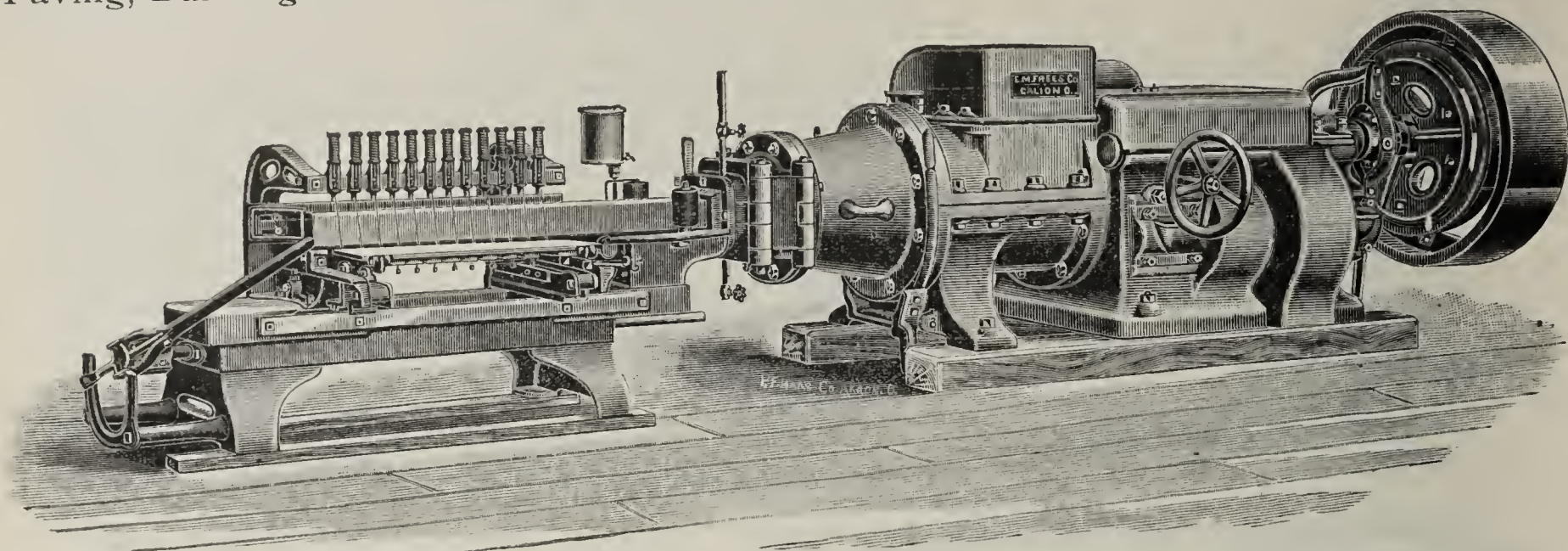
See ad. on front cover page.

[Mention the Clay Worker



## ✧ THE COST REDUCED! ✧

By the use of our Improved Machinery, the cost of producing the best quality of Paving, Building and Fire Brick is greatly reduced.



### The "Mammoth Junior."

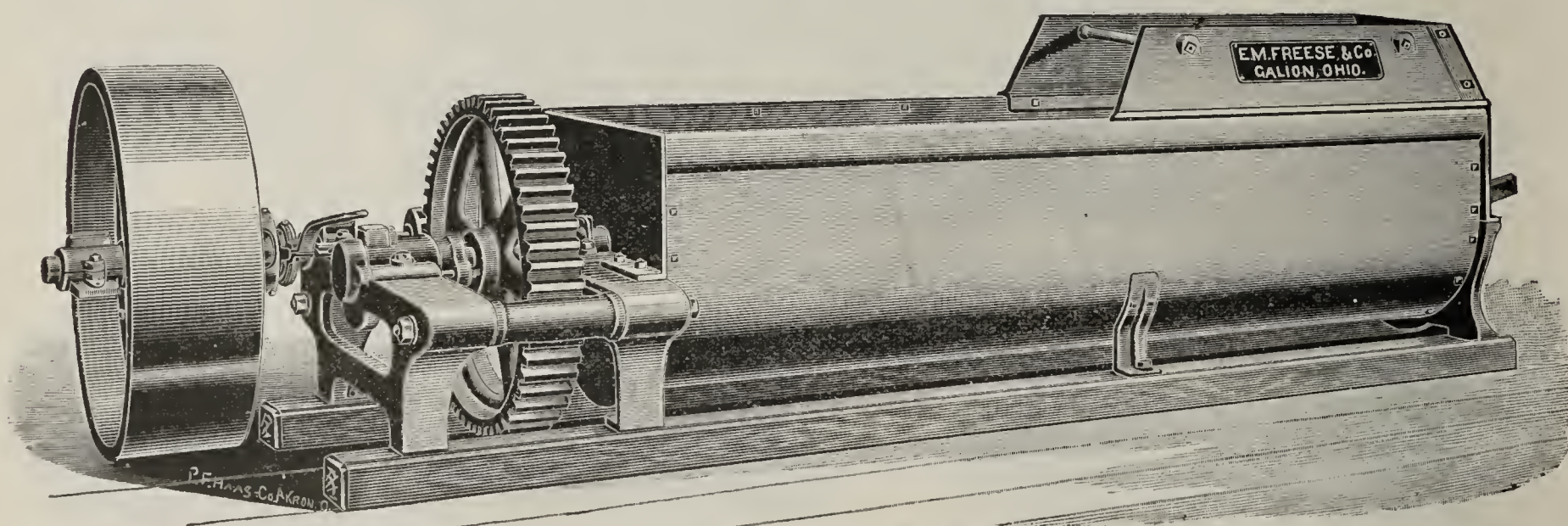
NEWEST PATTERN.      LATEST DESIGN.  
MONEY SAVING.      MONEY EARNING.

✧ Brick as fast as you want them, and in form and texture to suit you. ✧

We would like to tell you all about the innumerable special points in which this Machine has the advantage, and will do so if you are sufficiently interested to write us.

Our address is,

**E. M. FREESE & CO., GALION, OHIO.**



### No. 1 Pug Mill.

We build a variety of sizes and styles of Pug Mills to meet your requirements.





# E. M. FREESE AND CO. GALION, O.

GOLDSBORO, N. C., May 27th, '92.

E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:—Your "A" Special Brick Machine and Pug Mill are a combination that ought to make a bank account. I am averaging over 30,000 per day with ease and I believe the machine capable of increasing output 50 per cent. I am more than pleased with it, not so much for quantity as quality of brick.

I am, very truly yours,  
H. L. GRANT.

MARIETTA, OHIO, Jan. 16th, 1893.  
E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:—

We have this morning opened our first kiln of 300,000, and find them first-class.

We are well pleased with the "A" Special in every respect.

Enclosed find check for machine as per contract.

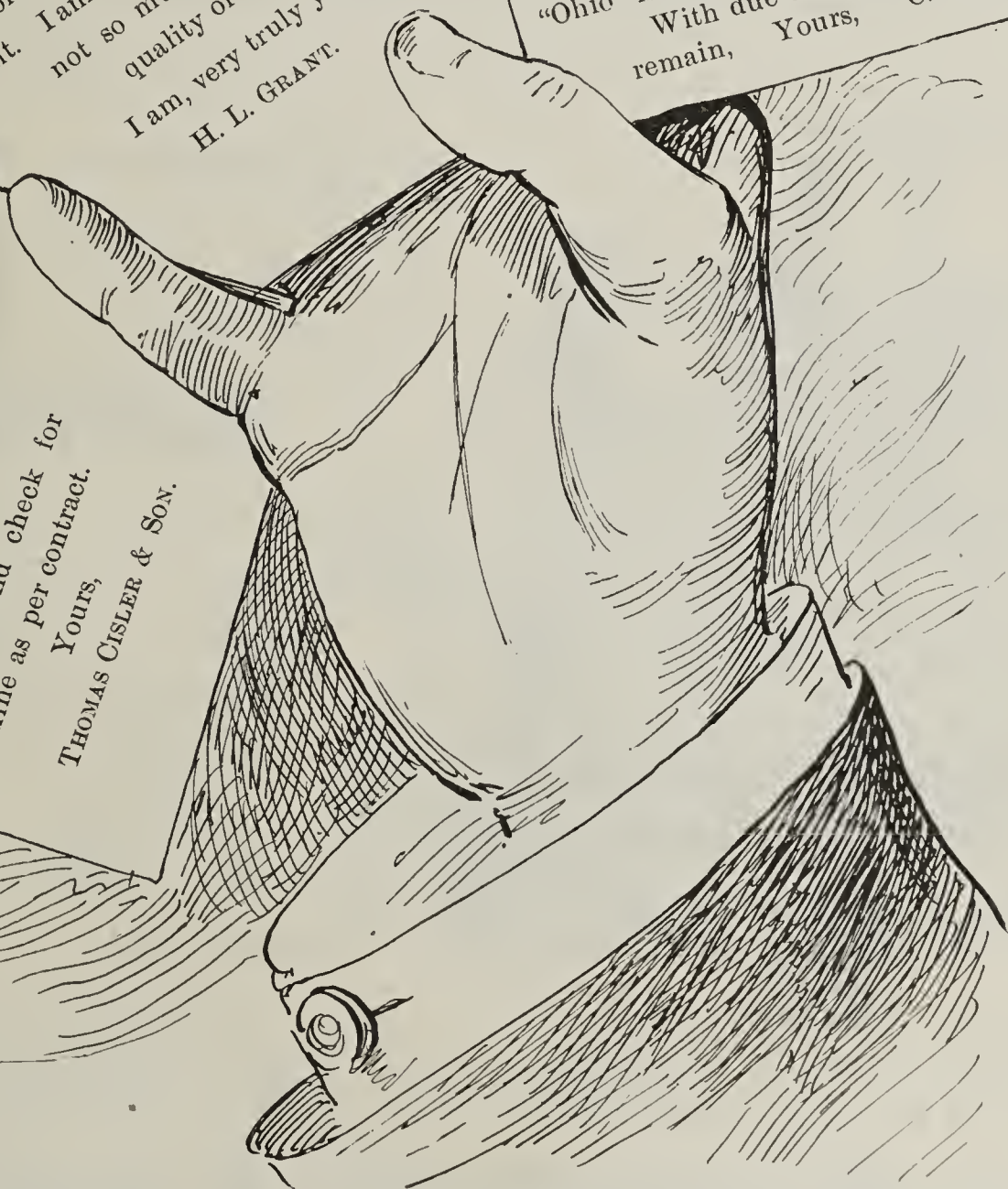
Yours,

THOMAS CISLER & SON.

MARENGO, IA., Nov. 13th, 1892.  
MESSRS. E. M. FREESE & Co.,  
GALION, OHIO.

GENTLEMEN:—Have been so busy all season building and repairing, it seemed I could not get time to write you as I wished to, but let me say here, the "Ohio" is going to get me out of debt incurred by the purchase of other machines. The "Ohio" is making the best brick in the State. The ornamental dies come too late, but we started up and run out a few which we have now burning. They are very fine. Every man who sees my brick pronounces them the best he has seen, and goes away impressed with the idea that the "Ohio" is a dandy, and so I think.

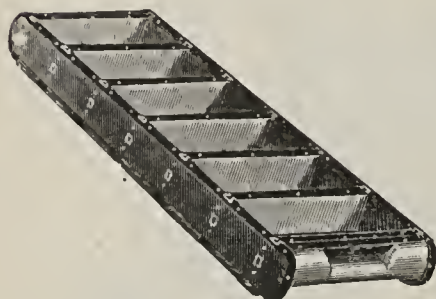
With due respect, gentlemen, I remain, Yours,  
C. CARTER.



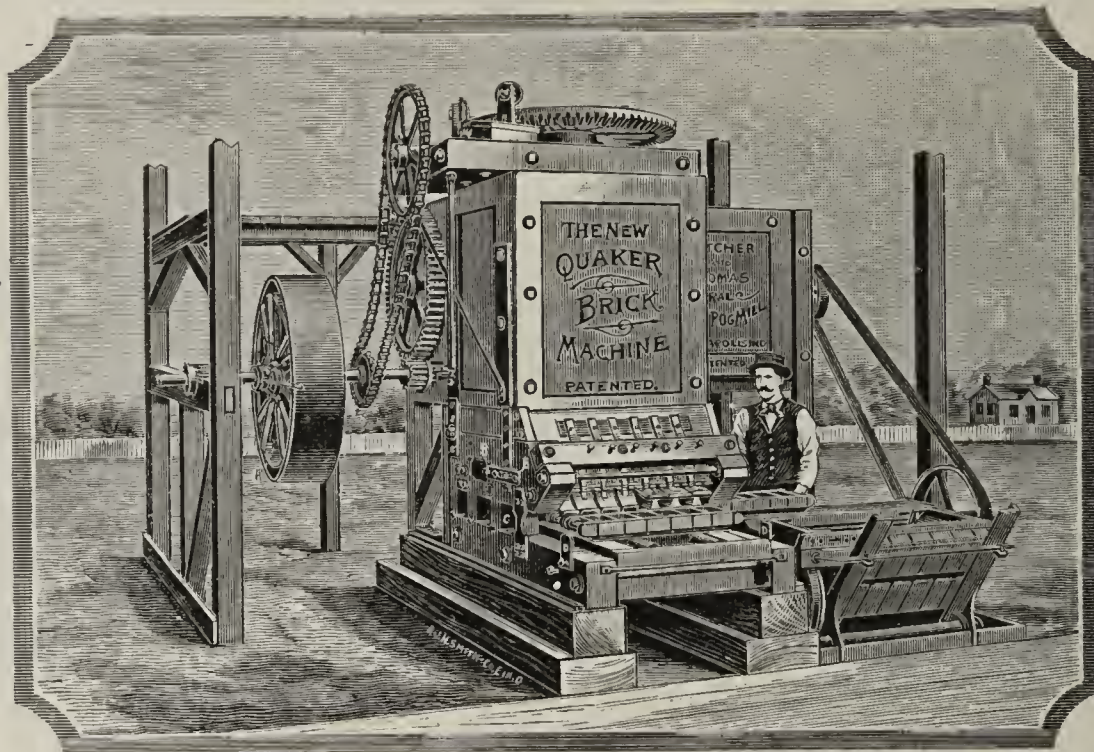


FLETCHER & THOMAS, INDIANAPOLIS, IND.,  
MANUFACTURERS AND DEALERS IN  
**Brick Machinery and Brickmakers' Supplies.**

Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.



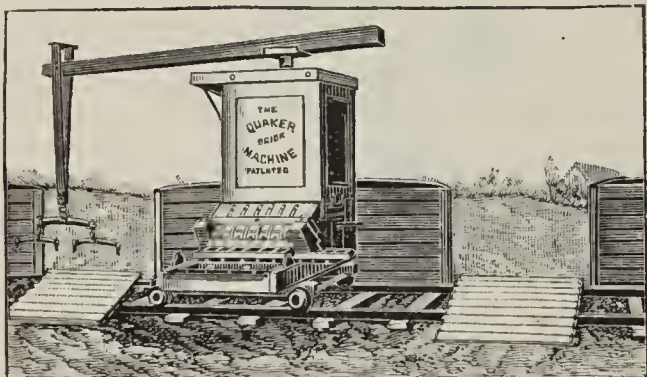
Made of Best Cherry.  
Three Brick Molds.  
Four  
Six

Hand Molds.

**THE EXTRA HEAVY QUAKER BRICK MACHINE,**

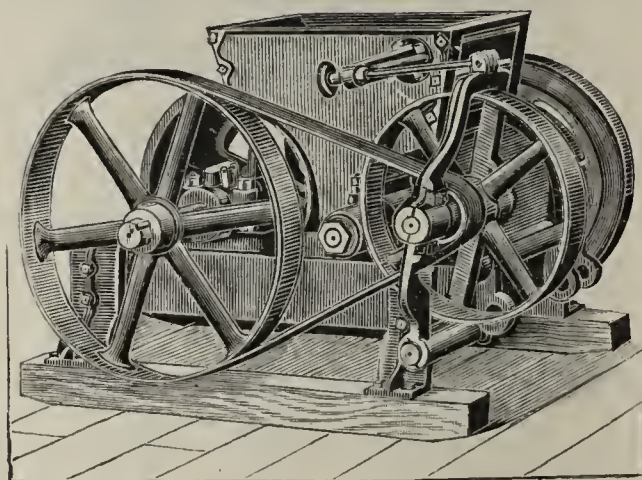
FLETCHER & THOMAS SPIRAL PUG MILL and MOLD SANDER Combined, makes the most complete plant in use.

Capacity limited only by the ability to provide clay and take care of the product.

**THE NEW QUAKER**

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.

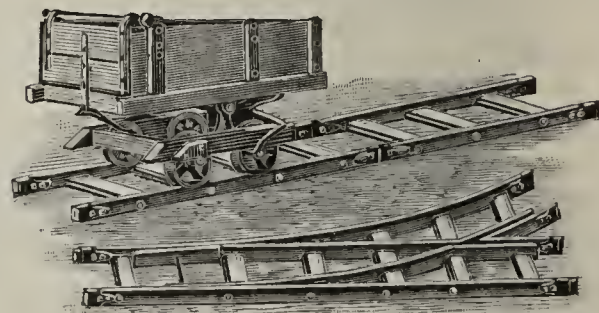


Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.

**DISINTEGRATORS.**

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.



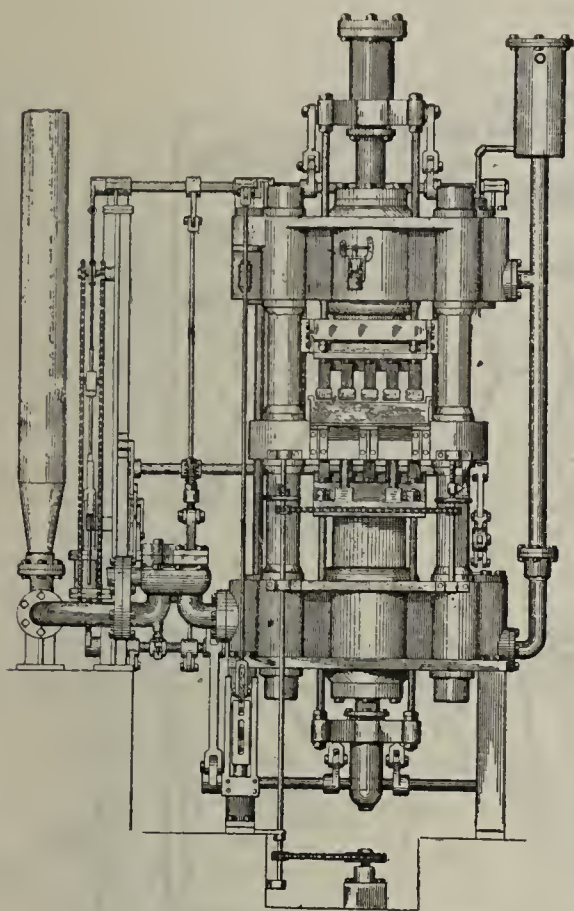
Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

**FLETCHER & THOMAS, Indianapolis, Ind.**

[Mention the Clay-Worker.]

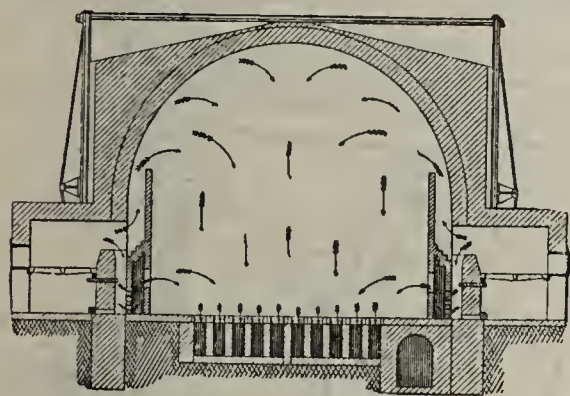




VERTICAL SECTION.

FRONT VIEW.

REAR VIEW.



## THE KOCH Perfection Hydraulic Brick Press

AND

The Grath DOUBLE Down Draft Kiln

||| ||| SUPERIOR TO ALL OTHERS. ||| |||

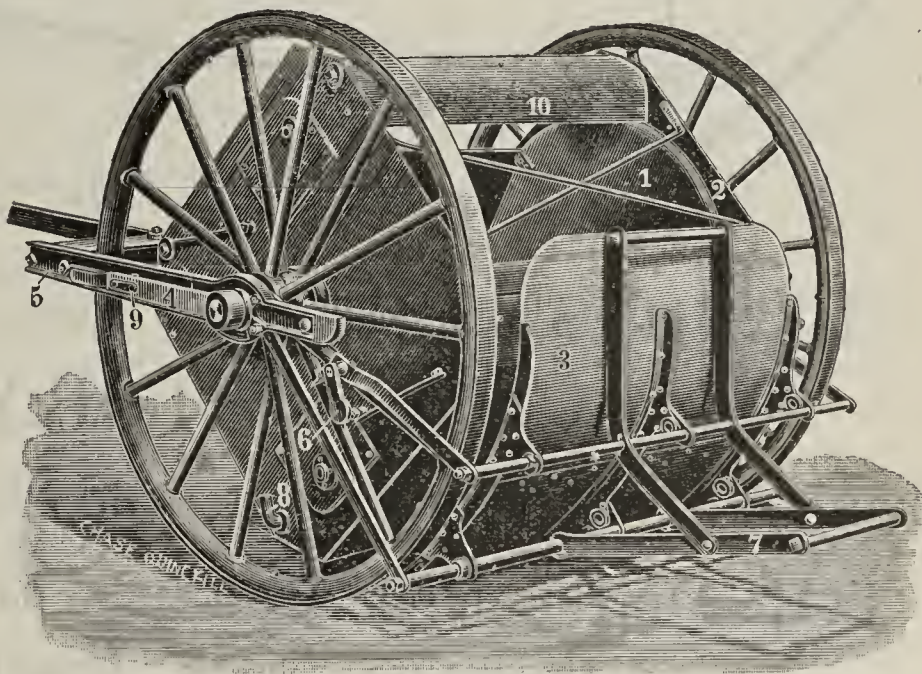
Our Press, Kilns, Gatherers and Disintegrator are in use at the American Hydraulic Press Brick Company's Yards, Collinsville, Ill., who are turning out the finest quality of Press Brick made in the history of Brickmaking.

Brick free from granulation and hard and smooth as polished granite.

## THE QUINCY CLAY GATHERER

For gathering and shedding dry clay it is unequalled. It is self-loading and unloading. It is the cheapest and most approved Clay Gatherer. Gathering clay by this method dispenses with shovelers and avoids strikes.

No brickyard complete without the Quincy Clay Gatherer.



We are General Agents for the ROSS CLAY PULVERIZER. Grinds more clay than all other mills. Will not clog or get out of order. Guaranteed in all particulars.

Manufacturers of the BEST BLACK COLOR for Brown, Gray and Mottled Brick, of the best quality.

# ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.

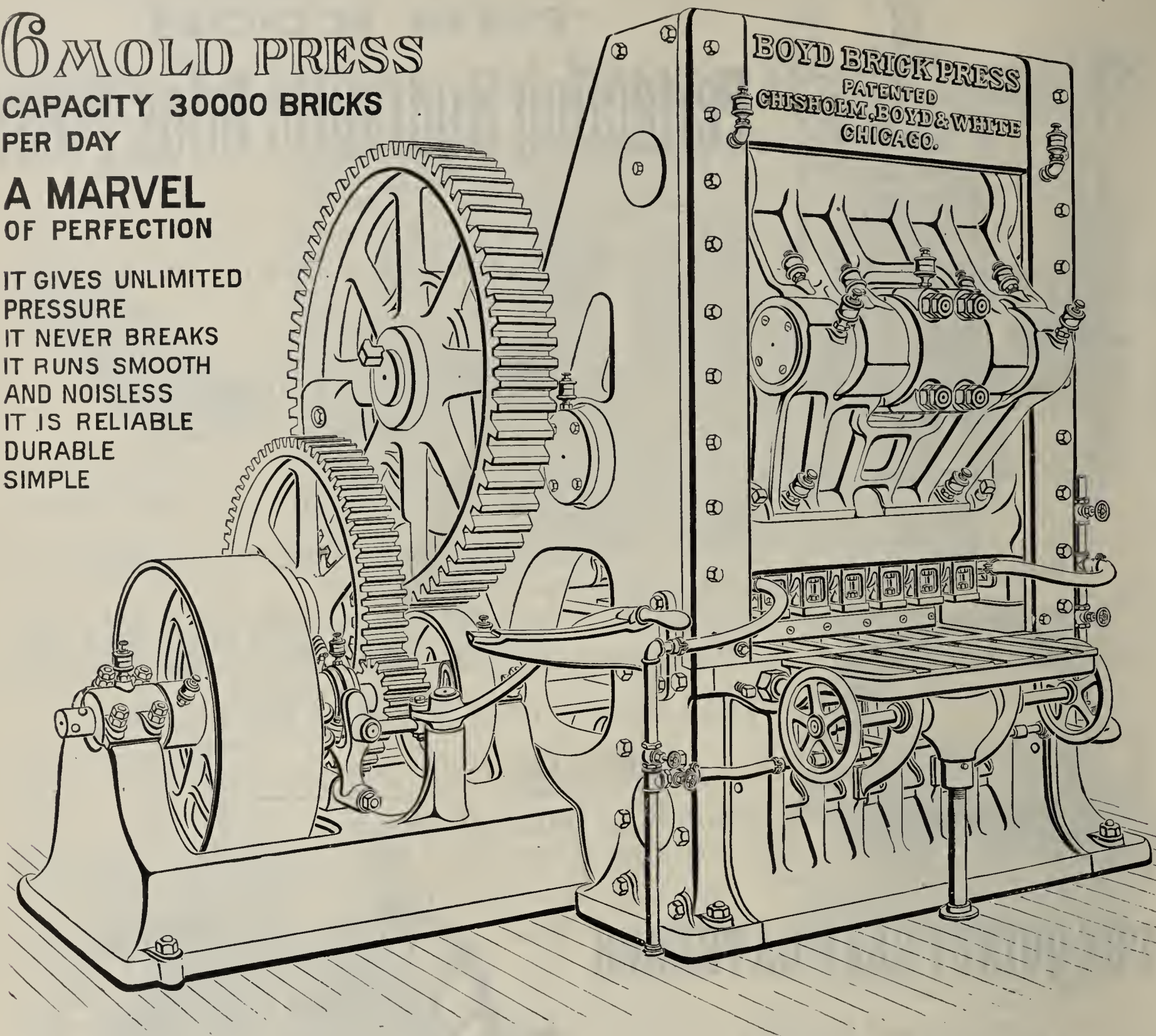


# 6 MOLD PRESS

CAPACITY 30000 BRICKS  
PER DAY

## A MARVEL OF PERFECTION

IT GIVES UNLIMITED  
PRESSURE  
IT NEVER BREAKS  
IT RUNS SMOOTH  
AND NOISLESS  
IT IS RELIABLE  
DURABLE  
SIMPLE



MILLIONS of Beautiful Pressed Brick

are being made **DAILY** on **BOYD BRICK PRESSES**,  
at lowest cost, and bringing the highest price per M.

**THE ONLY PRESS** which can be quickly changed to make  
POMPEIAN BRICK, STANDARD BRICK, FIRE BRICK,  
PAVING BRICK, ORNAMENTAL BRICK.

**CHISHOLM, BOYD & WHITE,**

MONON BLOCK,  
324 DEARBORN STREET.

CHICAGO.



### A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing the Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be our own in case of failure. Why experiment when you can have a sure thing.

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

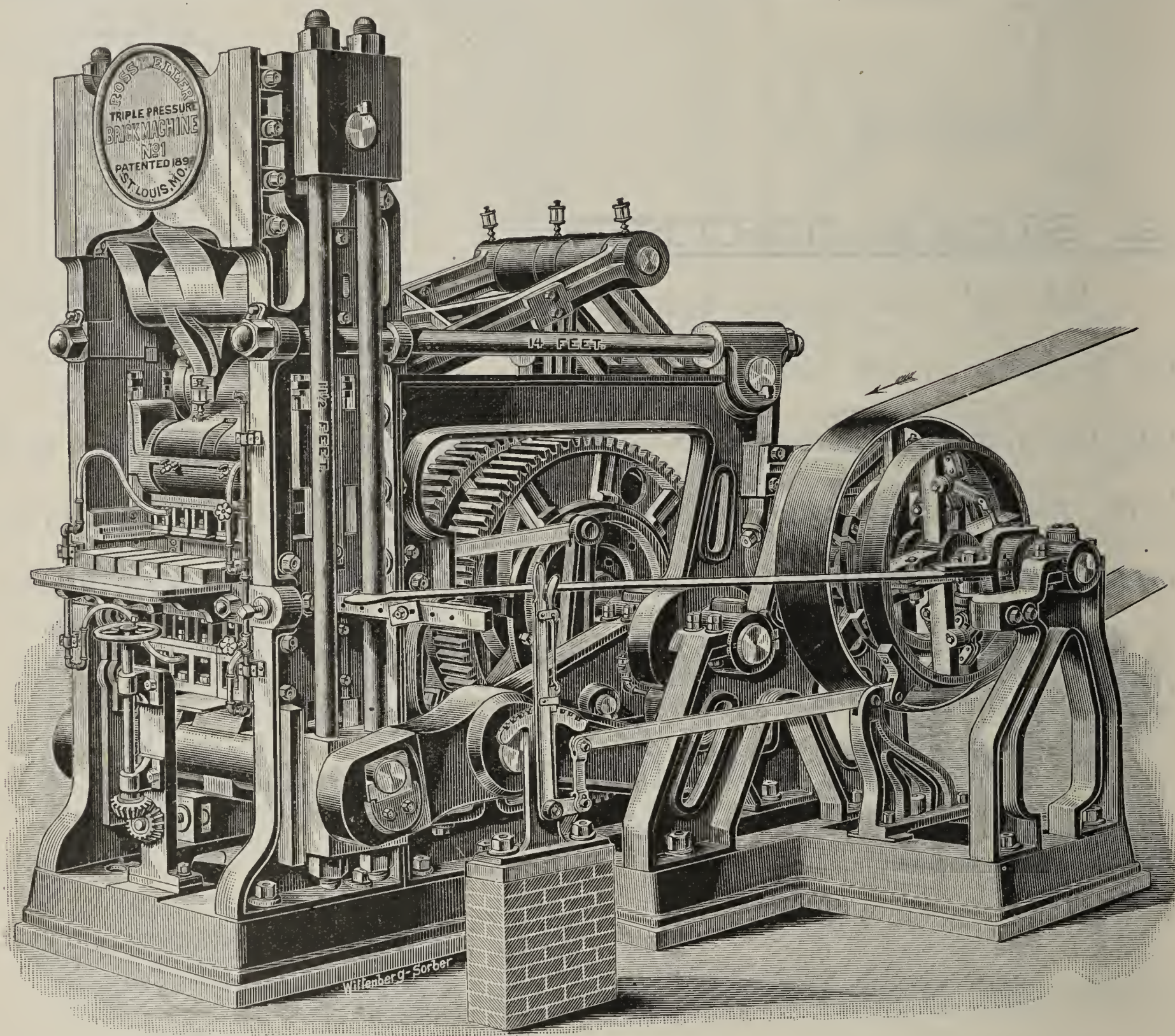
CHICAGO.



# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 68,000 pounds, Capacity 35,000 pressed brick per day.*



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

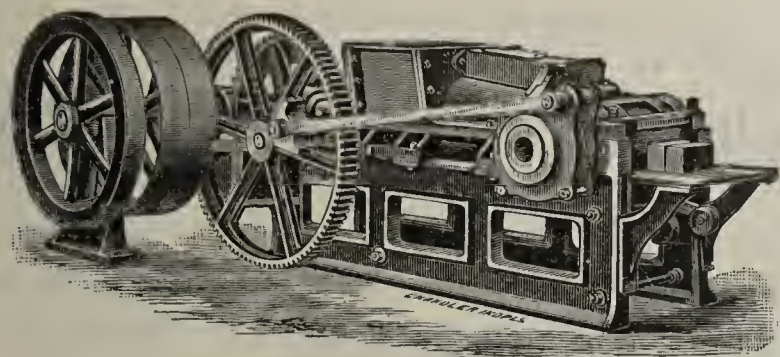
For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**

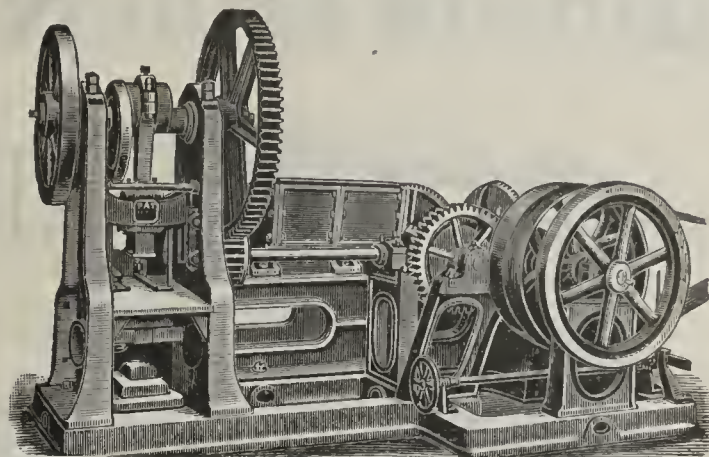
*Room 207 Laclede Building,*

*ST. Louis, MO., U. S. A.*

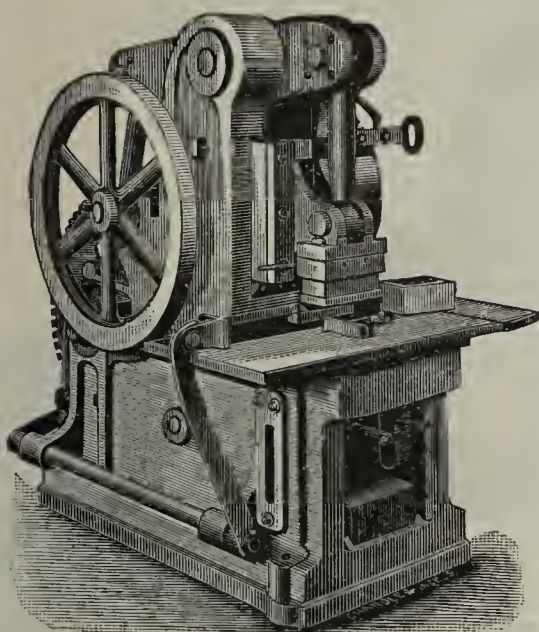




IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK & TILE PRESSING MACHINE

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building

# BRICK

and the best and most economical  
kiln in which to burn them.

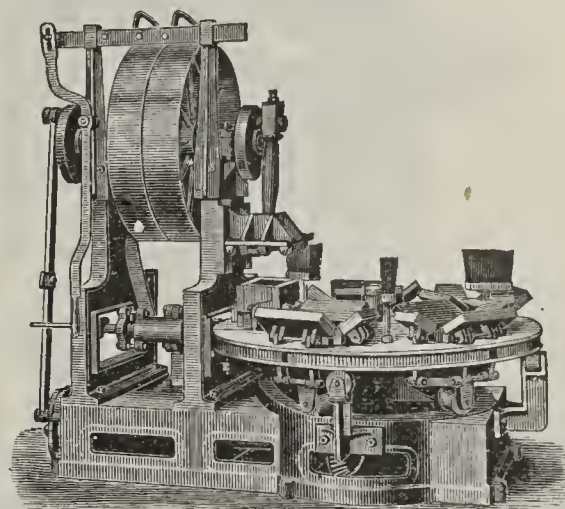
We are prepared to furnish complete  
equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

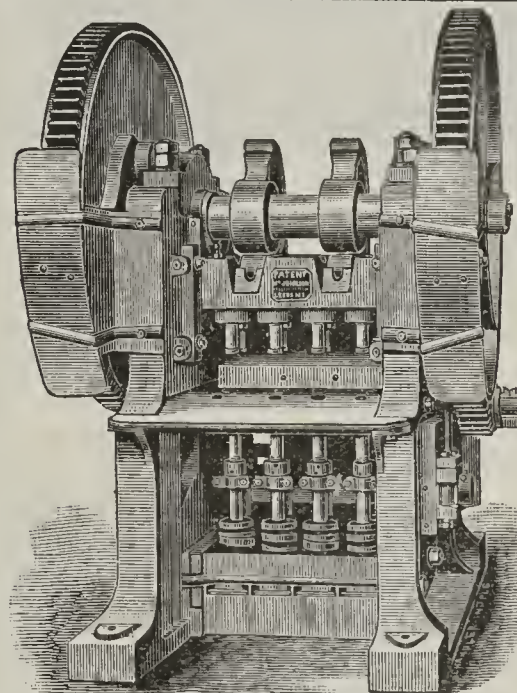
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

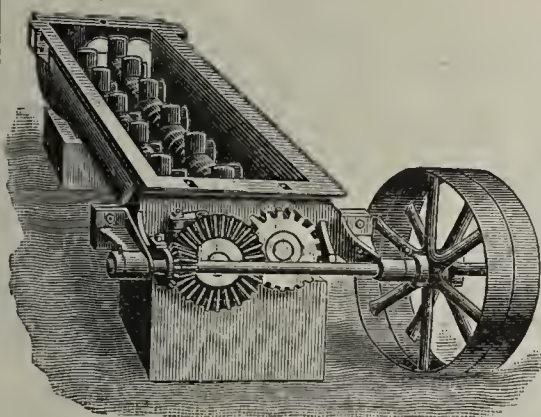
BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



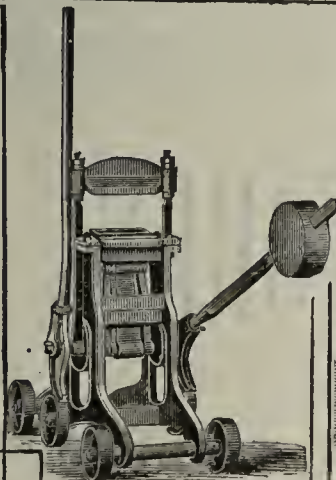
PAT. STEAM SAND-FACED PRESSING MACHINE



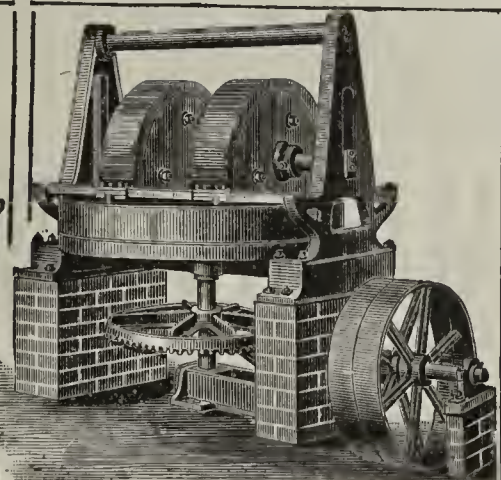
THE UNIVERSAL BRICK MACHINE



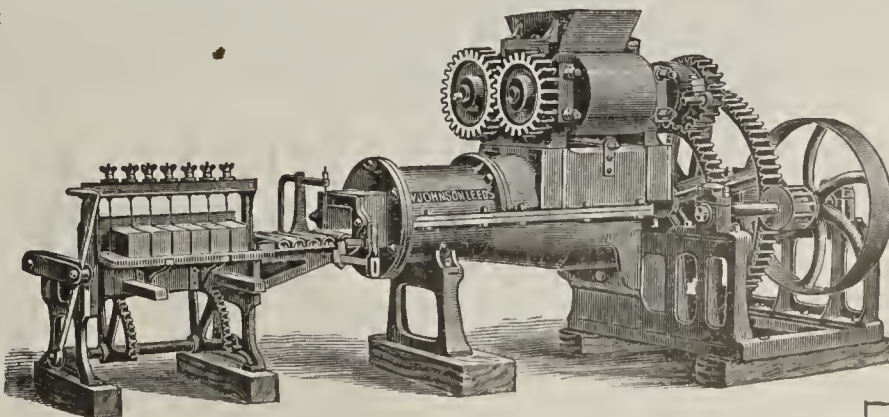
DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER



HAND LEVER BRICK PRESS



PERFORATED-EDGE RUNNER CLAY GRINDER



COMBINATION PUG MILL BRICK & TILE MACHINE



ESTABLISHED 1854.

INCORPORATED 1875.

# St. Louis Iron & Machine Works

Iron Founders and Builders of Heavy Machinery.

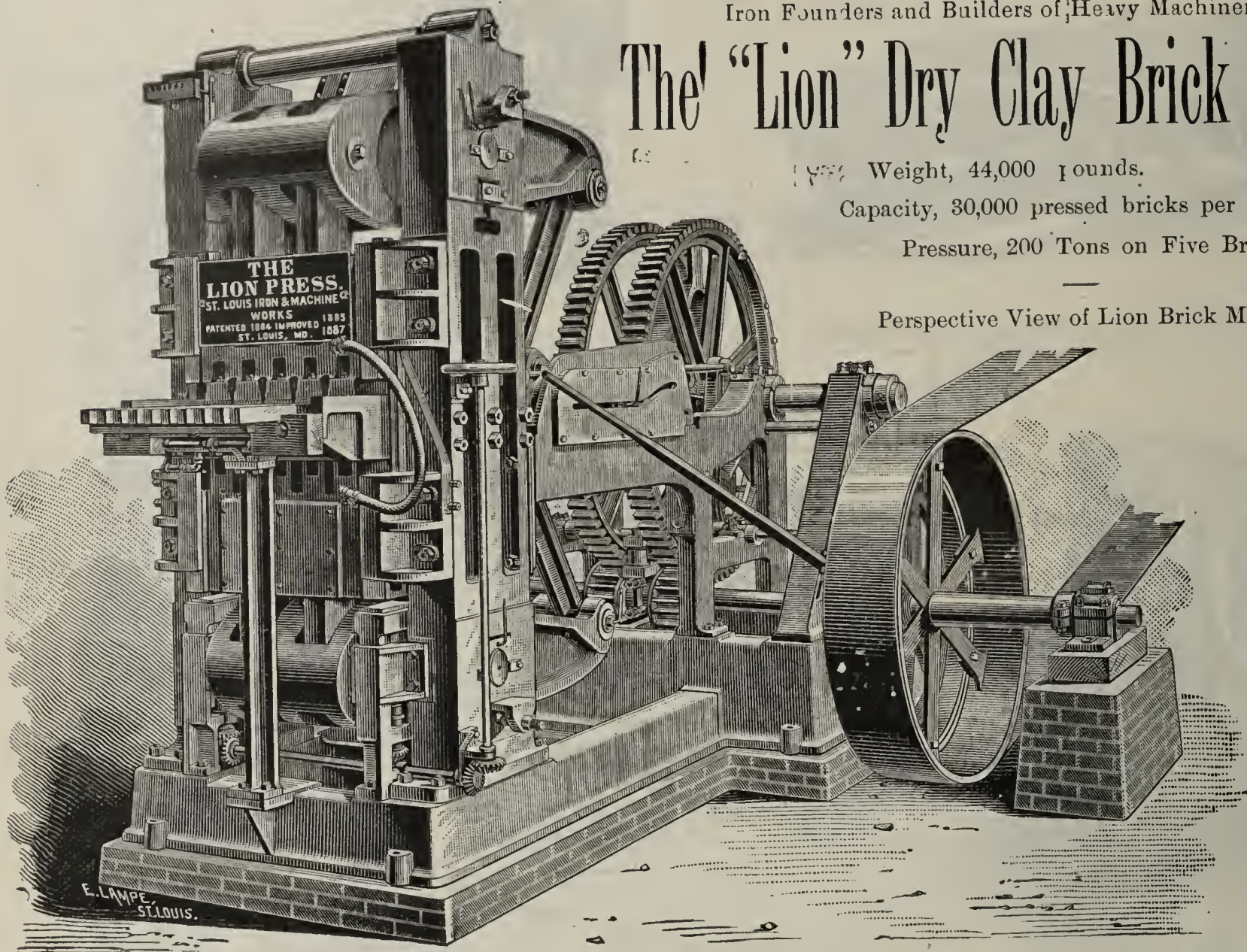
## The "Lion" Dry Clay Brick Press.

Weight, 44,000 pounds.

Capacity, 30,000 pressed bricks per 10 hours.

Pressure, 200 Tons on Five Bricks.

Perspective View of Lion Brick Machine.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—30,000 capacity and 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

# ST. LOUIS IRON & MACHINE WORKS,

Main Street and Choteau Ave., St. Louis, Mo.

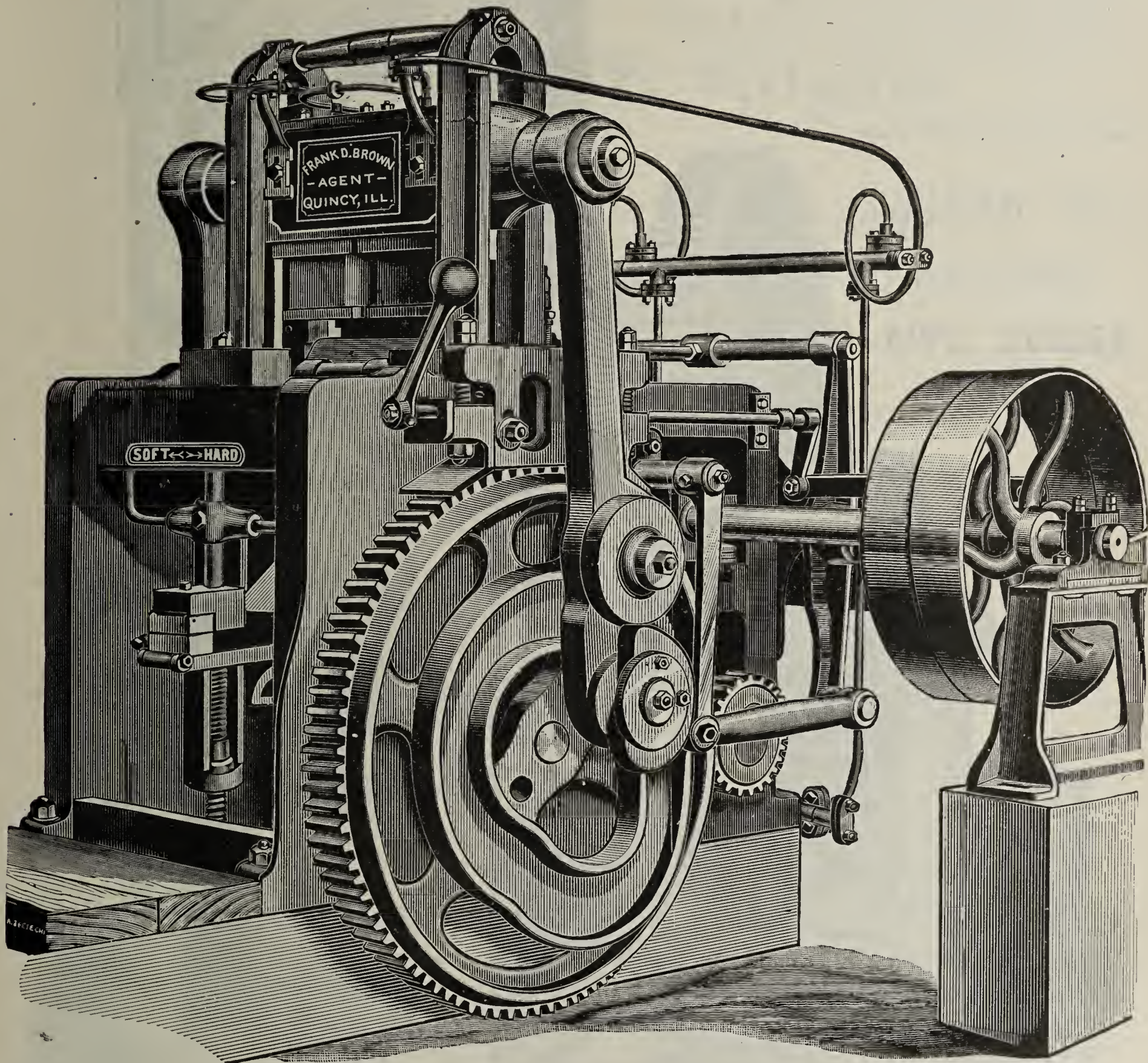


# Whittaker Press Brick Machine

Works Clay Semi-plastic, Semi-dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



Clay sent freight prepaid will be pulverized, pressed and burned free of charge.

**FRANK D. BROWN, Sole Owner and Agent,**

For Territory East of Mississippi River,  
Except Minnesota and Wisconsin.



**QUINCY, ILL.**



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

## Refer to . . .

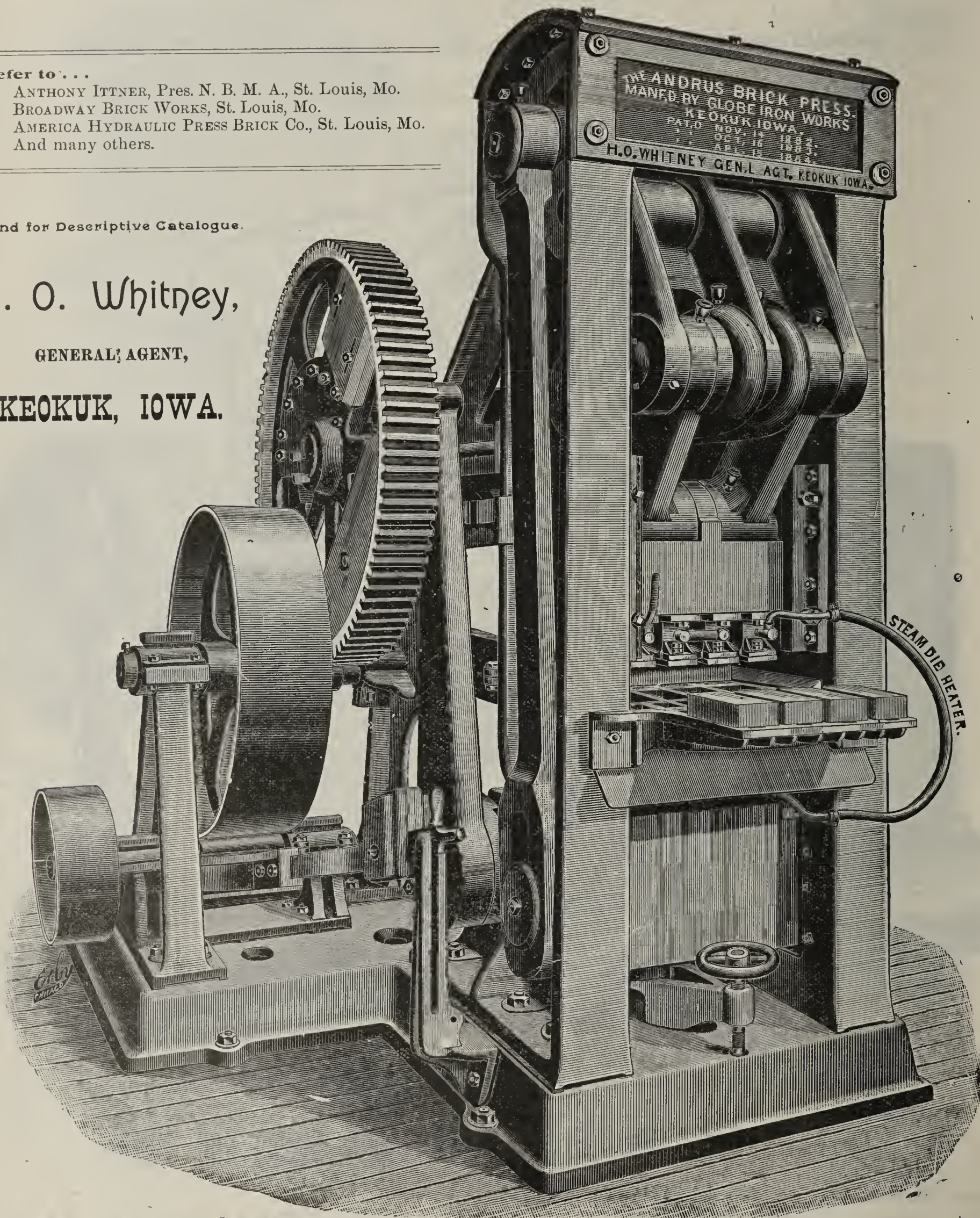
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





# HOFFMANN KILNS.

---

## Plans for Building Genuine

**H**OFFMAN KILNS with all late improvements are furnished, at low rates, by the inventor, Fred Hoffman, 7 Kessels St., Berlin, Germany. ∴ ∴ ∴ ∴

Brickmakers who intend to erect Hoffman Kilns should state how many brick they want to burn in the Kiln per season, also, size of brick and kind of fuel used, coal or wood?

FRED HOFFMANN,  
7 Kessels Street, Berlin, Germany



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

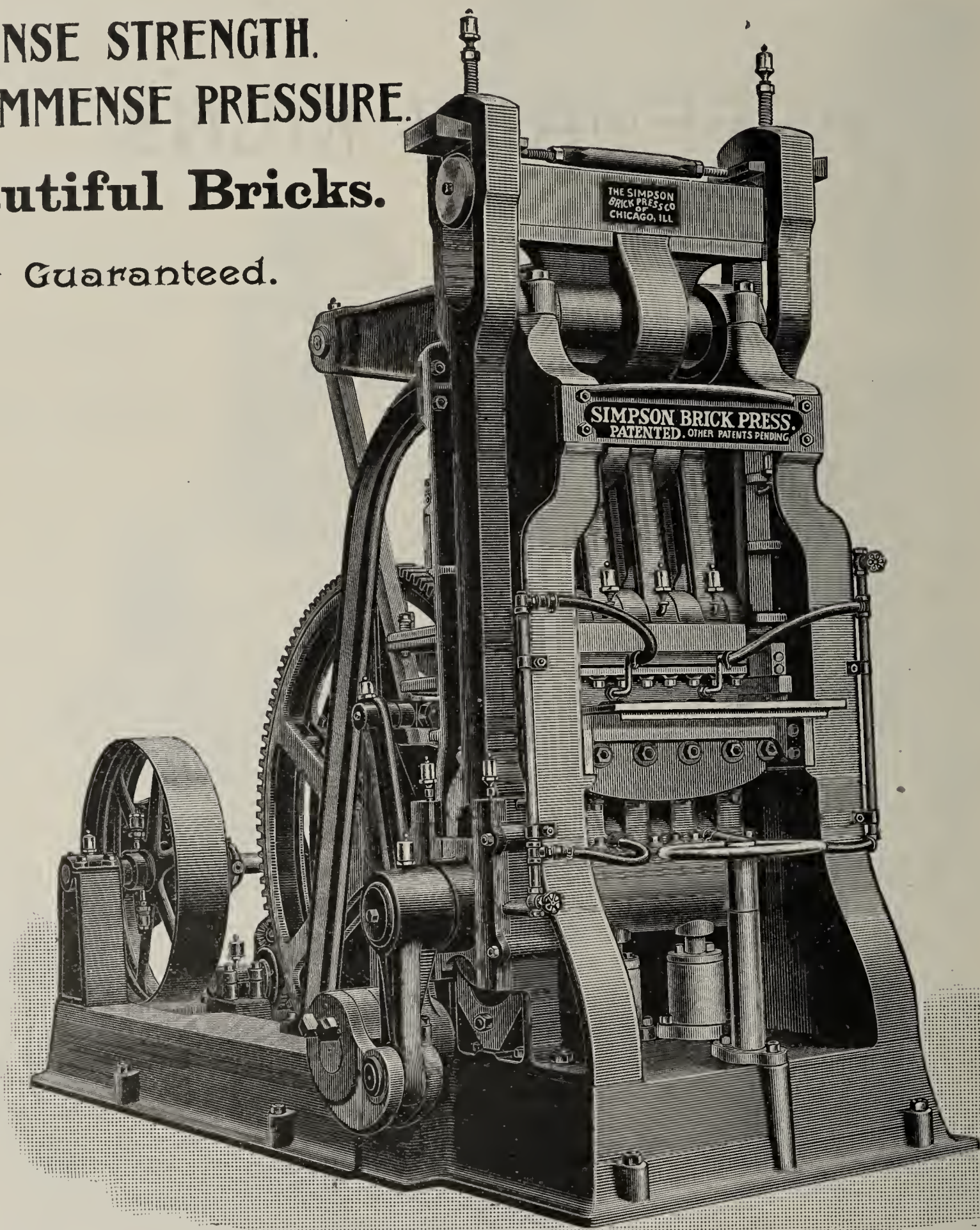
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

**Beautiful Bricks.**

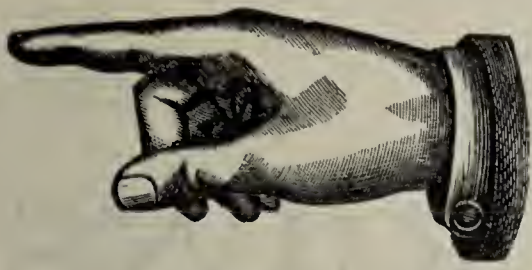
Fully Guaranteed.



APPLY TO  
**THE SIMPSON BRICK PRESS CO.,**  
 Room 210, 87 89 and Wash, St., Chicago, Ill.

Agent for the South, **D. B. DRUMMOND,**  
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 Brantford, Canada.





# See the SIMPSON PRESS.

READ WHAT A USER THINKS OF IT.

O. W. McFARLAND, President.  
 CHAS. BRANAH, SR., Vice-President.  
 R. F. KILGREN, Secy and Treas., 112 N. 6th Street.  
 M. J. REILLY, Superintendent.

TELEPHONE 2934.

COTE BRILLIANT PRESSED BRICK CO.

OFFICE, 5216 ST. LOUIS AVENUE

St. Louis, Mo. Sept 3<sup>rd</sup> 1892

Messrs Simpson Brick Press Co  
 Chicago

Gentlemen  
 After using your Dry Press  
 Brick machine for about 16 months we are  
 thoroughly convinced that it is the very  
 best machine in market to-day. And we would  
 not exchange for any other machine known.  
 We average 20,000 brick per day of 10 hours  
 when making common brick - And when making stock  
 brick we average 17 to 18,000. Our Repair bills have  
 been a little less than \$14<sup>00</sup> per month. And we have  
 not lost 3 consecutive hours at any one time  
 since we started, on account of the machines.

We began with one machine in April 1891.  
 So well did we like it that we put in another  
 in July 1891. And our confidence was so  
 great and satisfaction so complete, we put  
 in another in April 1892. And if we are  
 ever in need of more machines. The  
 "Simpson" is our choice. We would not  
 buy any other.

Sincerely, Yours

Cote Brilliant Pressed Brick Co M J Reilly



# MORRISON'S IMPROVED KILNS FOR BURNING CLAY WARES.

DAILY PRODUCT OF OUR KILNS IN UNITED STATES---ONE MILLION BRICKS.

Especially adapted to burning paving, repressed, ornamental and common bricks.

\* \* PATENTED IN UNITED STATES AND CANADA. \* \*

SUCCESSFUL.



DURABLE.

Pressed bricks burned without fire marks, of uniform color. Arch bricks all fronts or pavers

———— AND NONE DAMAGED. ————

Coal screenings preferred for fuel. Will burn either wood or coal. One fireman for two hundred thousand bricks.

  THE  ' ONLY  KILN  

That regulates the temperature of heat, and directs its course by a system of air drafts, giving complete control of the degree of heat, as well as its manipulation. This system we have covered by letters patent. Parties using these air drafts are liable to prosecution for infringement.

For descriptive circulars, prices, terms, etc., address us, stating what you want.

## R. B. MORRISON & CO.,

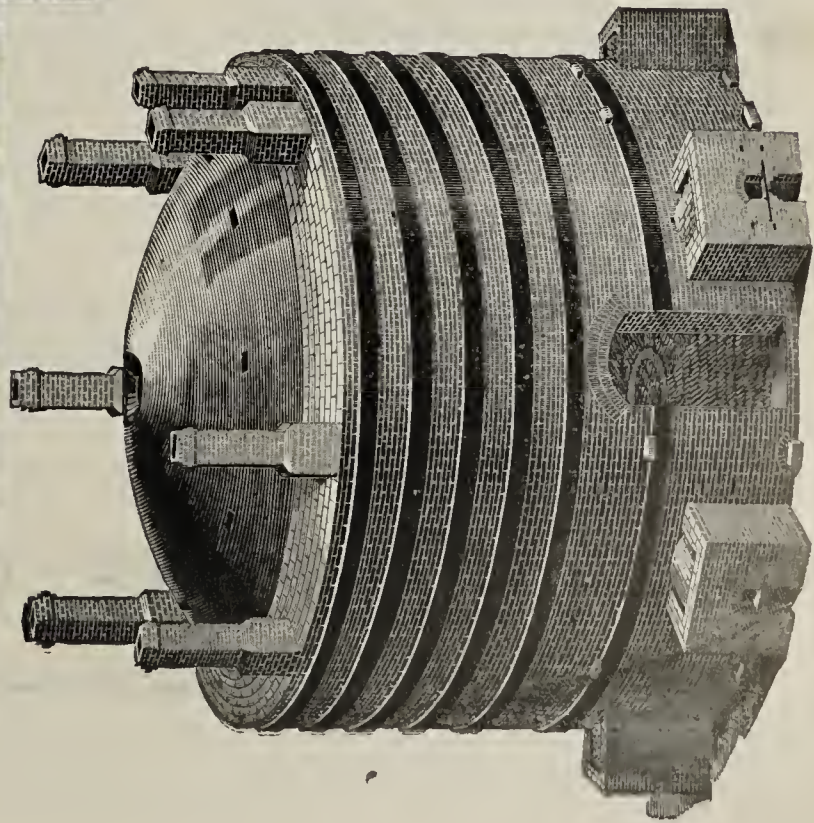
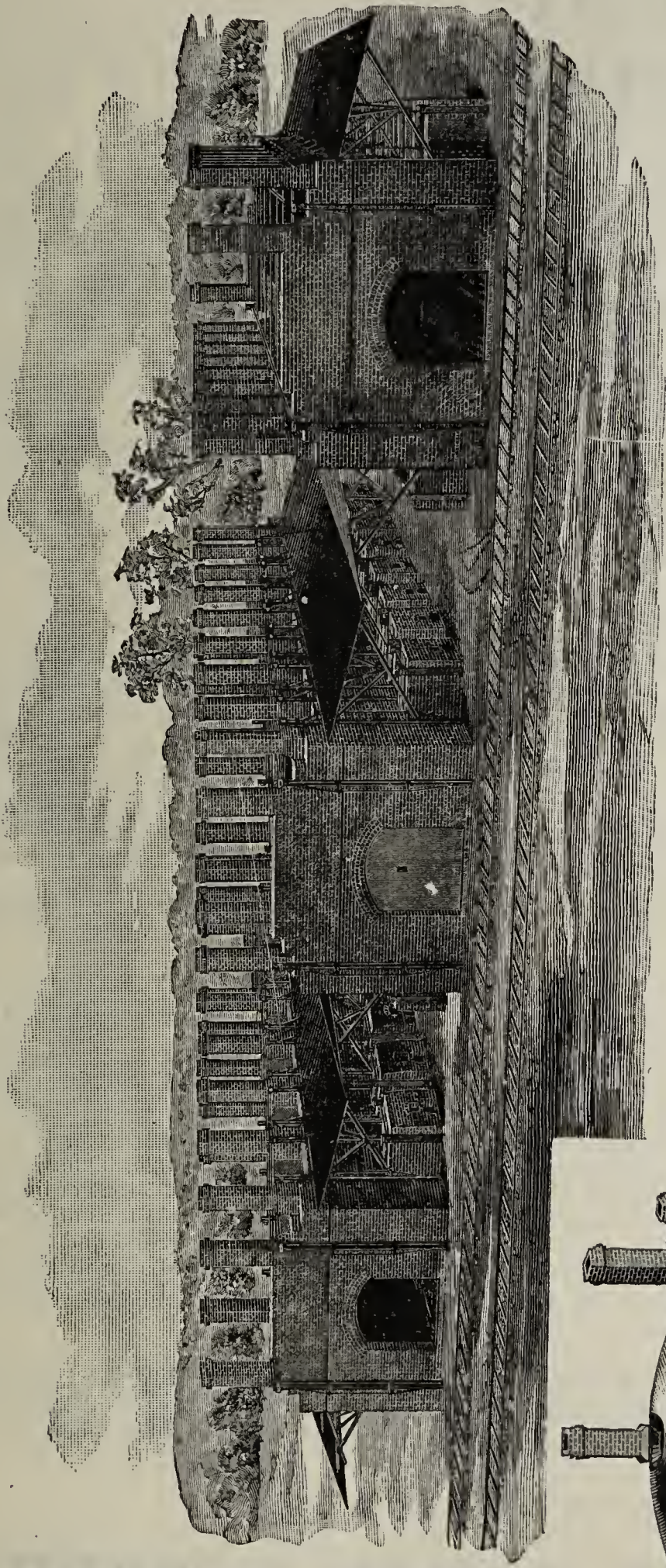
PROPRIETORS,

Box 335,

ROME, GEORGIA.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of **large capacity** on account of **economy** in cost of construction and **space** occupied on the plant; while the Round Kiln is better adapted to plants of **small capacity**, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for **burning all hard and uniform**. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



Telegrams & Cablegrams  
 "KILNS,  
 EXMOUTH."  
 SERCOMBE, OSMAN  
 & WARREN,  
 Patentees and Proprietors of  
 "The Perfect Kiln."

# SERCOMBE'S PATENT CHAMBER KILN.

**PATENTS:**  
 ENGLISH, No. 238, (1891.)  
 AMERICAN, No. 472,404.  
 FRENCH, No. 216,453.  
 BELGIAN, No. 96,628.  
 CAPE OF GOOD HOPE No. 742.  
 NEW ZEALAND No. 5440.  
 AUSTRIAN, Nos. 4,153-44878.  
**Applied for,**  
 Canadian, German, Indian,  
 Australasian, Tasmanian,  
 Russian, Italian, Etc.,  
 Etc.

**SPECIALTIES:—Perfect Control of the Fire. Perfect Combustion. Perfect Results and Perfect Economy in Erection and Operating.**

November 22, 1892.

## To American Brickmakers:

We respectfully request your attention to the following particulars of our "Patent Perfect Kiln." Naturally you may desire to see the same in operation before deciding to erect one of them. We therefore take pleasure in informing you that our Mr. Sercombe has left England for the purpose of operating the kiln erected by Messrs. The Ostrander Fire Brick Company, Fords, N. J., and he will be pleased to exhibit the same to you when ready for inspection; will you kindly communicate with him on the matter at your convenience, and we trust that business will result.

The kiln has proved a grand success in England, as may be judged by the testimonials we have received and the references we can give, and large numbers of kilns are being erected or converted to our system in various countries.

We get what has never before been obtainable in any Chamber kiln, viz.: (1) PERFECT CONTROL OF THE FIRE; (2) PERFECT COMBUSTION; (3) PERFECT RESULTS; and (4) PERFECT ECONOMY IN ERECTION AND OPERATING.

We can burn ordinary bricks (all hard) with 2-cwt dust coal to the 1000, and we have lately—as a test—burnt for Messrs Martin Bros., Ltd., of Plymouth, a Chamber of the most refractory Fire Bricks in the world, with 3½-cwt., the same goods requiring 15-cwt. rubble in down draft kilns. The proprietors were so well pleased with the result that they immediately gave us an order for a big kiln, and intimated their intention of erecting four more of them later on.

The cost of erecting the various sizes will differ, according to cost of materials and labor in the different districts. We give approximate estimates below:

### FOR A NUMBER 1 KILN,

Containing 14 chambers, each chamber being 13x14x8, and holding about 11,000 bricks, 9x4½x2½ when burnt, and turning out from 30,000 to 75,000 per week, according to the supply of bricks and requirements.

49,000 for 98 feet chimney stack.

209,000 for kiln.

20 tons of lime.

4 tons of castings.

Sand and rubble.

Labor in England varies from \$1,000 to \$1,250. (Calculated at from 12 to 18 cents for masons and 8 to 12 cents for laborers.)

License fee, \$625. payable half down.

### FOR A NUMBER 2 KILN,

Fourteen chambers, 16x17x10, each holding about 22,000 bricks, and turning out from 40,000 to 110,000 weekly.

49,000 for 98-foot chimney stack.

370,000 for kiln.

30 tons of lime.

5 tons of castings.

Sand and rubble.

Labor in England \$1,500 to \$1,750.

License fee \$875, payable half down.

### FOR A NUMBER 3 KILN,

Sixteen chambers, 16x17x10, 22,000 capacity, and turning out from 60,000 to 130,000 weekly.

60,000 for 112-foot chimney stack.

425,000 for kiln.

35 tons of lime.

5½ tons of castings.

Sand and rubble.

Labor in England \$1,750 to \$2,000.

License fee, \$1,000, payable half down.

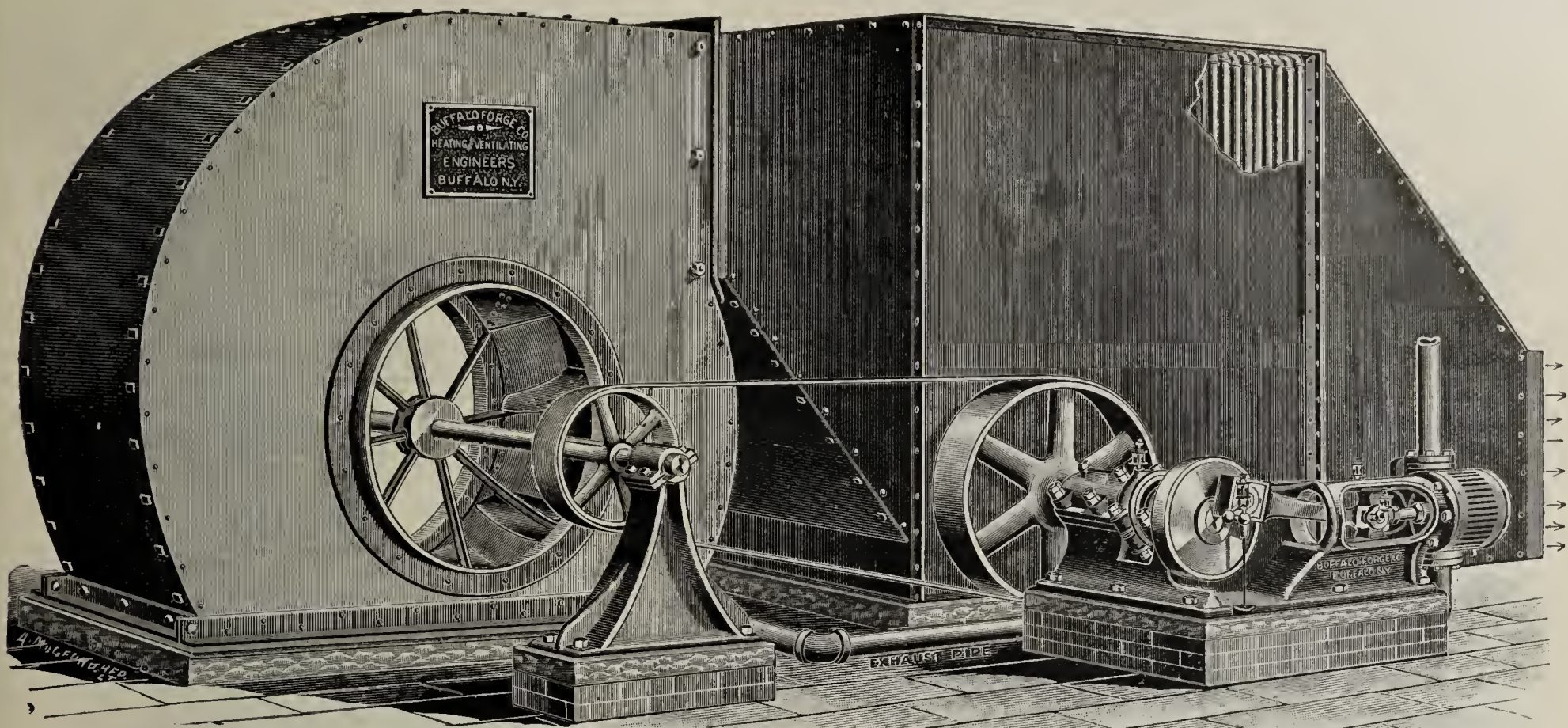
FOR A NUMBER 4 KILN, double the capacity of a No. 2, the cost would be nearly double No. 2, and the fee would be \$1,750. payable half down. Only two burners are required for this kiln, same as for the others.

Correspondence solicited.

## SERCOMBE, OSMAN & WARREN,

Exmouth, England.





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To **CLAIM** that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is **ONE** thing; to **PROVE** it is **QUITE ANOTHER**.

The proof that **Buffalo Progressive Brick Dryers** embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO., Buffalo, N. Y.**

**S. G. PHILLIPS, Agent and Patentee,**

**WOODBRIDGE, N. J.,**

**“Woodbridge” Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.**

**“Air Dried” Bricks All the Year Round.**

A new plan of reducing old, approved methods to a System. This frame enclosure needs no iron pallets.

**THE INSIDE FAN STEAM DRYER.**

A cross, spiral current from fan to fan. Bricks are safely dried in five hours. No “checking” or discoloration.

**NO CHIMNEYS OR BRICK STRUCTURE!**

And only half the doors are required. A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

**MORE FANS! LESS PIPES!**

The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than “live,” as now in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

**“Seeing is Believing,”**

Therefore, “at home,” this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

**“Better Than Drying in the Sun.”—“Exhaust Steam.”**

S. G. PHILLIPS, Woodbridge, N. J.

OTTUMWA, IOWA, July 7, 1892.

DEAR SIR:—Though I have had your Dryer in operation but a short time, it gives me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTICK.

**“And Met the Requirements in Every Case.”**

MR. S. G. PHILLIPS, Woodbridge, N. J.

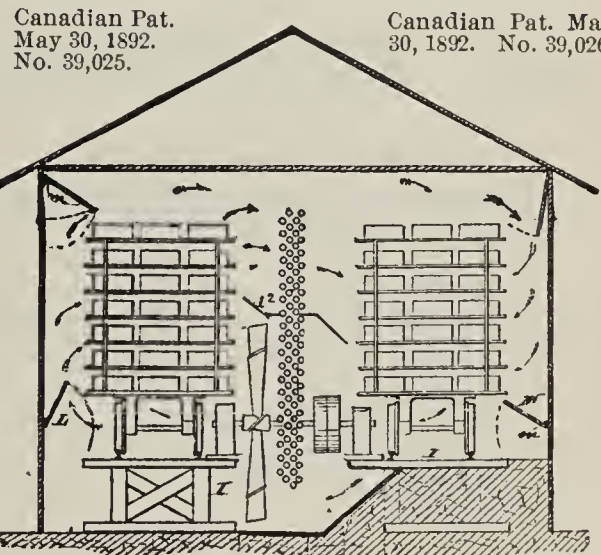
DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,

CHAMBERS BROTHERS CO., J. H. Chambers, Gen'l Mngr.

**THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.**

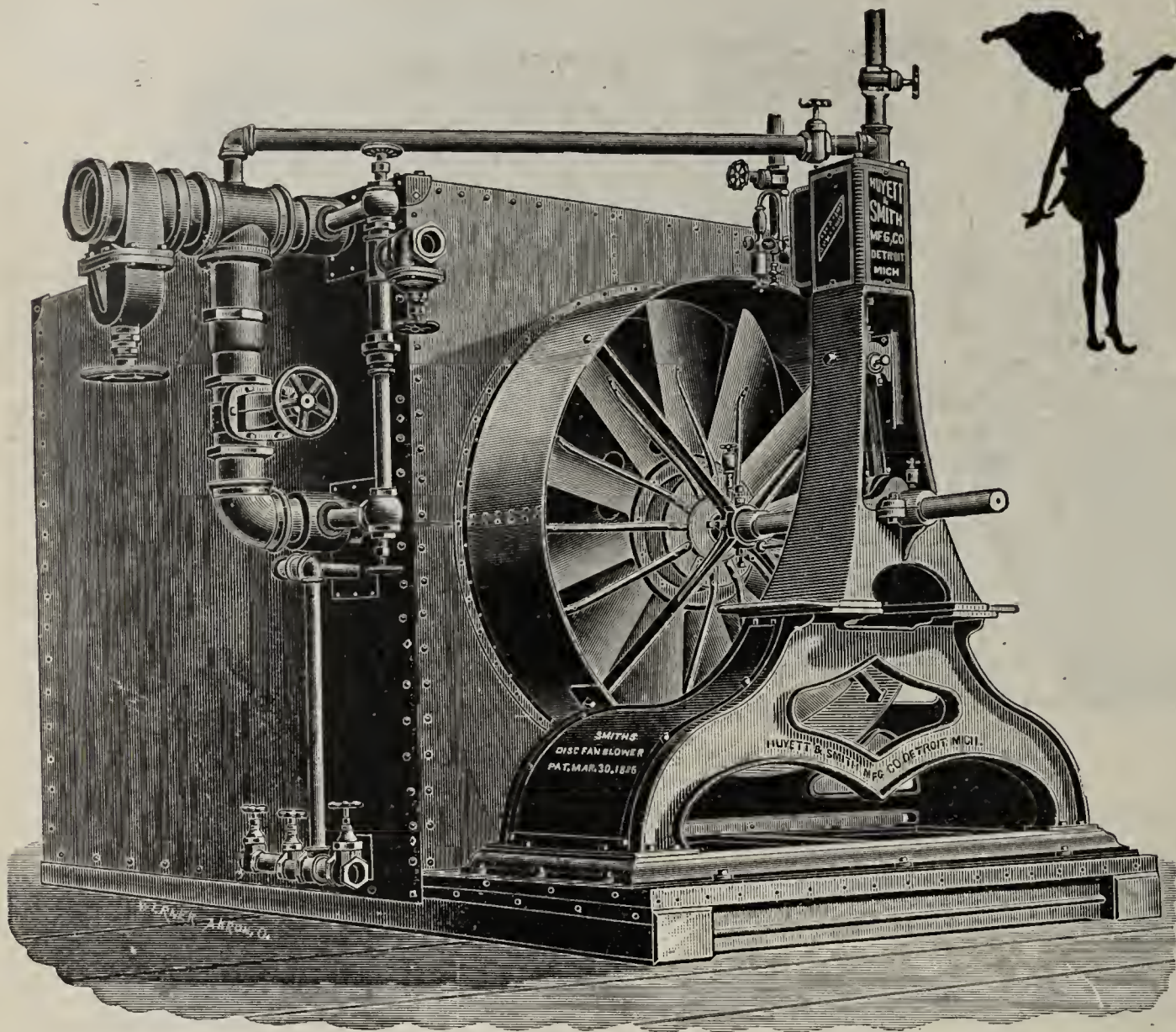
**“I think you have the Dryer the brick people are looking for.”**—JNO. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently; **“Not over 12 hours to make them VERY DRY—the best by great odds of any in the market—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance.”**



U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

PHILADELPHIA, December 14, 1892.





THE  
HUYETT &  
SMITH  
MANUFACTURING  
COMPANY.

Main Office  
and Works.

DETROIT,  
MICHIGAN.

Are as busy as bees building Brick Dryers. Orders coming in daily. Some of the largest in the World booked last month.

Perhaps you had better take the matter up promptly so as to be sure to avoid delay. Full set of plans furnished with each order.

Send for estimates.

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The Huyett & Smith Mfg. Co.,

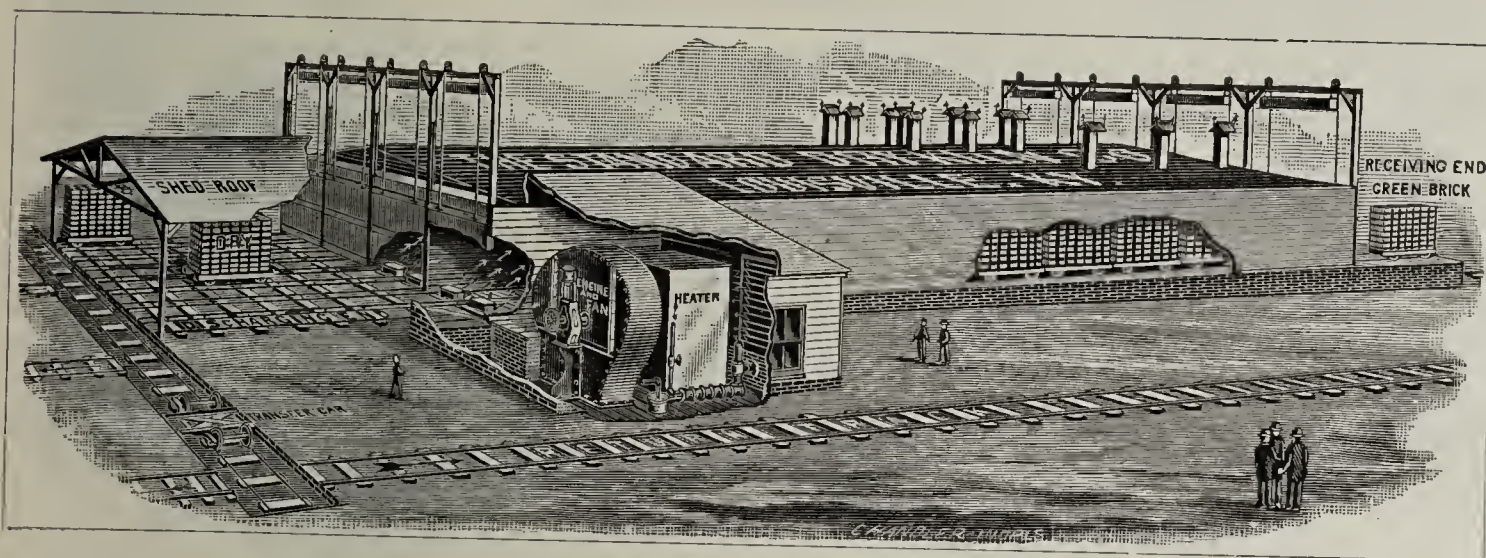
NEW YORK.  
CHICAGO.  
BOSTON. }



MAIN OFFICE AND WORKS: DETROIT, MICH.



# THE STANDARD PATENT FORCED DRAFT BRICK DRIER,



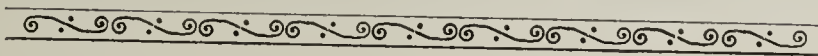
IS  
"THE  
STANDARD."



## MEMORANDA

✧ FOR ✧ YOUR ✧ CONSIDERATION. ✧

- |                                               |                                                                                            |                                                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| I. It is rapid and at the same time RELIABLE. | III. Labor employed and time consumed are reduced to a minimum—therefore it is ECONOMICAL. | V. And are of a BETTER QUALITY than those from any other drier.            |
| II. Being absolutely fire proof, it is SAFE.  | IV. The Brick COST LESS per thousand,                                                      | VI. Write for illustrated catalogue No. 10, general information and terms. |



....ADDRESS....

## THE STANDARD DRY KILN CO.,

General Office and Salesrooms: 923 and 925 W. Main Street,



LOUISVILLE, KY.

EASTERN OFFICE: 81 Main Street, NORFOLK, VA.



# The Best <sup>ALL</sup> AROUND Brick Dryer



DRYERS OF THE PURINGTON PAVING BRICK COMPANY, GALESBURG, ILL., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

D. V. PURINGTON, PRESIDENT.  
C. H. CHAMBERLAIN, SEC'Y.

W. S. PURINGTON, VICE PRES. AND GEN'L MGR.  
A. A. MATTESON, TREAS.

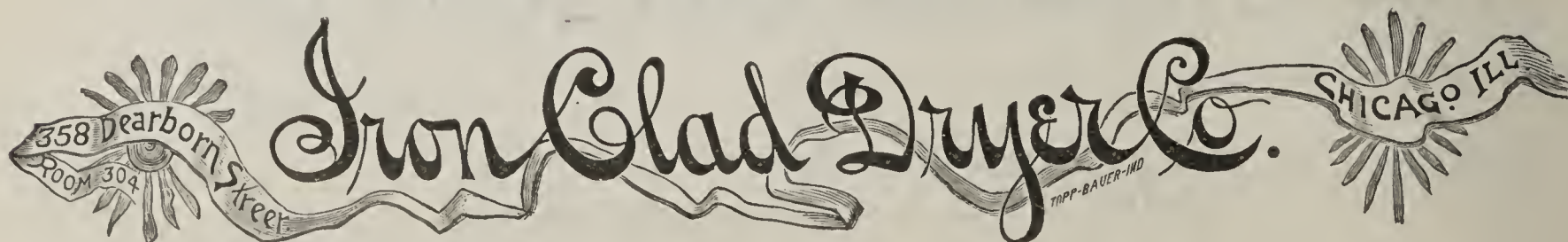
## PURINGTON PAVING BRICK COMPANY.

*Galesburg, Ill.,* Feb. 23, 1893.

IRON CLAD DRYER CO.,  
CHICAGO, ILL.

GENTLEMEN:—This Company has had one of your Dryers in constant use since October 1st, 1891. During the first year we experienced a good deal of trouble in the pipes filling with condensed water, but since you overhauled it last summer and put in a pump instead of a steam trap and made some other radical changes in its construction I am more than satisfied with the manner it performs its work. In the four compartments we can dry 75,000 brick in 24 hours, and all through this cold weather we can rely on its doing everything we desire. Our brick when made are  $9 \times 2\frac{3}{8} \times 4\frac{1}{2}$  which is quite a difference from the Chicago brick which are  $8\frac{1}{2} \times 2\frac{3}{8} \times 3\frac{7}{8}$ . Paving bricks contain a great deal more water than those made in Chicago.

As regards the quality of the work of your Dryer, I desire to say that no system I have ever seen can compare with yours. We rarely have a cracked or broken brick come out of the Dryer. Yours Truly,  
PURINGTON PAVING BRICK CO., W. S. PURINGTON, Vice Pres. & Gen'l Mgr.



[See cut of Dryer on last cover page.]



# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION, OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., MARCH, 1893.

No 3

## HOLLOW BLOCKS AND HOLLOW BLOCK WALLS.

\*BY GEO. S. TIFFANY.

WHEN I was invited by your President to prepare a paper upon the subject of "Hollow Blocks and Hollow Block Walls," I did not know that Mr. McClure was to prepare one on the subject of "The Advantages of Hollow Tile as a Building Material." I am glad, however, that he was selected for this purpose and has given us an able exposition of the subject. With the fact of their superior advantages clearly set before us, and fully demonstrated by manufacturers and builders, we should ask ourselves the question, "Why have they not come into more general use?" What is the answer? We cling with wonderful tenacity to old forms and customs.

"Follow your father, good son,  
And do as your father has done"

has been the rule of life. Take a brick and brickmaking as an illustration.

\*Read before the Ohio Brick, Tile and Drainage Association Feb. 15th, 1893, by Geo. S. Tiffany, Tecumseh, Mich.

The art of brickmaking is older than history. How it had its origin no man can tell, but it must have, of necessity, been the predecessor of all arts. Bricks have varied but little in dimensions or proportions for,—what shall I say?—6,000 years, and still men are discussing how brick shall be made. Is

of sameness and monotony. Surely good taste requires a change. We must have more variety of forms and colors.

In the May number of the *Engineering Magazine* of last year, Edward Atkinson says: "One may almost venture to say that we have as yet, no science applied to bricks; no true art of construction in brick, fire clay and tiles."

What a charge to bring against the most ancient of arts. Bricks have been sawed and chiseled, and ground, laid Flemish bond, Yankee bond and English bond, in arches, pilasters, panels, columns, square and round and in every conceivable form of architecture possible; and still I think we must admit the charge that there has been "no true art of construction in bricks." What is the trouble?

Uniformity and monotony of color. We have seen large pieces of tapestry work of great nominal value, and mosaics in encaustic tiles, representing men and animals, but no true art is represented in tapestries or blocks of tiles. They are dead and the artist can not breathe into them the breath of his art and make them look like living things.



A COTTAGE BUILT OF HOLLOW BLOCKS, CUYAHOGA FALLS, O.

This illustration was not furnished by Mr. Tiffany, and may not represent his idea of hollow block construction. Mr. Tiffany has invented several ornamental forms of hollow blocks by the use of which a much handsomer edifice might be constructed.—Editor.

it not time to consider what other forms of terra cotta may be made for the construction of buildings? 6,000 years of manufacturing and what have we to show for it? Go into our cities and see. Philadelphia has excelled in the art. Look at her buildings of brick. Block after block, of uniform red brick, with fine stucco joints until the eye wearies



We must have other forms for the construction of walls. Ornamental brick are very pretty when you are near them, but when you are at a distance, to take at one view the form of the building, they are scarcely noticeable. They are more suitable for inside decoration.

Decorative work for the outside should be on a larger scale. Terra cotta manufacturers appreciate this fact. We have committed the same error in hollow block making that we have in brickmaking. There is no variety worth mentioning. Nearly all manufacturers make the same size blocks. Nearly all have the same print on their cards, that of a foundation of a house. One might infer from this that they were only suitable for foundations, and this is the truth—as they are made. The moment you lay them above the foundation they seem out of place, and give to the structure a barn-like appearance. The surfaces are too large in proportion to the size of the building. If you were to build a one story house of polished granite, having an exposed surface of one by two foot it would look low and common, and the more it was polished the worse it would look. The structure would look well with its walls covered with tiles. A large brick makes a house look low and a small brick makes it look high. We may have the large blocks; but they should in some way be made to show a number of surfaces. While a glazed tile looks well in the foundation, because it is adapted to that position, it would not look well in the superstructure.

There are no dazzling surfaces in nature except the unruffled sea and the ice. We want warmth of color in our hollow blocks, but no glazing above the foundation excepting, perhaps, on a very small scale in decorative work. There is no question in regard to the value of the hollow blocks as a building material.

The problem is to make them and lay them in shapes, proportions and colors that are pleasing to the eye. If we do not observe proportions, our work will look like a boy with his father's hat on, or a fine built horse with the elephant in one leg. Oh, there is money in beauty; it often costs no more to make a house look well than homely. A dwelling may be so constructed as to manifest comfort, happiness and prosperity. Let us have no painted walls or artificial colored clays for the walls

of our buildings. The natural colors developed by the burning of the clays are all we require. Let us try those clays near at hand and learn what color they will burn, then put these colors together and learn the best combinations of color or shades of color for foundations, trimmings and walls. Do this and you will soon be able to demonstrate to your neighbors that it is supreme folly to go to Northern Michigan for lumber to build a frame house. One could not build a more inflammable house than the balloon frame. Its vertical air passages from sill to cornice, from cellar to attic gives the utmost freedom to fire and it takes but a few moments, when the fire attacks them, for them to go up in smoke.

You can build a house that has no vertical air passages, no combustible material in its walls, that is much warmer in winter, and cooler in summer, requires no paint, and never decays. Within the life time of many of us here Ohio, Indiana and Michigan were an almost unbroken wilderness. Where have the mighty forests gone? Oh, it is pitiful! Every year it is becoming more and more difficult for men to obtain a home. The criminal waste of wood continues. A better and more abundant building material, "cheap as dirt," covers a large part of the State. You can scarcely engage in a more profitable or benevolent work than to show practically how well adapted it is to the construction of magnificent residences or beautiful and comfortable homes for the poor.

Written for the Clay-Worker.

#### OBSERVATIONS ON THE EASTERN MARKET.

##### Brickmaking for the Capitalist.

BY GEORGE M. FISKE.

THE evolution of the brick manufacturer in the United States has been rapid and interesting. Twenty-five years ago the "stock companies" engaged in the industry could have been counted upon the fingers of one's hand—and these in most cases were composed of men who were giving their personal attention to the practical conduct of the business, reinforced financially by a few friends and acquaintances, who took stock in the company, presumably as an investment, but often, perhaps, to aid those in whom they saw promise of success.

The rapid growth of brick architec-

ture, and the enormity of building operations all over the country created such a demand for bricks that the brick yards of twenty-five years ago could no more have met the demand, than could the primitive methods of the shoemaker then in vogue, the increased demands for footwear.

As the industry increased in magnitude, capital naturally turned its eyes in that direction. This beloved country of ours is so surfeited with money (not too evenly distributed) that it is a serious problem with its happy (?) possessors as to what they shall do with it, where they shall invest it so that it will be reasonably safe, and yet return a fair interest.

It is quite natural that some of this surplus capital should find its way, purely as an investment, into the brick and terra cotta industry. The enormous demand for and production of bricks for street paving has absorbed large amounts of capital, and doubtless with fair returns—but we are now considering bricks for building purposes, and especially pressed and moulded front brick.

For the special production of this class of bricks within the past six years quite a number of large corporations have been formed in the East, and still more are proposed. (By the East, I refer to New York, Pennsylvania, New Jersey and the New England States.) The demand for buff and other colored bricks for fronts of buildings has given quite an impetus to this industry. The prices which have been obtained for these goods, as compared with the ordinary red, have offered apparently large profits, and it is not at all surprising that that undisguised blessing of our time, "the promoter," has found this a fertile field. His figures (which cannot lie) are a revelation to the eager capitalist. His estimates of the cost of the buildings for a modern brick plant are taken from actual cost of some other factory, not, of course, in this immediate market.

He has the tabulated statement of the kiln man, of the dryer man, and of the clayworking machinery man. The latter is particularly helpful. The clay which it is proposed to use has been thoroughly tested in the machines, and is pronounced superior to anything we have ever seen—a perfect bonanza to any concern that will work it. A few of the bricks which have been made on the machines, and burned in the kiln



of some friendly concern, are in the office of the "promoter," and certainly no more beautiful bricks were ever seen.

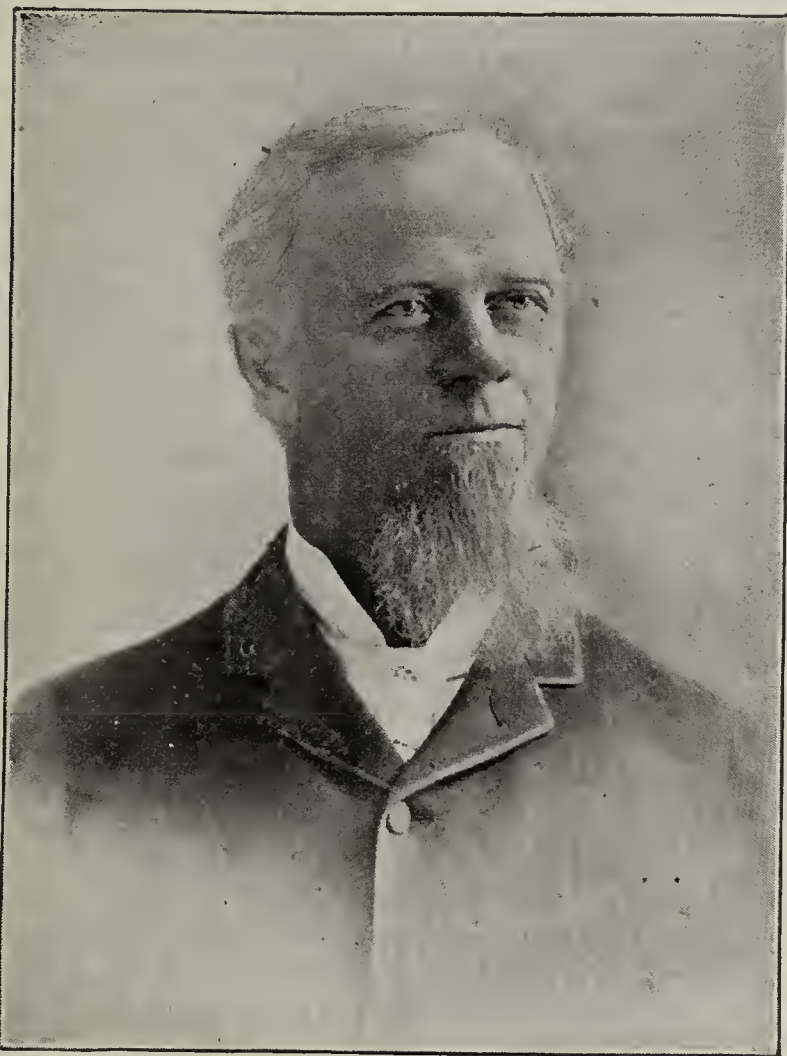
Then come the tables showing the cost of manufacture, carefully prepared by a thoroughly practical man who knows it all, and which cover every possible point of cost and risk. "But to make the estimate positively sure, gentlemen, we will add twenty-five per cent., and there is your cost, positively the outside. There can be no question about that. Now, the next question is, what will those bricks sell for? Well, gentlemen, you know that building at the corner of A street and Tenth avenue? The owner paid \$— per thousand for those bricks, and the demand for them all over the market is far beyond the supply. Why, you know Messrs. So & So, the great builders? They used three millions of these bricks last year, and would have used more if they could have obtained them. I tell you, gentlemen, the demand is enormous, and this presents the best field for investment that I have struck for a long time."

It has been my fortune to hear a number of "promoters" of clay industries in the East talk just that way. I have before me now the "prospectus" of a proposed company for the manufacture, on a large scale, of "fancy colored front brick." It reads very much like the foregoing. The estimates are all down in detail, and the arguments are there, and yet in my humble opinion, the scheme, if consummated, is as sure to prove a financial failure as the sun is to rise to-morrow morning. I have recently had a call from a "promoter" of an "enameled brick company" to be established somewhere in New Jersey. Some potter has made a "great discovery," a method of enameling brick "superior to the English." According to the figures, these bricks can be produced for \$30 per thousand, and "millions of them can be sold every year at from \$90 to \$100." It was intimated that if I would "go in" and give the enterprise my endorsement and aid, I would be "let in on the ground floor." I declined with thanks. The outside of such schemes is good enough for me. The "ground floor" is too near the cellar.

But some one may say, "Oh, it is all very well for him to talk that way. He is in the business himself, and of course

wants to discourage competition." Yes, I am in the business, and what little money I have made in it has been made by hard work and close personal study and application to the practical details of the business, and because, when I pass through my factories, I can detect at a glance any false move that is being made, and see that it is corrected.

But I am not writing this article for the purpose of discouraging others from going into the manufacture of front bricks. If I were, it would probably fail of its purpose, for how is it to be brought to the attention of those for whom it is, or might be, intended? The



GEORGE M. FISKE, TREAS., BOSTON (MASS.) TERRA COTTA CO.

clayworking machine men, the patent kiln men, the dryer men are not likely to send a "marked copy" to those contemplating a new clay enterprise. The "promoter" will not lay this out upon his table beside the flattering prospectus. No, I am writing from the standpoint of an observer of an interesting phase of the clay industry, and to keep my promise to the editor of THE CLAY-WORKER. But to go on with our "observations."

The avidity with which capitalists invest in clayworking schemes is, to one somewhat familiar with the field, simply amazing. There appears to be an idea that clay costs nothing, and all there is to do is to shovel it into the

machines, and it is sure to come out a finished product of great value. To illustrate, some years ago a certain man who had several patents on brick machines, presses and kilns, came to an Eastern city and interested some capitalists in a proposed "pressed brick company." The company was organized and the plant erected, the patentee reaping a rich harvest in the way of profits on construction, sale of patents, etc. The venture was a flat failure, as it was bound to be from the first, and the "ruins" of the plant can be seen to-day—and yet within about ten years of that time, that same man came back to the same city, got hold of another set of capitalists, who, of course, were ignorant of his first venture there, and repeated the same "swindle."

A few years ago a man, who was seeking an investment for some of his surplus capital, brought me a white brick of exceedingly good quality and said, "Now, Fiske, I have looked into this thing, and find that this brick can be produced for \$10 per thousand, and I believe I shall go into it." "Well," I said, "if it really can be produced for that money there will doubtless be a large profit on a limited demand, but I do not believe it can be produced for \$10." He probably thought I wished to discourage competition. He "went into it." I met him a few months ago, and asked him how the company was getting along. He said not very satisfactorily, and asked me what I thought of it. I told him that, to be frank about it, I thought the sooner they stopped making bricks the more money they would have. He seemed somewhat offended by the remark and I am afraid I hurt his feelings.

But now why are many of these schemes so sure to prove failures? In the first place, because they are not called for by a demand for bricks. There is, to be sure, a large demand, but it has been reasonably met by the older companies, and those of the newer ones which have proved successful. I have no means of judging accurately, but, for illustration, let us say that the Eastern market takes twenty millions of fancy colored front bricks per year. Now supposing the combined output of all the plants producing this class of bricks is forty million per year, it is easy to see



that if there is a full production, a large stock must be accumulated, and eventually sold at such a loss as to ruin somebody. I believe that if all the brick works which have been started in this market within the past ten years had proved successful, i. e., producing to their full capacity as laid out, that exactly the above condition of things would have prevailed, and it is only because so many of them have proved failures that there has been no great over supply of this class of bricks.

Several companies have been organized in this market within the past three or four years, in apparent ignorance of the fact of the existence of their competitors. One of these companies who suddenly appeared in the market with their product, when asked how it happened that they did not make their existence known sooner, replied: "Oh, our company is a sort of close corporation, and we thought we would not make any noise until we were all ready with our bricks." Within a month of that time another company appeared in the same way. There is a story of three old maids, who were making a pudding. Each salted it unbeknown to the others. When it was served No. 1 said, "Why, I did not think I put so much salt in this pudding." "Why, did you salt it?" exclaimed No. 2. "Yes, of course," replied No. 1. "So did I," said No. 2. "And me too," exclaimed No. 3. The Eastern market pudding is being salted in about the same way.

I have already spoken of the fallacious idea that clay is easily converted into money. The fact is clay is the most difficult, treacherous, and in every way uncertain material which enters into the mechanical arts. Iron is iron, brass is brass, copper is copper, and the worker of these metals knows every time just what he can do with them. But clay is as uncertain, as varied and complex as are the characteristics of the different men who are engaged in working it.

Clayworking is a science, especially in its higher forms, and when capitalists put their money into a clayworking plant, and then go out into the market and hire "a superintendent" to run it, expecting that it will prove a success, they are pretty likely to be disappointed.

Another reason why many of these new schemes are bound to fail, is because they are started on false estimates. The company starts out with the idea that their goods will cost so much.

Then they say "Now we don't really care to double our money every year in this business. It would be better perhaps in the end only to expect a reasonable profit, say 33 $\frac{1}{3}$  per cent. so we will not put the price too high, especially as we are a new concern and want to get into the market." So they go out with a price perhaps 25 to 30 per cent. below the older companies, and it may be a year or two before they find out that instead of getting 33 $\frac{1}{3}$  per cent. profit, they are not getting the cost of their product. I do not mean to say that the "promotor" whether he be "a professional" or "the man who owns the clay," or the machinery man, or the kiln, or dryer-man, purposely deceived the capitalist. But if they do not, then another thing is true, viz: they don't know what they are talking about. The shrinkages, risks, losses, etc., etc., in clayworking, especially in "fancy colors" are from moderate to enormous, and it takes a longer head than any which I know to figure beforehand, with any degree of accuracy, where, between these two points the gig will stop.

A large corporation recently established in the East has lately put out its first set of samples. An Irish bricklayer said of them "Faix, an ef ye soak thim fellers in kerosene over night ye could burn 'em a month." An architect to whom some were sent remarked facetiously, "If they would only make them thin now, we could use them for blotters." Judged by every standard of a first-class brick, they were simply "abortions" a disgrace to the craft.

Almost the same story may be told as regards Architectural Terra Cotta. The three older companies, the Perth Amboy, the New York and the Boston can easily produce every ton of Terra Cotta called for by this market, and yet there are five or six smaller concerns. Several of them recently established, and another contemplated. It will probably make no difference that the bones of several of their predecessors are already "whitening on the plains." New companies will start up here and there, some to continue under the good and healthy law of the "survival of the fittest" but many after a few years of sickly existence, to quietly join the great and "silent majority."

P. S.—Since writing the above I have read the proceedings of the Louisville Convention, and have noticed the "cropping out" here and there of the ideas expressed above. Mr. Donald McDonald

in his remarks at the Powwow, laid special emphasis, I notice, on the question of *ignorant* and *ill-timed* investments in brickmaking, and his resolution introduced at the third session, although doubtless impractical, was in the direction of a solution of a matter of the most vital importance to the industry. The difficulty is to reach the parties who need to see the figures. It could only be done through the daily press at considerable trouble and expense, and even then it would not be wholly successful. Only yesterday a man came to me, to know if, in my opinion, it would be wise for him to put some money into a proposed Fancy Brick and Tile Co., in eastern Massachusetts. The scheme is one of the most absurd, of which I have lately heard, and I put him on the track of a few facts bearing on the question, which I think will satisfy him. This question should not be dropped, some remedy, which shall be at least partial, ought and doubtless can be found.

G. M. F.

#### COST OF BRICK ROADWAYS.

In compliance with the request of Mr. L. W. Mathewson and others I will give the cost of constructing a double track steel wagon road for country use.

The cost of construction will be based on the conditions that exist here in this locality in Illinois. Here nearly all the roads are underdrained. I have sold over 100,000 tile for road drainage the last four years.

The tile are put in-a-line on both sides of the road as illustrated in the February number of the *Journal*.

To prepare old road for oak stringers three men and one team with good tools will make one mile ready in one day.

Ten men will lay the stringers and spike the tie rods and rails in one day.

The filling between stringers depends on the material used. If it is gravel two teams and three men will fill in a mile a day. If the material be rock or brick it will cost more but will be that much the better.

The oak stringers 4x6 inches, 42,240 feet at \$16 per M. \$675.84.

Tie rods, 660 to tie stringers together 3,960 pounds at 2 $\frac{1}{4}$  per pound \$84.15.

Steel rail 4x $\frac{1}{4}$  inches, 4 pounds to the foot, 84,480 pounds, \$1,900.80.

One tile on each side of road and nails to fasten steel rails, \$158.

From the above the cost of constructing a double track steel road way in this locality may be easily estimated. I have a contract for steel rail delivered anywhere in the state of Illinois for 2 $\frac{1}{4}$  cents per pound. Where there are more than eight miles the cost will be 2 cents per pound.—E. A. Stare, in *Drainage Journal*.



Written for the Clay-Worker.

## PRACTICAL POINTS ABOUT PAVING BRICK.

### Eleventh Paper.

BY D. W. STOOKEY.

#### SOME PECULIAR SPECIFICATIONS.

A CAREFUL comparison of the specifications drawn for governing the laying of paving brick in various cities of the country will show marked differences. These variations are probably owing to at least two causes. It is the prerogative of the city engineer in each instance to prepare the specifications for his own work, and it is but natural that he should shape them in accordance with his own ideas, as to the manner in which the work should be done.

There seems to be a general conception of the characteristics of a good pavement, but engineers, apparently, hold different ideas as to the best methods and materials to be used in obtaining them, even though they are all of the opinion that pavements made of brick are the most desirable.

Another cause for the difference in specifications may be found in the presence or absence of certain auxiliary materials near the city in which the pavements are to be laid. In some places stone is found in abundance, and it might be well and economical to lay a foundation of macadam for brick pavements in the streets of cities so situated.

In other parts of the country stone is not easily obtained, and can only be had by shipping from a distance. In these places, it may be that gravel and sand are to be found in abundance, and it would be more economical to lay a course of concrete for the foundation. In other sections there may be a scarcity of stone, sand and gravel. In such localities, the best and cheapest results would probably be attained by the use of brick, laid flat, as is done in many places. Thus it appears that circumstances control the action of the engineers in preparing the specifications and selecting the materials to be used in constructing the foundation for their brick pavements. Although different engineers and city officials may hold diversified opinions as to the best form

of foundation, it is not entirely a matter of opinion with them as to the particular form that they should select, but their action must be governed, in a measure, by the material at hand and the relative cost of the various kinds of foundation that they might select from.

There seems to be but little if any difference in the specifications of different cities as to the kind of brick used and the manner of setting them in constructing the superficial course of brick pavements, and the variations to be found relate to the foundation and

a saturated condition. The brick pavements in Decatur, Illinois, were injured by Barnum's heavy show wagons passing over them during a wet time several years ago. Had the ground been dry, the wagons would hardly have made a depression where no pavement had been laid, but at the wet season, when the earth was saturated and the pavement new, two courses of brick would not sustain the weight of the wagons.

Recognizing the necessity of a dry foundation, a few engineers have incorporated in the specifications the requirement that drain tile shall be laid on each side of the road-bed. This was well, but one of them only required that the tile should be laid ten inches deep, and another only twenty-four inches.

In central Illinois, where there is probably more road draining done than anywhere else in the world, the drains are laid at least three feet deep and often at a greater depth.

It is a good idea to require that the owners of all abutting property shall make connection with the sewer, gas and water pipes and do such other work as will likely be needed before the pavement is laid, so that it will not have to be disturbed so often after it is down.

There seems to be a general opinion in favor of thoroughly rolling, tamping and packing the ground and bringing it to conform with the surface of the finished pavement before the work of laying the foundation course is begun. Great care should be taken to have this preliminary

work well done lest soft spots be left where the finished pavement will settle and thus produce irregularities and depressions on the surface.

The peculiar style of foundation that will be best adapted to each locality will depend, as stated before, upon the kind of material that can be most economically obtained, and also upon the nature of the soil.

In a stiff clay soil which is well drained, a very simple form may be used with satisfactory results. While on sandy places and others that are soft and yielding, a more complicated and substantial foundation may be required.

Probably the cheapest form of brick pavement that has been tried, consists



D. W. STOOKEY, CEDAR RAPIDS, IOWA, AUTHOR OF "PRACTICAL POINTS ABOUT PAVING BRICK."

to the treatment of the surface in the attempt to make it impervious to moisture.

#### THE FOUNDATION.

In preparing the foundation for a brick pavement, the nature of the soil upon which it is to be made will have much to do in the determination of that particular kind of foundation that will give the best results with the least expense. First of all, it is essential that the subsoil should be relieved of all surplus water and should never be permitted to become saturated. The necessity of this is apparent, and if neglected, would certainly become so, if the pavement should be subjected to heavy traffic while the subsoil was in



of a single course of brick set on edge upon a layer of sand or gravel. This might give good satisfaction where the subsoil was firm, but it would fail in many places.

#### GRAVEL FOUNDATION.

One set of specifications calls for a foundation made of gravel, spread upon the prepared road-bed, in the following words: "Fine gravel or pebbles, free from stones, larger three quarters of an inch in their dimension, which shall be thoroughly rolled. A layer of bedding sand shall be spread over the gravel foundation." Upon this the brick were to be set upon edge in the usual manner.

#### CONCRETE FOUNDATION.

Other specifications provide for the use of a concrete foundation, to be made of various thicknesses in different localities, varying from four to nine inches.

The concrete is to be made of cement, sand and broken stone or gravel in slightly varying quantities at different places. The stone or gravel shall be so small that their longest diameter shall not exceed two or two and one-half inches.

All of the specifications or plans for foundations referred to so far, are for pavements in which only one course of brick is to be used. A layer of clean sand, from one to two inches thick, is to be spread upon the foundation so formed, and upon this course of sand the brick are to be placed. All specifications examined call for practically the same method of setting the brick and a quotation from one will represent all: "Upon this bed of sand the paving bricks are to be laid on edge, at right angles to the line of curbs, in parallel lines, in as close contact as possible, on sides and ends, the joints broken, one with another by starting at curb lines with half bricks in alternate rows. No half or broken brick shall be laid except at the curb lines in order to make closures."

#### CINDERS IN THE FOUNDATION.

The following quotation is taken from a list of specifications: "The road-bed, being properly rolled, shall then be covered with cinders of a uniform depth of at least three inches, and the same shall be rolled and compacted as before, and there shall then be spread a covering of sand of sufficient thickness to grade the surface of said road-bed to a uniform shape, regular and smooth surface for receiving the bottom course of brick."

This was for a pavement with two courses of brick and the lower course was to be laid upon this sand "upon their flat surface, long dimensions parallel with the street, laid as closely together as practical and all joints broken."

Doubtless this made a good pavement, but the peculiar feature of the specification lies in the requirement of the use of cinders. The localities where cinders could be obtained in sufficient quantities to be used as these specifications require, are comparatively rare. Probably the one who required the use of cinders in this case knew that they could be readily obtained without great expense.

#### HOW MUCH SAND?

Some specifications call for one-inch of sand between the foundation and the top course of brick and others require two. The object of this intermediate layer of sand is to fill the space between them, and by so doing to distribute the bearing of each top course brick throughout its full lower area. With a thin layer, the pressure of the brick will be more readily transmitted to the foundation directly under it, and be more firmly supported. When this is done no further benefits can come from the use of more sand, and one-inch is better than two. With a thick layer of sand, some brick that were subjected to heavy loads, might be pressed down and those near bulged up by the pressure transmitted through the Mobile sand underneath.

The only possible idea that we can conceive of why a thick layer of sand should be used, is the opinion advanced by some that the cushion of sand underneath rendered the pavement elastic, and thus reduced the shock. This is very beautiful in theory, but in practice the elasticity of paving brick set upon sand, is probably not sufficient to be perceptible, and their elasticity exists principally in the minds of their advocates.

#### TOO FRESH.

Intelligent Compositor—That new reporter spells "victuals" "v-i-t-a-l-s."

Foreman—Yes; he's fresh. Make'r right an' dump'r in here. Want to get to press in just three minutes.

And this is what the public read when the paper was issued: " \* \* \* The verdict of the coroner's jury was that the deceased came to his death from the effects of a gunshot wound in his victuals."—*Whiteside Herald*.

Written for the Clay-Worker.

#### THE TRUE POLICY FOR PAVING BRICKMAKERS.

It is a Question of Quality, not Quantity or Demand.

BY J. W. CRARY.

It is quality, not quantity, or sale, that every maker of street paving brick must consider. In fact all the ordinary rules of the business part of brickmaking, must be set aside and reversed in the business of selling paving brick.

The common brickmaker can sham, and generally succeed, in counterfeiting good brick in his sales to builders. He can burn his brick in a hurry, to save time and fuel, so that the outside of his brick will appear to be burned, but the inside only half burned, he can sell his "arch" and "salmon" brick, which can be used out of sight, and not exposed to any test, and by a little "soft talk" and "silver oil," make the owners of buildings, and the stupid, careless public believe that the building put up of his brick, is first-class, and that he is really a true well skilled brickmaker.

#### THE STREET PAVING BRICK FEVER, AN EPIDEMIC.

Everybody that has a clay bed now, gets a paving "brick in the hat," and they dream of the brick machine and brick that is to make them millionaires. Of course, they know nothing about making brick, that would be fatal to their pet scheme for making a fortune. They send a sample of their clay to a brickmaker interested in some brick machine, he makes a fairly good looking sample and reports. The next thing is to form a company and order all the machinery recommended. A plant is soon erected and in operation. The patent machine and brick kiln men are there to give the concern a successful "start off." A kiln is made and burned, one-third of the kiln appear to be good pavers, and all might have been, but there was just one little "if" and "but" in the way. "If" they had had a different fuel, or had not closed the kiln so soon, or had had an expert to burn the kiln, who understood the nature of the clay, they would have made a perfect success. "But" they did not have these things. "But" all these, and any others defects will surely be avoided in making the next kiln. A new brick burner is employed and all other wants are supplied. Another kiln is soon made



and burned; the result is a little better, but far from being a success, or a demonstration of any inherent capability for success. Meanwhile the managing business men of the concern take a contract to furnish street paving brick, at a less figure than was offered by some well skilled and well established manufacturer, who would on no account, allow a bad or imperfect brick to go from his yard into a street pavement. But the contract is manipulated by those concerned and in charge of the work, and the pavement is put down.

The defects of the brick have been pointed out, they were not thoroughly burned. The brick had a hard, brittle crust on the outside; but when broken open across, the inside, or central part of the brick, was comparatively soft; but the street is paved with these brick, and soon the edges of the brick begin to break off under the heavy travel over them, then the centers begin to break, and some of the brick break across, and are nothing but "bats," so the life of the pavement, and perhaps of the company that made the brick, was about two years.

#### THUS, COMPETITION WITH BRICK PAVEMENT CAN CROW.

And if the manufacturers of street paving brick do not see to it themselves, that not a single brick goes out from their works, that is, not in all respects, thoroughly made and burned, and first-class street paving brick they must abandon all efforts to compete with the men who will not give up the fight for stone and asphalt.

There is a large, wealthy and powerful interest in these long tried materials for street pavements, and the brickmakers have a foe worthy of their best steel.

I am glad to see that the late Convention of the N. B. M. A. took a lively and effective interest in this matter, and I hope that powerful body of brickmakers, will not relax their efforts and purpose to build up and sustain the great and new industry of street paving brick.

#### A TEMPTING PRICE AND DEMAND

Should never induce a good brickmaker to allow a bad street paving brick to go from his works. It would be best I think, that every maker of street paving brick, should fully guarantee his paving brick, reserving the right to have them properly laid down. This would com-

pel all makers of paving brick to make none but the best, and thus the reckless adventurers, who jump into a brick yard, and then run out, would have little chance to ruin this new and very important industry.

#### MAKING PAVING BRICK A SPECIALTY.

It seems that some are contending for supremacy as special makers of paving brick. I do not think that this plan could be made generally practicable, or successful. If a concern should make only street paving brick, they would be compelled to have a large price for the brick sold, for it would be impossible to make and deliver more than ninety, or



JOHN H. MORGAN, CHIEF BURNER, ACME VITRIFIED BRICK WORKS, CLOVERPORT, KY.

ninety-five per cent. of paving brick, and if the maker depended solely on his paving brick, the demand might not justify his work.

#### ALL BRICKMAKERS SHOULD MAKE PAVING BRICK.

If a brickmaker has suitable clay he can make paving brick to supply the local demand. It is simply a question of skill, and if a manufacturer of brick has not the skill to make street paving brick, he cannot, and should not rise to the dignity of a respectable brickmaker.

Just the kind of clay, best for street pavers has not yet been ascertained. Some say that shale makes the best

pavers; some say that fire clay makes the best, others think that common brick clay will do just as well, if properly mixed, dried and burned. Clay is a silicate of alumina, or to use a common phrase, land and clay. Now it is evident that if clay has no mineral or salts in it, it will not vitrify, and hence, according to the theory that paving brick must be vitrified, fire clay will not do to make street paving brick. But there are very few beds of pure fire clay, and brickmakers who make only fire brick, will not care to make paving brick, and if he wishes to do so and it is really true that paving must be vitrified, then he

can always find readily and cheap, plenty of alkaline clay near at hand to mix with his fire clay, and thus make a vitrified brick. But the term, vitrified, as applied to paving brick, if not intended as a nickname, is in bad sense and misleading. We can fuse clay and sand by adding a little alkaline matter to it, but it will not vitrify. All brick that shrink in burning, are partially melted, or fused and this is caused by the chemical action of the clay, sand and alkali mixed together.

#### THE MAIN QUESTION IN MAKING PAVERS

Is, "Has the fire acted strong enough and long enough on the kiln?" The common fault is to burn too fast, and quit burning too soon. If any common brickmaker having first-class clay for the best kind of building brick, will take care to properly set and burn his kilns he can be sure of success in making street paving brick. But all loamy and friable clay must be kept out so that the brick will anneal under a strong and long continued heat.

As a rule, a kiln of brick should be kept tightly closed, as long as it takes to burn it. The top should be all covered over with damp fire clay, and the kiln should not be opened until a brick can be taken out of the top with the hand.

#### THE GREAT COMFORTER.

When a fellow has spent his last red cent  
The world looks blue, you bet!  
But give him a dollar and you'll hear him holler:

"There's life in the old land yet!"

For money's the comforter after all,  
No matter what cynics say,  
And the world will stick to you when you fall  
If it finds you can pay your way.

--Atlanta Constitution.



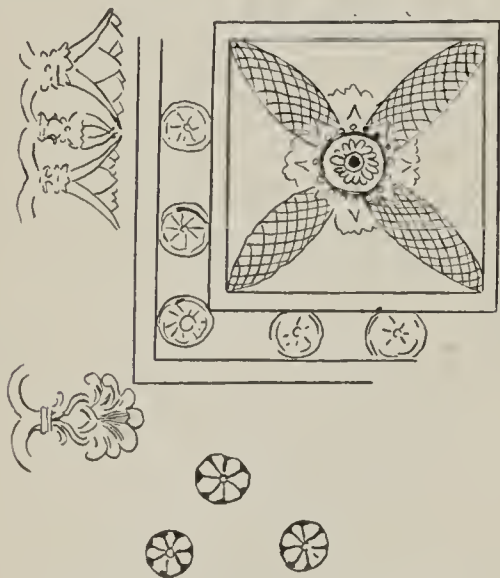
Written for the Clay-Worker.

### ANCIENT CLAYWORKERS.



OF THE interesting countries of the olden times, was Assyria, the land of great soldiers. The animals of this kingdom form quite a chapter in the old Bible history, almost as extensive as those of the succeeding dynasty, that of the Babylonians. For as it is the case with almost every great fighting nation, the time comes when its enemies outnumber its friends, and then comes ruin and subjection. So was it with the Assyrians, but not until after a long existence of unexampled power and splendor.

As far as the arts and industries are concerned, the Assyrians seem to have taken up the civilization at the place where the Chaldeans left off and to have carried it to a greater perfection. It is this fact that may account for the similarity that pervades the early Assyrian work and that of the Chaldeans. While the people of the latter country



ASSYRIAN ELEMENTS OF DESIGN.

were dependent entirely upon clay with which to give expression to their architectural instincts, the Assyrians had an abundance of stones and marbles. However, they did not despise the use of clay by any means. Tablets were of great use in writing, varying in size from 9 x 6 inches to a little fellow an inch square. Many of these have not only the cuneiform inscriptions, but also emblems or illustrations. Some of these in translation are of the utmost interest, being histories of the times, and religious works, but the most inter-

esting of their writings were upon what are called cylinders, from their shape, being terra cotta prisms, either hexagonal or octagonal, and hollow in the interior. The material of these prisms is of the finest quality, and the cylinders seem to be the special property of kings, as most of those found were deposited with the utmost care in corners of temples, and evidently by royal hands. These cylinders range from 1½ to 3 feet high and are covered with writings or cuneiform so very fine and minute, that we can hardly believe it to have been made without the assistance of the microscope.

The palaces of the Assyrians were built of stone or marble, but as usual



ASSYRIAN TYPES.

with the structures of this part of the world, they were mounted upon great platforms, and without exception these platforms are of undried bricks, with a side masonry of stone. Clay tablets were much used also for paving, and for this purpose were about two feet square.

All of the arches so far found are made of brick, and specially prepared for the purpose with convex top and concave bottom, and wedge shaped. The arches are semi-circular in shape, and the largest measures about 15 feet across the span. One pointed arch was found, the bricks being of the common shape. The arching was accomplished by bending the bricks with mortar until they almost met, and then finishing with a longitudinal brick. This arch was found at the entrance of a conduit and stands alone representative of this form.

The Assyrians did little in the way of ornament for their wall, in fact none, excepting that sometimes they were colored. Above the height of twelve feet there were placed colored bricks and slabs oftentimes in a designed arrangement. The colors were usually pale enamels, but sometimes brilliant.

blue, olive green, dull yellow, white, brown and black are the shades employed. Very remarkable is the almost entire absence of reds. As a rule the color-schemes are quiet even to the sombre. Harmony is the chief thing sought after, and very successfully is it obtained. In those places where drawing is attempted, there is never any effort to obtain the effect of chiaro-oscuro. The artists seemed to know their powers and never tried to go beyond them.

The principal colors used are found upon investigation to be composed chemically as follows: The white is made of the oxide of tin, the blue of oxide of copper, the brown of iron salts, and the yellow is our own Naples yellow. In the making of these painted tiles, the biscuit was somewhat baked, then the painting was done, after which they were reburned and enameled with silicate of soda and lead oxide in the usual manner.

The patterns mostly effected in the ornamentation and coloring of bricks were scrolls, honeysuckles, chevrons and guilloches. These together with rosettes and bands make up the stock of the designer.

An interesting clay product is the statuettes, mostly of poor moulding. They are of gods and genii and are of very fine terra cotta. Some of them display a great deal of vigor and are all very grotesque, but none of them have the faintest thought of beauty.

The pottery of the Assyrians resembles somewhat that of the Egyptians. It is of a very fine clay indeed, coming from the neighborhood of the Tigris. Some of the vases are of the most



ASSYRIAN MOTIVES OF BORDERS.

graceful designs, and the collection of lamps, jugs, amphora, saucers, jars, etc., does credit to the ingenuity and industry of the ancient people.

One thing worthy of remark is the fact that the Assyrians used a mould of wood in making their bricks, each thus being of the same shape. And while the Chaldean brick was inscribed with characters written on the face and



within a little square, the Assyrian brick was written entirely over the face and sometimes around the edges.

### CRUDE OIL FOR ALL KINDS OF KILNS.

BY THOMAS TRAINOR.

ONE of the greatest improvements in tile and brickmaking has been brought about by the introduction of crude oil, as a substitute for coal as a fuel. Its success as a heat producer, is no longer an experiment, but a fact established beyond all doubt. It is a clean, convenient and economical fuel, producing the required results in any kiln, without material effort on the part of the burner, with the exception of close and careful attention.

Its numerous advantages over coal will readily be appreciated from the following important facts, linked closely and connected with the manufacture of tile and brick:

First, I direct your attention to the trouble attached to the handling of coal. It costs at least five cents per ton to unload, providing you have a switch to your bins, and yet it has not been distributed about your kilns. There is a shrinkage of 5 per cent. in weights, and about the same in waste by handling. Then it is an impossibility to burn and not consume a certain amount of coal from which no benefit is derived, caused by opening of fires to regulate the heat in different sections of the kiln.

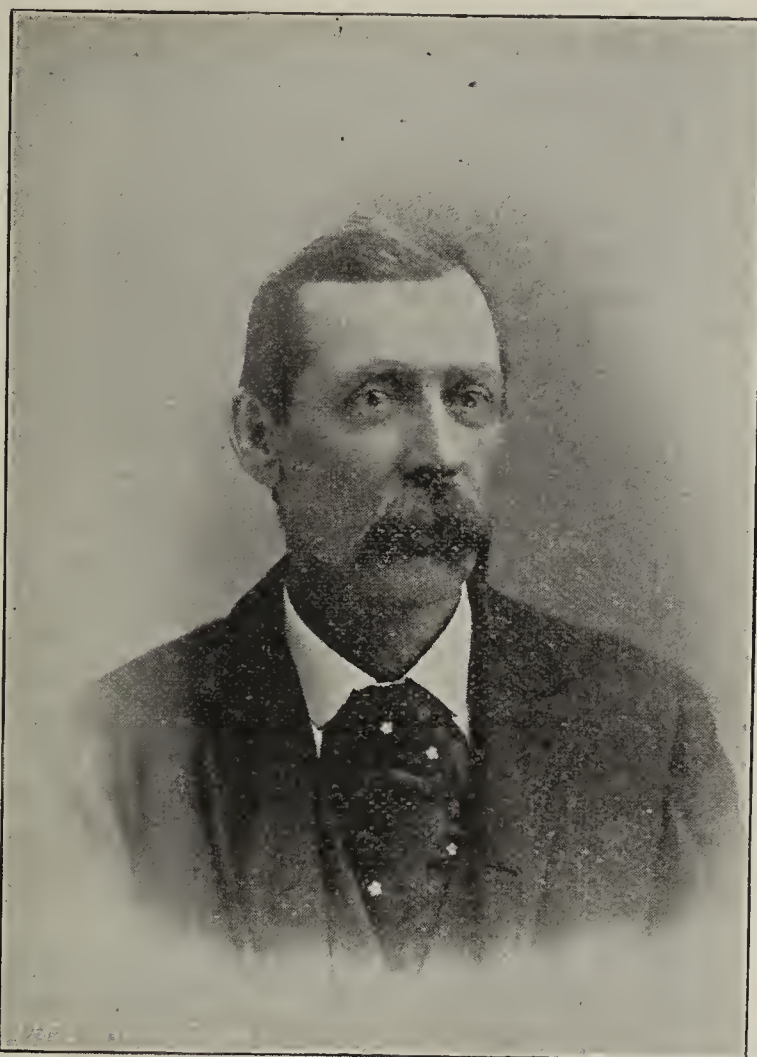
The labor of feeding the fires, clinkering the boxes, taking care of ashes and the wear on kilns, are unknown in the use of oil.

One car of oil is equal to three cars of coal, and by attaching a rubber hose or gas pipe, in three hours you have obtained the results of the labor of one man for one and one-half days, and only consumed about ten minutes in preparing for the operation of unloading, which afterwards needs no attention. By the aid of a pump, your fuel is distributed and always ready for use.

If your fires are too hot, turn a valve, save your fuel, and not only that; but at this point your ware is at a stage of perfection or destruction, and, with

coal, you open your boxes and cold air rushes in, causing an immediate and reverse change to take place, thereby producing checks and cracks, as a result of which in many instances, we hear people make the remark on picking up a piece of seemingly well burned ware, say "It is rotten." Oil prevents this, as a slow and gradual change takes place, leaving the particles of clay united instead of breaking asunder by sudden contraction.

Not only is the fuel the only advantage, as time is gained and more ware burned in the same space. You can set



THOS. TRAINOR, BRICK AND TILE M'FG, CLIFTON, ILL.

one-sixth the more brick, and nest your tile closer in "Down Draft Kilns," and save 12 to 24 hours in burning. In the old styles "Dutch Clamp Kilns" with coal, the common way of setting is a three brick bent, set 5 on 2, 40 high and 40 long. With oil, better results are reached by erecting four brick bents, set 3 on 3, 45 long and 47 high. You have no waste arch brick, and gain one-fourth more brick on the same number of arches. You are never bothered with kilns clogging or choking, as there is no smoke or soot, thereby discontinuing the use of powder or shot gun, which is often used when kilns become clogged. The steam necessary to be used with oil, creates an artificial draft, and dis-

tributes the heat evenly to all parts of the kiln, insuring a more perfect and desirable burn. One man will attend 20 arches with greater ease, than five men with wood or coal, and save 24 to 48 hours. It also can be arranged to burn during the heaviest storm or winds with perfect ease, and keep your fires under perfect control.

After having used crude oil for the past few years, and until the 1st of last October, (at which time I assumed the management of Wonser & Cramer's factory at Clifton, Ills., one of the best equipped plants in the State, but using coal,) I am thoroughly convinced that "Crude Oil" is destined to become the tile and brickmakers friend.

Written for the Clay-Worker.

### DRY PRESS HINTS.

No. 4.

#### BURNERS AND BURNING.

THE idea prevailing among new beginners in the brick business seems to be, the better the kiln adopted, the poorer the burner required, which is all right so far as it goes, but the pity is, it don't go very far, and right here is where the misfortune comes in. They think it covers the whole ground, and often before they (the N. B.) finds out their mistake, they have got to the edge, toppled over and gone clean out of sight. Take my advice, whatever kiln you decide on (in my last paper we decided on a down draft,) make it a point to get the best burner in your reach. Don't make another very common mistake and say, I don't need a first-class burner, as I am only making a common grade of brick—there is no demand for a better grade; they won't pay the price, etc. A good burner on a common kiln is a paying investment. A good burner will use less fuel, and give a larger proportion of the kind of brick that create a demand, than will his more common brother.

"Uneasy lies the head that wears the crown," but not a whit less uneasy lies the head of the brick manufacturer who is responsible financially for the incompetency of his burner. Like friend Snell, I am a believer in systematic operation, and that a brick works like any other business, to be successful, must be governed by established rules. Perhaps

\*Read before the Illinois Tile, Brick and Drainage Association January 17th, 1893.



you have undertaken the general management of the business yourself. You employ a man of known ability as your superintendent, or, as some are called, "General foreman," and leave to him the hiring of the other hands. As the work progresses he will have ample opportunity to pick out men suitable to the various positions, and if he is what he ought to be, will very soon have perfected his arrangements, and be on the highway to success. The more important positions, as machine man, setter and burner, he will fill with experienced men who will operate their especial branch under his directions.

Now one error that you are liable to fall into, but which you must guard against if you value your peace of mind and the welfare of your business is this, do not attempt under any circumstances, the introduction of any new method or process without first consulting with your superintendent. When you so far forget yourself as to ignore him and give instructions or directions to the men as to how you want things done, or changing some plan of his in his absence, you are certainly not treating him fairly, and are more than likely hurting yourself. It is not in accordance with good business methods, and by doing it you are shouldering undue responsibility, destroying the harmony that must exist to achieve success, and creating a feeling among the men that will cause your superintendent trouble. Don't keep him if you have not the fullest confidence in his ability and integrity. You will do well to remember that he is jointly responsible with you for the success of the concern.

One very important factor to a successful burn is, having the setting done right, *started* right, *kept* right and *finished* right. The setting must be even from end to end to insure an even burn. I have been told that the only way to set pressed brick is 3 over 3 or perhaps 5 over 6. Such a statement is very misleading, as its efficacy depends altogether on the size of brick you are making. In some cases it may be all right, but in others ruinous and disastrous as far as that kiln is concerned. One lesson is often enough, but it is apt to be a very expensive one. The setting must be done with a due regard to *draft*. If you set your brick so tight that the heat and products of combustion can not get through your kiln, you will over burn the top (in fact are liable to do most of your burning on the arch of

the kiln,) and find the bottom half a beautiful salmon or worse. To set too open is not quite as grave a mistake, but it entails a big waste of fuel, and an increase in the number of flashed brick. What is the happy medium? you ask, and in reply will give you what I consider the best method, and that is, to simply allow "finger" space (about  $\frac{1}{8}$  of an inch) between the bricks all through the kiln, except along the flash wall, where an occasional tight course must be set, headers to the wall. It is also a good plan to set a course of flat fire clay tiles along on the flash wall, projecting over and onto the green bricks, to prevent the fire taking the shortest course to the floor.

Now the kiln being set and the doorway bricked up and thoroughly daubed, we can start our fires to water-smoke and commence on the most important branch of the work. I claim this to be the most important because no matter how carefully or skillfully the preceding operations may be attended to, a careless or incapable burner may blight all our prospects and thoroughly upset our calculations.

How many times have we watched our brick through the processes of making, drying and setting, seen the kiln closed up on what we ourselves have styled, "As pretty a kiln as ever was set," seen the fires started, and then placed our hopes in the keeping of our burner and waited. Finally the momentous time comes when 'he' says, "Enough," further waiting for a few days, and the kiln is opened on—well perhaps one of the extremes, or it may be that the burn proper was all right, but the brick checked from careless or insufficient water-smoking, anyway our hopes were dashed to the ground, and we were forced to begin again.

The great trouble that I have seen in burners is a lack of system, a failure to appreciate conditions and a tendency to take chances. Let us just glance at the routine of burning. First comes water-smoking. This must be done slowly and carefully, as our ultimate success depends, in a great measure, on our treatment at this stage. A few extra hours spent at this time, are not lost, but will be found profitable at the end.

PRESS.

The man who studieth revenge, keepeth his own wounds green, which otherwise would heal and do well.—*Bacon*.

## A WONDERFUL CONVENTION.

### Its Final Work.

ONCE more it is morning upon Jupiter, and from the window of our room we look upon the sun which shines here as everywhere, and towards the earth, but which is too small to be seen from such a distance.

And how will we feel? The "Feast of reason and flow of soul," as it occurred last night, was pretty well intermixed with a feast of turkey and flow of wine but it has not been followed by either a heavy head or heart. The real work of the convention is about ready to begin, and after a happy breakfast we repair at once to the hall, and picking up the official programme, we find, among others, such themes as these:

"Old Fashioned Brickmaking Upon the Earth," by a craftsman from New Haven.

"Vitrifying Brick by Electricity," by a member from the Sun.

"The Preparation of Clay; Too Much Sand and Too Little Brains Used in the Mixing," by a member from Boston, Mass.

"The Machine of the Day; It Must Deliver a Burned Brick Direct from the Wagon on Cars," by a dry press member from Chicago, U. S.

"Whitewash on Brick; The Real Cause of it and a Cheap Way to Prevent it," by a member from No Man's Land.

"The Most Desirable Attribute in a Brick. Is it to be Beauty or Durability?" by a member from Venus.

Etc., etc., etc., etc.

As we had never before attended a universal convention, we were astonished, both at the manner in which the subjects under consideration were handled, both by the individual and also as discussed by the open convention.

When any speaker related a matter as a fact, he based that fact upon an experience, and also related the experience. Theorizing was looked upon by the convention as a waste of its time, and any speaker attempting it was called down in such a manner that he would hit his seat pretty hard. This led to absolute faith in a fellow member's remarks, and when some one stated that the whitewash on brick was caused by the lime in the mortar, all the other members believed him, even though he had a half hundred piles of brick on his own yard that were all covered with whitewash and which had



never been near any mortar or seen any lime, except what some one thought might exist in *distilled rain water*. The fact was brought out in that great convention that so called whitewash on brick was produced by a variety of causes; that brick made at different times of the year, on the same yard, and in the same manner, would sometimes whitewash and then again they would not; that in some cases it was an alkali brought out from the brick itself, and sometimes deposited by evaporation. All of these theories were advanced by the reader of the paper on that subject, and all of which were dispelled by the learned chemist who arose and spoke on the same subject. About that time we were called out of the hall, and therefore we cannot here tell you the real cause of the whitewash, or how to prevent it. This is the way it often turns out in matters you wish to become posted upon.

One member read a paper telling just where the point came in between a vitrified brick and one about to be vitrified; also how to govern the fires so as to vitrify every brick in the kiln. The general method was by electricity, but we have forgotten the particulars.

Another paper was upon the instantaneous drying of green brick, either hand-made, stiff-mud or dry-press, and to leave them sound and free from cracks. It was a paper similar to those often read in N. B. M. A. conventions in one respect; it left you to understand that all in the world you had to do was to do it.

There were papers on repressing and shepressing, papers on transforming clay into brick and also transforming men into good brick, papers on the formation of trusts so as to get all of the other fellow's money; and papers on not trusting the fellow with your brick who would sell the building as soon as erected and hide the money where you would never see it again.

Ah! it was a great convention, and wound up with the report of the committee on resolutions. Among other things it was resolved:

That each member attending future conventions must bring with him either his own wife or that of some other fellow.

That "Floods" of eloquence should spring forth from spontaneous sources, and not when superinduced by a malt house.

That the hotels designated as official

headquarters should be required to confine their cockroaches in regular quarters, and not let them stray off and get mixed up in pancake batter, and be served in that form on the breakfast table.

That wine served at the powwow should first have the "big head" removed from it.

That the next Universal Brickmaker's Association be held upon the Sun and during the month of January (especially if we were to have another such a winter).

That the convention adjourn sine die.

And now we arise and say good bye to everybody. We shake hands with the members from Saturn, and he promises to give us his seven rings if we will only come and see him. With the member from the Milky Way, and he promises that, if we will come there, he will show us the source of the "milk of human kindness," although he confesses that just at present the flow is pretty well dried up. With the member from the North Star, who agrees to furnish us with a pocket compass that will always guide us home on powwow nights and in a straight line from the edge of the *Great Dipper*. And lastly and best of all we part with the member from the Sun, he who invites us to ally ourselves with the Great Son of Righteousness, and through whose merits alone can we hope to escape final destruction and become bricks of gold in the home not made with hands, eternal in the heavens.

From all these we sadly turn away; go to and depart from the home of our friend; seek the station from which we are to start back on our journey to the earth and find that—something has happened. The station agent informs us that the company has busted and that no more trips of the flying machine will be made to the earth. Now the devil is to pay sure. Here we are millions upon millions of miles away from home and the only wife we ever had. Seventeen little brickmakers left fatherless—until their mother finds another for them.

Twenty-seven buildings being erected from as many different colored brick, and the only formula for making them here is our pocketbook. Ah! yes, our pocketbook. Even that has gone back on us, as the Republican party has manipulated all the gold out of the country, and here in Jupiter silver is worth no more as money than so many

wooden chips. We are a stranger in a strange land, and there comes a policeman to run us in as a tramp from the wide, wide world. Down comes his billet upon our head; down upon the floor we roll and—"Hello," says the black imp of a car porter, "let me help you up. That berth never would stay up, and it's too bad to mash your hat so that it is not fit to wear by a 'spectable gentleman."

Yes, the hat looks tough, but the head is all right, so never mind. If it had not been for that berth we might never have got back to earth and the bosom of our family, and while we are glad to have attended the Universal Brickmakers' Association in Jupiter, we are also mighty glad to find that J. A. S. will not have to stay there forever.

Written for the Clay-Worker.

#### ENAMELED BRICK.

##### No. 2.

IN my former article which, by the way, was the only one I had intended to write at present, I dismissed the semi-dry process with very few words. I will state, however, that I think it would be the ideal process for the enameled brickmaker, provided he can successfully apply the enamel before burning. It can, of course, be applied to a burned brick made by any process, should any one care to thus put on the market what would, in all probability, prove to be an inferior article. In our experience we found we could use a hand-made brick profitably, while we could not so use a semi-dry brick, and consequently adopted the method that gave us the best results. If you have the time and capital to devote to it, and finally succeed, the semi-dry brick will be very likely to drive all other enameled brick out of the market, due to its better appearance and level face.

In making brick for enameling purposes, it is very necessary that the clay and other materials that enter into the composition of the body of the brick, be thoroughly ground and evenly mixed. Should you be so fortunate as to have a clay just suited to its purpose, the mixing should be no less thorough. This is made necessary by the glossy surface of the enamel, which reflects and seems to magnify any slight depression or elevation in the surface of the brick. A brick that seems to be perfectly smooth will, when burned, show a more or less



wavy face, when glazed. This is due, to a certain extent, to the unequal contraction of the particles of the different clays, or of the same clay, which always varies somewhat in contraction in different parts of the bank. This does not show in the ordinary dull brick, but if any one will glaze as fine a specimen of the ordinary hand-made, stiff-mud or soft-mud pressed brick as is possible to procure, he will be surprised at the seeming waviness of the face. The only way to obviate this is thorough mixing, so as to give a homogeneous body. This defect is not noticeable to so great an extent in a semi-dry brick, but will become very apparent should the clay not be well prepared. Do not infer from this that I am advising you to adopt the semi-dry process; I am simply stating what I know to be true, and leave you to decide which process you will adopt. Whether you make your brick by hand or machine, use no sand on your moulds. If you cannot do this, give up all thoughts of the enameled brick business at once. Sand on the face of a brick makes it impossible to successfully enamel it in its green state. If you use a tin enamel and burn your bricks twice, I do not know what the effect will be, but do not think it will improve it any, and do not see how it can do much harm. I guess it is one of the things that it is hardly worth spoiling, for the elements seem to have a grudge against tin enamel on bricks, and seem, sooner or later, to get the better of them. I have also seen and made semi-dry enameled bricks that did not seem to agree with the weather from some cause. Judging from appearance, I would call it sun burn, but still they may have been slightly frost-bitten at some time during their existence.

No matter how you make your brick, do not trust to enamels or glazes to hide defects. Give your brick a fine smooth face, no matter at what cost. It will cost considerably more not to do it, though it may not be apparent at the time. The paper read at the convention at Louisville, Ky., gives you a very good method for doing this. The writer of that paper has evidently had more experience in the business than I, and will, no doubt, prove the safer one to follow, should I chance to differ from him very materially.

The brick being properly made, the balance of the operation is comparatively easy, after you have settled upon the proper glaze or enamel, which must,

of course, be suited to your peculiar clay or mixture of clays. What suits one clay will, in most cases, need considerable alteration to suit another; and were I so inclined, it would be impossible for me to give you one that would be likely to suit the clay you would wish to use. The different ingredients must be thoroughly mixed and ground and sifted through a fine sieve at least as fine as No. 100 brass, or finer if possible. If you chance to have a friend in the pottery business, he can give you valuable pointers as to the manner of preparing glazes, etc., but his particular glaze will, in all probability, be an excellent thing not to use, though his manner of preparing it for use will be a safe one to follow, so far as the mere mechanical part of grinding, sifting, etc., is concerned. The longer your slips and glazes stand before using, the better, as old glaze will work a great deal smoother than that which has just been mixed. It is applied by dipping, giving the brick a sweeping motion through the glaze or enamel, which will prevent the formation of pin holes and cause it to flow smoothly over the face of the brick. The succeeding operations are given in my former article about as fully as it is possible to give them, without some knowledge of the clays to which they are to be applied. You will find it a business in which experience is vastly the best teacher, and will find that an overdose of some other fellow's experience is an exceedingly bad thing to have on your plant, unless you take him along with it, or have a good stock of your own to use as an antidote. I have found a little of it valuable and of great service; but I have also been led into serious difficulties by trusting too much to the experience of others entirely unacquainted with the clays I was using; however, I am always hankering after more of it, now that I am, to a certain extent, better able to sift the wheat from the chaff, but generally go slow and take it in homeopathic doses until I am able to judge of the effect. If you are "green" in the business you must, of course, depend more or less on the experience of others, but you should tax all your resources to the utmost and with native American wit to back you up, you will in a short time have a stock of experience of your own, that will, if your courage and pocket-book hold out, enable you to turn out a first-class American enameled brick, that will sell on the American market

and stand our rigorous American climate as well or better than the best imported article. J. M.

Written for the Clay-Worker.

### HINTS ON BRICKMAKING.

No. 73.

BY R. BRICK.

#### ADVANTAGES OF A FLUE OR HOT FLOOR DRYER.

IN this article will be considered the advantages and economic features of a hot floor dryer. In the April, 1892, number of the CLAY-WORKER, in "Hints on Brickmaking, No. 62," is given a detailed description of a flue dryer, together with instructions for its proper construction. Hence in this article the plans of construction will not be considered. We will notice the advantages and economic features. First, this dryer can be built for less money than can any form of tunnel dryer. A flue dryer of twenty-five thousand daily capacity can be built for about one thousand five hundred dollars (\$1,500), the cost varying somewhat—material costing more in one locality than in another. This makes it in many cases the only available dryer, where capital is limited. The main cost, so far as material is concerned, is the common brick, which the brickmaker manufactures. The cost for fire brick is not heavy.

A dryer of above capacity requires 5,000 fire brick and 3,000 pounds of castings. The only other material to buy is lumber for the building. The advantages of this dryer over natural drying are the same as those of any other artificial dryer.

It enables the brickmaker to dry brick in wet weather and in cold weather, it protects his ware from storms and frost, and gives him control of his output. He requires less machinery to make a given amount of brick per year. With one machine and 25,000 daily capacity, and a dryer, he can produce more bricks per year than he can with two machines, with a combined capacity of fifty thousand per year, without a dryer. With a flue dryer there are no cars to get out of order, no tracks to keep in repair, and to put into and remove from the kiln that is filled. There are less broken bricks in drying than by any other process. Where stiff mud bricks are to be dried they can be hacked on the floor on end, and so close that about one hundred brick are



dried on a square yard of space, and where one furnace heats about two hundred square yards of surface, where all the heat that radiates from this surface is absorbed by the bricks, I believe there is less heat wasted than by any other process of drying now in use.

In this dryer there is no boiler or engine connected with it, no risk to run from boiler explosions, or wearing out of engine to run it. All that is necessary is a man to fire, and fuel for the furnaces. It is not necessary to run it day and night, it can be fired 12 hours and stand the other 12 hours with banked fires and dampers down. Bricks can be dried just as fast as possible without damaging. The fireman has complete control of the heat and can regulate it to suit the drying qualities of the clay. Heat is applied to the bricks uniformly, they all begin to dry at the same time, and the drying is completed at the same time; hence, heat is not being wasted by coming in contact with dry bricks, while others near are only half dry, as is the case where they are loaded on cars for drying, as cars are usually loaded.

In firing a flue dryer, wood or coal slack may be used, or oil or gas. When coal slack is used the grate surface should be 3 ft. 6 in. long by 3 ft. wide. Slots in grates should be five-eighths to three-quarter inches wide. When dryer is first built, wood or coke should be used to dry it out, then put on coal slack. The grates should be kept clean, the same as under a boiler. Ash pits also should never be allowed to fill up nearer than eight inches to under side of grates. The furnaces should be kept up to a bright cherry red when firing and should be well filled up when preparing to put down dampers for twelve hours. By firing the furnaces in the night, the fireman can do this and be watchman at the same time. The work he has to do will prevent him from sleeping on duty. The dryer should be built so that coal can be shoveled from car into bins in front of the furnace.

In order to utilize all the heat, the bricks must be taken from the floor as soon as they become dry, and the floor must be filled as fast as it is emptied. The setting gang should be out in time to have sufficient space clear. At work time in the morning, all the bricks that are dry should be taken to the kiln and the space covered with bricks from the machine before night. The firing of the dryer can be so regulated that just

the amount of bricks required can be dried each 24 hours.

The surface of the floor should be even and smooth, and the bricks placed upon it carefully; each brick should have a bearing on the floor full size of the end of the brick. A hacker may sometimes have his brick leaning, and, by setting one against another, cause the brick to rest on one edge; they must be plumb. The hacker should keep his hand straight while in contact with the bricks to avoid leaving finger prints upon them. The same care is necessary in taking them from machine and placing them on the trucks, and the same care must be observed in placing them on the barrows, when taking them to the kiln. These barrows should have springs, to prevent injury to the bricks by jolting them on the way to the kiln. Two heavy seat springs can be placed on the handles and upon these a frame to hold the bricks. One end of this frame is fastened to the handles by a one-half inch rod passing through the side pieces of the barrow or truck; this holds it in place and allows the frame to rise and fall, the rod turning inside; the middle of the frame rests on the two springs, which are placed at right angles and upon the handles, the frame projecting over the springs. This makes a cheap and durable barrow, upon which the bricks can be handled without injury.

#### NOTES GLEANED AT THE IOWA CONVENTION.

THE Iowa Brick, Tile and Drainage Association at its annual meeting, on February 1 and 2, at Des Moines, was an illustration of the importance and strength of the manufacture of brick at the present time. The addition of the manufacture of paving brick to the old work of making building brick has given the brickmakers a preponderance in the convention, and the matters of tile making and drainage have been overshadowed by the brick interests.

There are, in the State, many exclusive tilemakers, but many, probably a majority, of the tile manufacturers divide their time and energies between tile and brick. These, together with the exclusive building brickmakers and the newer paving brick manufacturers, were at the convention in numbers sufficient to control the actions, and while no unkindness nor neglect was

shown the friends of tile and drainage, it was very evident that the interests of brickmaking and using had largely displaced those of tile and drainage, although the Association was originally formed in the interests of the latter and by those who were engaged in the manufacture and use of drain tile.

The reasons for this are easily found and readily understood. One is because the work of the tile and drainage Association has been largely accomplished. In the years that have passed since its organization the subject of tile drainage has been so much agitated, and the various publications of the country have done so much to spread definite information upon the subject that the matter has become familiar to all intelligent farmers. This was one of the objects for which the Association was formed, and hence its mission is practically ended.

The other object of the formation of the tile and drainage Association was to raise up an able corps of men to manufacture the tile that would be demanded by the dissemination of knowledge among the farmers of the benefits to be derived from tile drainage. This, too, has been accomplished, and to-day the State of Iowa has a number of able men who are producing a good quality of tile at so low a cost as to place them readily within the hands of the land owners who need them.

Another reason why the subject of brickmaking was given so prominent a place in the convention was because many of those present had been turning their attention to the manufacture of paving brick, although they may not be actually engaged in that work at present.

Still another reason may be found in the many methods being employed in brickmaking. Some of the members were seeking information as to the dry-press process, and lost no opportunity to bring that subject up. Some wanted to know more about soft-mud brick, others were ever ready to turn the attention of the Association to plastic clay, while all united in considering the subjects of drying and burning.

The omnipresent agent was there, and added to the interest and profit of the meetings by relating the results of his observations of the methods employed and results obtained by different manufacturers whom he had visited in his rounds. Even the crank was there with his new schemes that had probably



never been conceived by the mind of any other man, and that never could be made of practical use by any one.

#### ROAD DRAINAGE.

One phase of drainage was brought out there and given prominence which has not had the attention in the past which it deserves, and that is the drainage of roadways. Every one knows that Western country roads are good and firm when dry, and nothing but an excess of water ever makes them bad. The present agitation by the friends of hard roads and improved roadways is in order, and will doubtless result in much good, but Iowa is too sparsely settled and too new to adopt any expensive system of road making. The first step is the securing of a good foundation, and this can only be gained in many places by a thorough and systematic system of underdrainage. This work has been begun in many localities and the work of drainage is about all that the financial condition of the State can afford at present.

#### DRAINING PAVEMENT FOUNDATIONS.

Many of the cities and larger towns of Iowa are laying brick pavements in their streets, and since the land upon which the streets are built is the same as that of the country roads, the rule as to drainage will hold good within the corporate limits. In many places the soil is so wet, spongy and "spouty" that underdrainage is absolutely necessary to the securing of a solid foundation for paving.

Some of the streets of Des Moines have been repeatedly treated to heavy coatings of gravel, but when the wet seasons came this gravel would rapidly work down and the mud come up, and the condition of the street would be as bad as at first. Had these streets been well drained before the gravel was applied the foundation would have been able to withstand the downward tendency of the gravel. It is only a "penny wise" economy to lay pavements upon streets that have a saturated subsoil at any season.

#### BRICKMAKERS AS CONTRACTORS.

In many places throughout the State the brickmakers are also contractors, and deliver their own brick in the wall. They have been driven to this, in many cases, by the unjust and overbearing actions of contractors and middle men. Self defense has caused them to assume the control of the use of the brick as well as the making of them. While there is a double responsibility in this

method, it has the advantage of cutting out the middle men and of reducing the cost of the consumer and increasing the profits of the manufacturer by dividing the profits of the middle man between them.

#### DRY PRESS BRICK FROM SHALE.

In the reports from members one reported that he was manufacturing brick from shale by the dry-press process. He runs the shale through a dry pan, from whence it is elevated to the second story, then screened and taken directly to the machine. From the machine the brick are set directly in the kiln. By this process brick are made directly from the bank and taken to the kiln without either drying the clay before pressing or drying the brick before setting in the kiln. When brick are made of shale, by the stiff-mud or plastic process, water must be added to the clay before pugging, and this water must be removed by drying before the brick can be set in the kiln. The discussion of the subject of drying and artificial dryers showed very conclusively that the drying of brick is one of the aggravations to the manufacturers, and is not only an aggravation but a great item of expense. To the worker of shale there is food for reflection here and investigation of the two methods may be profitable to those who are about to embark in the business of making brick of that material.

If a good and satisfactory brick can be made of shale by the dry-press process, as described above, it seems that that process is to be preferred to that of the plastic clay and the subsequent drying with its attendant expense and sources of anxiety.

The fact exists that brick are being made from shale by both methods. It is fair to presume that one is more economical than the other and that the sum total of advantages is greater for one method than for the other. Surely every manufacturer would like to employ the method that is most advantageous.

Shales do not show the vast differences that clays do, and the characteristics of one are more likely to be found in all. The oft repeated advice, "Go home and study your own clay," cannot be as suitably given to the worker of shale. It may be that some of those who are working shale are not employing the means that will give the best and most satisfactory results.

If the writing of these thoughts shall

call forth a discussion of the subject through the columns of *THE CLAY-WORKER* by the advocates of the different methods, they will not have been written in vain, and, if they are practical thoughts and lead to the adoption of more economical or better methods of manufacture in the future, they will be of profit to some.

#### A CURIOSITY.

One of the curiosities in clayworking is reported from Sioux City, Iowa. A gentleman there is working a yellow, sandy looking clay, and making side-cut brick by the plastic or wire-cut process. He uses no soak pit and no pug mill, but obtains the best results by as little pugging or mixing of the clay as is possible to get it through the die. In transportation from machine to drying floor the brick, on edge, would settle until the bottom face was about three-quarters of an inch longer than the upper. In order to obviate this he was compelled to have a new die made with the lower side three-fourths of an inch shorter than the upper, and now the brick, when finished, are perfect in form. He uses several methods of drying, hot floor and open air among the others, but the results in every case are the same. The difficulty is in the transportation of the new brick while the clay is soft. The clay seems to be somewhat of the nature of quicksand, and settles to the bottom of the brick.

#### IN CHICAGO.

The following method of making brick in Chicago was given by a gentleman who had had much experience there. Hard coal dust is mixed with the clay in the proportion of about three barrow loads to twenty thousand brick. The brick are set very close, thirty thousand to an arch, and are often set quite green. The brick are burned with wood, and about ten cords are consumed in burning one hundred thousand brick. The fires are pushed as fast as possible, and the heat is raised as soon as the necessary draft can be obtained.

D. W. STOOKEY.

Cedar Rapids, Iowa.

#### FILED AWAY.

Johnny had a Nanny goat  
As black as rubber hose;  
He got his father's file one day  
And tried to rub her nose.

Think not he filed away her nose,  
For on a summer's day  
She eats the flowers from the grave  
Where Johnny's filed away.



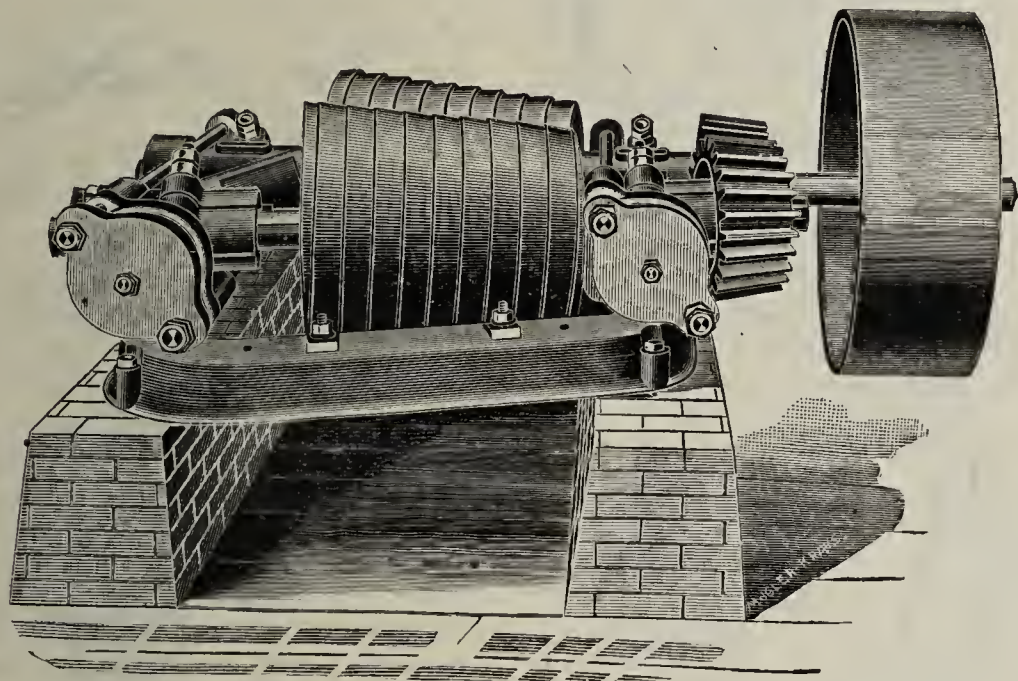
## A MODEL CLAY CRUSHER.

The accompanying cut represents the Penfield Conical Corrugated Clay Crusher and Stone Separator, which secures by its peculiar construction a number of decided advantages over other machinery for the same purpose; at the same time, the crusher embodies no complicated devices, but is especially notable for its simplicity as well as its strength and efficiency. It occupies a distinctive and unique position among clayworking machinery from the fact that it is the only crusher made with conical corrugated rollers; in fact, the Penfield Patents cover the field so thoroughly that other manufacturers could not produce a machine of this kind without infringing.

The cone shaped rollers are provided with broad Spiral threads of corrugations—right and left hand respectively

tion at that point, combined with the gripping surface of the rollers, will force the clay through. The corrugations have a double advantage in this style of crusher, as rollers provided with them would in any case take the clay through more rapidly than ordinary smooth rollers, and, furthermore, the corrugations accelerate the conveying of the large lumps to the large end of the roller where the surface motion is sufficiently high to take them through readily.

In point of construction, the crusher is also first-class. The rollers are thoroughly chilled, giving them a hard, impenetrable, wear resisting surface, and are provided with renewable outer shells so that when worn the roller can be made as good as new by simply replacing the outer shell, without changing the shafts or centre portion of the rollers. The boxes of the adjustable roller are provided with heavy car springs be-



—extending the entire length of the rollers. These corrugations are a decided advantage in taking the clay through rapidly, and at the same time the stones too large to be crushed are quickly conveyed by the spiral corrugations to one end of the roller, and pass out through a suitable automatic spring gate.

A further advantage arises from the fact that at the large end of the rollers the speed of surface motion is of course much more rapid than at the small end, the speed decreasing proportionately as does the diameter of the rollers. Thus the smaller pieces or lumps of clay would be readily taken through at the smaller end of the roller, while the arrangement of the corrugations is such as to convey the larger lumps rapidly to the large end of the rollers until they reach such a point in the length of the rollers that the accelerated surface mo-

tion at that point, combined with the gripping surface of the rollers, will force the clay through. The corrugations have a double advantage in this style of crusher, as rollers provided with them would in any case take the clay through more rapidly than ordinary smooth rollers, and, furthermore, the corrugations accelerate the conveying of the large lumps to the large end of the roller where the surface motion is sufficiently high to take them through readily.

The above points render this form of crusher particularly desirable for handling stony clays of a tough, sticky nature, and the results accomplished by this crusher in actual operation fully demonstrate its capabilities for performing satisfactory work under difficult circumstances.

Messrs. Penfield & Son, of Willoughby, Ohio, will take pleasure in furnishing further particulars of this crusher to any party, or will mail free their catalogue of Clay Preparing Machinery, embracing illustrated descriptions of the various Crushers, Disintegrators, Wet and Dry Pans, Pug Mills, Granulators, etc., which they manufacture in a variety of sizes and styles.

## A ROUND KILN.



The above represents Stewart's Diurnal kiln, as applied to a round kiln with the floor removed. The arrows indicate the currents of heat under the floor. Circulars free. STEWART BROS.

Mt. Victory, Ohio.

## KNOXVILLE ITEMS.

Brick business at Knoxville is looking up and promises to far exceed the trade of last season. Plans are ready or being prepared for quite a large number of good buildings. Our sewer contracts are already under way, and there is a large sum to be expended on street paving, and brick will receive a good share of attention, as that already laid is giving satisfaction.

The Knoxville Stoneware, Sewer Pipe and Tile Co., have removed their old buildings, and are rebuilding and otherwise enlarging their works. Their new structure will be 50 x 180 feet, two stories high and contains about 25,000 square feet of working and drying space. They will also add a new Jas. Means & Co. forty-inch sewer pipe press and contemplate adding a new kiln or two in the near future. They will then be prepared to make all sizes of sewer pipe up to a forty-inch hollow and building blocks, paving blocks, flue linings and all sizes of drain tile up to ten inches.

The firm, W. H. Stewart, sec'y and treas., and A. Zollers, supt. and general manager, are both hustlers and are pushing things along and expect to capture a big trade. J. A. REEP.

The Macomb (Ill.) Stoneware & Terra Cotta Company has changed its name to the Macomb Stoneware Company, and increased its capital stock to \$50,000.



Written for the Clay-Worker.

## THE HOPE DEFERRED CLUB.



PERHAPS you have never heard of the Hope Deferred Club; perhaps you don't even know that I am president thereof. The name of the association isn't of my choosing; my preference in the way of a name was for "Abandoned Hope." However at the organization meeting a compromise was effected and I was given the presidency and the others adopted the title of their choice—a title which I still claim is misleading and with a decided leading towards optimism.

You must know in the first place that the members of the Deferred Hope Club are all have-been-would-be concessionaires of the World's Columbian Exposition. Every man of us expected to have become the possessor of some en-



AMIALE B. JINKS.

riching concession, and our hopes have been deferred—about a hundred years or so. Many of us didn't care so much about the money as the fame that would have been ours, had our prospects prospered.

The CLAY-WORKER is our only recourse.

We turn by common consent to the great representative journal of the brick-makers for the opportunity to become immortal.

My desire is to give a portrait of each of the officers of the Deferred Hope Club, together with a few lines relating what the concession was that each desired granted at the hands of the unfeeling World's Fair directors.

Modesty requires that I should commence with my illustrious self. I didn't want much—merely the privileges of the exclusive sale of ear muffs during the months of May and October and the



THE EX-HON.

sale of my new baby carrying shawlstraps during the entire fair. After making my request as I did in person, Director General Davis threw me out of the fourth story of the administration building, but luckily I landed in a little snow drift that came up to the third story.

The first vice-president of the club is Amiable B. Jinks, whose hair is the kind that Paderewski patterns after when cauliflowers are too dear. "Am" only wanted the sale right of aluminum traveling caps on the grounds, ten per cent. of the net profits to be returned to the fair people. But Mr. Jinks was

"turned down," to use a slang expression in vogue among bank presidents and billiard experts.



COUNT LUDWIG.

The Recording Secretary of the Deferred Hope Club is the Ex-Hon. Waxem Harde, the inventor and sole proprietor of Waxem Harde's Jag Extractor, a process of great superiority over the com-



FOXIE BAGGS.

mon Keeley cure. The Ex-Hon. wanted to show men in the act of drinking themselves to death and then being



rescued from a watery—I mean alcoholic grave by the application of the world-renowned Jag Extractor. But the directors objected on the ground that it



THE SECOND VICE-PRESIDENT.

would be infringement on the Kentucky and Milwaukee exhibits.

The corresponding secretary, the entire civilized world should not lose a moment in becoming acquainted with. He is Count Ludwig Von Holsteinberghoffer. The count came all the way over—steerage—to introduce to America's attention the virtues of his Limited Nobility Scheme. He has a very clever plan for renting out (like dress suits for the evening) titles of nobility. He has in a stock a fine assortment running from Grand Dukeships to Baronetcies. These he wanted to loan to American sovereigns during the World's Fair season, but without avail, notwithstanding the very advantageous terms he offered the Exposition authorities. His idea was to loan a visitor a title of nobility long enough to justify the insertion in the Chicago dailies notices of which this may be considered a specimen:

His Dukeness, the Marquis John Dumphy, who conducts a general store at Kenosha, Wis., was a visitor at the World's Fair grounds yesterday. His Dukeness returns to Kenosha tomorrow as his store is short a clerk.

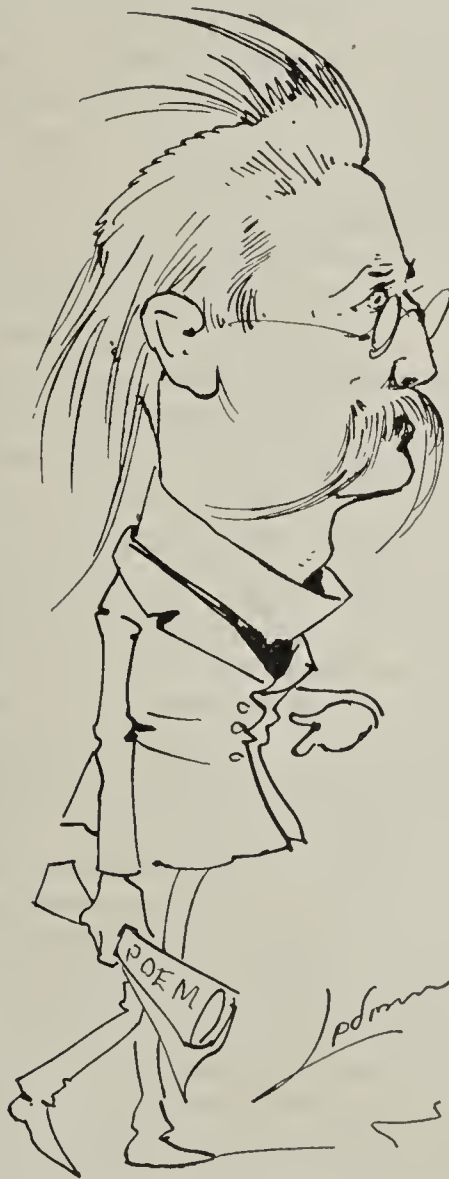
Our club treasurer Foxie Baggs who has achieved well earned notoriety as a train wrecker and has been a guest of some of our leading public institutions

on account of his being too lazy to get away. His lazy traits were the reason for our making him custodian of our funds. He wanted to show the world his latest appliances for train wrecking but the board of control of the W. C. E. gave him no encouragement.

I came near forgetting our second vice-president, who has a pack of genuine mad dogs and a treatment that excels Pasteur's. His scheme was to let his mad dogs run at large in the Fair grounds and then give treatment to those bitten, free of charge. FREE OF CHARGE, mind you, and yet the Directory cast him out.

Then there is Shorty Quill, chairman of our house committee as expert a penman as ever forged a will. He has a most excellent treatise on "How to Raise Checks Without Detection." It is in neat pamphlet form which he wished to sell on the grounds, only they wouldn't let him, although he offered the directory 25 per cent. gross.

Then there is the Librarian, Gurley Swash, a poet exiled from New York who offered \$10,000 in cash and notes (\$7.50 in cash, the balance in notes) for



GINLEY SWASH.

the title of Poet Laureate of the World's Fair, and was rejected, although all he asked beside was the exclusive right to

peddle poetry on the grounds.

But why go on with the list; does not



SHORTY QUILL.

the latin quotation in the back of the dictionary say: *res est sacra miser?*

CHARLES LEDERER.

#### A FEW WORDS FROM ZION.

As we all know there has been great strides of progress in the most honorable and ancient art of clayworking, although the brick of olden times is as hard and as good to-day as when made thousands of years ago, and a great deal harder than is burned by three-fourths of the would-be brickmakers of to-day, who glut the market with an inferior quality of brick at \$5 or \$6 per thousand. I saw 25,000,000 last year on the Puget Sound that could be bought for \$3.50 to \$4 per thousand, but now the Lyon and many other good dry press and stiff mud machine have become so near perfected that the mud man must go with poor Lo to the far off mountain fastness to grow up with the country, and the horizontal pole and pug mill along with the blind and badly crippled mule will soon be a thing of the past. The Salt Lake Pressed Brick Co., are running night and day with two Boyd's. We have lost only two days this fall on account of the weather, which is very pleasant now. "Zion" is having a steady, healthy growth and is using lots of brick.

R. BAT.

Mill Creek, Utah.



Written for the Clay-Worker.

### CONTINUOUS KILNS.

OVER a month has passed away since we met in Louisville with our fellow craftsmen, who gathered from East and West and North and South; from Maine to California, in the hospitable Kentuckian city, and I am convinced that everyone of them parted with a warm feeling of general satisfaction, not only over the "good time" we had socially, but also over the profitable amplification of general knowledge in our business, which we gathered in meeting so many able and well experienced brethren of the craft. I am also convinced that every one of us will try not to miss a single one of our future conventions.

You will remember that I was prepared to read a short paper about my favorite theme, "The Continuous Kiln." But I was too late asking for time and space, therefore I ask you again to open a little space in your valuable periodical for the following lines. You must know, my dear sir, it does a fellow good to see his articles printed in a paper like yours.

To my great satisfaction I learned that my previous papers about the same subject had met with general interest in the matter, and I feel myself under obligation to answer here a few questions which have been put to me in numerous letters inquiring about continuous kilns.

*First of all:* What is the principle of a continuous kiln?

It is a permanent structure in which to burn brick, lime, cement, or other clay goods during all seasons of the year, independent of wind and weather, without interruption, using the heat of the cooling ware to feed the fire with super-heated air; using the escaping heat from the fire to watersmoke and gradually heat up the green ware to a red hot state, thus consuming a comparatively very small amount of fuel having no loss of the ware in the kiln.

A well constructed continuous kiln, after the newest improvements, does not consume more than one ton of soft coal screenings to burn ten thousand brick, of average size, of ordinary clay, nearly to vitrification. Another advantage of the continuous kiln is the even burn of the goods, and last, but not least, the easy handling of the same, if well understood by the manager.

A second question, very often asked, and a very proper one is: Why are com-

paratively so few continuous kilns in operation in America, and why have the same in this country such a bad reputation?

In answer I must say first, it seems to be ridiculous to most of the brick-makers, when, on investigation, I claimed that in a continuous kiln one ton of soft coal screenings will burn ten thousand brick very hard. Nevertheless, this is a fact. Some of the visitors, inspecting my continuous kilns, and seeing the fireman put in each firehole only about one half to one pound of coal in intervals of twenty minutes, were laughing, and I overheard them saying to each other, "That man wants to fool us; when we are gone, he will give it to him; he will put a couple shovels of coal in each hole at a time, so as to make up." But a very much more serious fact is, that to the most unfortunate disadvantage of the clay industry, very many continuous kilns have been built by parties who never studied the main principles of the kiln, and who obtained some patents on changes of the kiln, which were not improvements, but, on the contrary, deteriorated the original Hoffman kiln so much that it was impossible to work "the improved kiln" to any advantage. Some kilns are built without the least knowledge of the principle of draft, of the relationship between size of kiln to size of flues and stack, and consequently the kiln refuses to do what is expected. Who is to blame for this? Certainly not the continuous kiln as such, but its constructor. Again some kilns, which happened to be built so, that if handled right, they could give a fairly good, if not an entirely satisfactory, result, are operated in a way that the best constructed kiln under same conditions would never turn out a merchantable brick, if any at all. The lack of knowledge of some men undertaking to build and operate continuous kilns is really astonishing sometimes, and it seems incredible how honest people dare to undertake to build and operate a plant, which, under all circumstances, costs considerable money, with scarcely any knowledge whatever about the business.

It is not only, as mentioned above, the proper construction, but also the setting and firing of the kiln, which has to be studied and mastered. The clamp kiln has the advantage of being handled by brickmakers for 4,000 years and longer. The continuous kiln is comparatively very new, but, if understood well, is ten times easier to operate and control. Nevertheless the art of handling it must be thoroughly learned.

[TO BE CONTINUED.]

### CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

### CONVENTION ECHOES.

#### One of the Taking Features of the Special Convention Number.

*Editor Clay-Worker:*

When I received the Convention Number of your paper and saw the representation of myself or, at least, what you evidently intended as such, I was disposed to think you had perpetuated a good joke. I gave the matter no further thought until letters from all parts of the country began to arrive; there have been so many of these, that I send you herewith a few extracts as an illustration of the interest a work of art has begotten in the minds of my friends.

"If you have the spirit of a man within you, the editor of that paper will soon be a subject for the undertaker. Affectionately your sister."—A. G. R.

"It is one of most striking likenesses I ever saw, and must have been taken just at the moment the Convention sat down on your Committee report."—W. A. E.

"It seems to me that you could make more money renting this picture out to some enterprising Quack Doctor who advertises a cure for skin diseases than you can making brick. This picture side by side with one taken when you were in order, with a few explanatory words in regard to the medicine used to effect the cure, would be a bonanza in the right hands."—R. B. M.

This from the DeSoto House, Savannah, Ga.

"It is awful, but I saw yesterday, a leper recently from the Sandwich Islands, that I really think looks worse, not much, but enough so that your picture suffers by comparison."—C. P. M.

"I have looked at your picture, at Gates and then at mine. Gates has that far away, spiritual look so appropriate to Louisville. Mine must have been taken at the moment when I received the news of our recent conflagration or perhaps when I first arrived in Louisville. It certainly expresses my feelings on that occasion, but *yours*—there are no words in my vocabulary with which to record



the horror that filled my soul as I gazed on its terrible delineation of all that is evil in human nature. And yet it looks like you."—W. H. A.

"The resemblance is perfect and I congratulate the artist."—C. T. D.

"I have heretofore been considered the homely member of the association. I gracefully yield the honor to you, see picture in Convention Number."—C. D. G.

"Have you had the small pox or have you a cancer eating away the lower portion of your face? If your picture in the Convention Number is a correct likeness I am thankful I was not there to see you."—J. H. C.

"You look as though you had been through a Chamber's machine."—R. P.

I have not time to make further extracts but will file away the letters as evidence in the libel suit I may begin some time in the future.

Yours for beauty,  
D. V. PURINGTON.

#### A Correction.

*Editor Clay-Worker:*

Kindly allow me a little space to correct a slight error in the convention report. My reply to Mr. McGraw should read: "The tar is not *all* deposited, but *some* goes along with the gas into the kiln, etc." I am afraid that the remarks of Mr. Davis, when commenting on my paper, will tend to mislead, and I should be sorry if that should happen. He said: "I found it was not profitable to the brick manufacturer whether he be a manufacturer of building or fire brick, to burn fuel gas in separate kilns as described in the paper." Now, I have "no ax to grind" in the matter, but in justice to your readers and myself, I must contradict Mr. Davis' assertion, and ask them to read over my synopsis of the *advantages* of fuel gas over direct feeding. They are *all* conclusions arrived at on a *separate kiln* basis, and can be substantiated. Doesn't it follow that, if as I say, the gas from seventy-five bushels of coal will do as much effective work in the kiln as one hundred bushels fed direct, or "you can use a very much inferior coal," it does not matter if the kiln be up-draft, down-draft or continuous, the saving will be the same? Any advantages that the continuous kiln has over the down-draft, in the use of fuel gas, it also has in the use of coal. I know whereof I speak, having built and operated both

kinds. One advantage that the continuous kiln has over the down-draft, or separate system, in coal firing, is the saving of skilled labor. By the use of fuel gas the separate system is, in this particular, brought up to the level of the continuous system, that remaining the same. I am afraid that Mr. Davis' quarter million capitalization scheme would, if adopted, make the brick business in its advanced stage either a most *recherche* and select profession, or condemn it to oblivion. Bro. Adams' saw-mill "chestnut" expresses my thought exactly. I guess you will be crowded this issue with "reminiscences," so I will close, hoping that I have straightened things out a little. Truly yours,

J. W. CARSON.

Brussels, Ill., Feb. 23.

#### The New York Market.

*Editor Clay-Worker:*

A few days ago your scribe was granted shore leave, and sailor-like, took a cruise around the great city, not like the Tar, who goes off soundings to see the sights, but to see what was being done in the building line. One of Jack's peculiarities is hitching up his trousers, whether from habit or necessity is a question. Your scribe had to hitch up his, to keep them out of the mud and slush. If ever a person needed faith, it was when they attempted to cross the street. There was a bottom and it looked all right, but was it? You would step off only to find that the bottom and top were separated by about six inches of slush. Under such conditions, is it any wonder that all building operations were suspended, for when slush did not prevail snow did, so that it was impossible to deliver material at the buildings. At different points on Broadway, there were some very large buildings being erected, but what I was looking for I failed to see—that was brick being used. Iron was the material that was in sight. In years past, if you had passed such buildings you would have seen quantities of brick dumped in the street. At only one place did I see any brick, and those showed the brand of J. J. J., or the initials of John J. Jova, of Roseton-on-the-Hudson sixty miles from N. Y. City. How did they get there in mid winter, with the river frozen tight? In the fall the dealers "stock" their yards with brick for winter use. They run out the tiers, say, two to three hundred long and forty or more high, thus insuring brick

for use if it is impossible to get them by water, but it often causes them to haul them a long distance.

Ten years ago, for a building the size of the one where the brick was dumped, the contract would call for Haverstraws. It is but a case of history repeating itself. Forty years ago Mud Hole brick was the choice in N. Y. market. All the clay has been exhausted there. John C. Rose located about a quarter of a mile above Mud Hole and called his settlement "Roseton." Mr. Jova's property adjoins his, and their brick, as well as many others in that section, will grade with Haverstraws. Simply on the ground taken by some of the members of your Association, by making a good brick, the material is as good as the best; but quantity not quality was the maxim with many, with far from paying results in many cases. Now quality is looked for with prices in touch with Haverstraws.

FLOTSAM.

A bill has passed the Assembly of Albany to regulate the hours of labor on brickyards in New York to ten hours per day, and no more. That is a fine state of things, introduced by Thos. Finnegan, a brickmaker. He is a "sunshine" manufacturer. If it should become a law, he will wonder "where he was at," when he has brick down, and a storm coming on after working hours, with his bill in force of no working after regular hours. The impression seems to prevail among some of our New Jersey manufacturers that the 55 hour law, which was passed last winter by the New Jersey Legislature for the benefit of the employes in factories, covers brickyards as well, and this season will see it enforced. If such should be the case, the Jersey men will have lots of time to go fishing. The hours that have prevailed, from 4.30 A. M. to 6 P. M., with an hour and a quarter for breakfast and dinner would leave twelve hours for work. Four and a half days would make the limit. Mould four days, use the next six or seven hours to get your brick in the hacks, then stop till the next Monday. Good prospects. If a ten hour basis was established, how would it work if you moulded on Friday? You would have but five hours on Saturday to get your brick up that was moulded the day before. If the weather was cloudy they would have to lay on the yard, or on Sunday pay extra to get them hacked. Ha, ha, some of your readers say, put in pallets. Yes neighbor, how about leased property, with a



lease that only runs five years, would it pay?

It looks as though the brick captains will have to tie in another reef the coming season. When a skipper is going along with as little sail as he can carry and work his vessel, he keeps casting his eye windward to see if there is any indications of an increase of wind, or if it blows so heavy that he has been compelled to anchor and have both anchors down, as he looks out of the companion way to see if she is dragging, and he sees little clouds not larger than his hand come scouting over the sky, he looks for more wind. Just so the ship brick is at present. All she can do to hold on. He is not in a happy frame of mind when "such little clouds" appear.

#### NEW YORK.

|       |                  |     |         |     |
|-------|------------------|-----|---------|-----|
| 1892. | Week ending Feb. | 5th | Permits | 48. |
| 1893. | "                | "   | "       | 36. |
| 1892. | "                | "   | 12th    | 67. |
| 1893. | "                | "   | 10th    | 33. |
| 1892. | "                | "   | 19th    | 63. |
| 1893. | "                | "   | 17th    | 47. |

#### BROOKLYN.

|       |                  |     |         |      |
|-------|------------------|-----|---------|------|
| 1892. | Week ending Feb. | 4th | Permits | 47.  |
| 1893. | "                | "   | 2nd     | 44.  |
| 1892. | "                | "   | 11th    | 72.  |
| 1893. | "                | "   | 9th     | 67.  |
| 1892. | "                | "   | 18th    | 108. |
| 1893. | "                | "   | 16th    | 52.  |

The day of improvement of the brick trade seems a far off. Rapid transit a far off, and it seems that if the company that has just been formed in New Jersey to extend the trolley system through the countries of Hudson, Bergen and Essex will prove a factor that will militate against the upper part of New York City, as it will furnish a need that the steam cars cannot; that is, a system that will reach out in the country where land is cheap and the rates of transportation will be low at short intervals; all this at the expense of the brick industry.

#### WHAT THE WIND SAYS.

The Excelsior Co., of Haverstraw, made and dried in their new tunnel dryer in January, three arches, and burned them with coal, with fair success. The clay was taken from the bottom of the Hudson River.

It is said that one of the proprietors in Haverstraw has leased one of his yards for 75 per M, a reduction of 50 per M. The same gentleman had one of his yards stand idle last year because he would not reduce his rent.

The Diamond Co., of Haverstraw, has given up its yard, as the leasers would not make a reduction. Straws are good indicators. If the Diamond

Co. thinks the rates too high, they cannot have a very bright hope of booming times for the next five years. Eighteen yards in Haverstraw on the market by expiration of leases. Two of the yards the lessees own all the improvements on them and pay 75 per M. The same property was operated under the same conditions up to 1865 for 25 per M, and brick brought as much as they have for the last three years. From 1865 to '73 it rented for 50 per M, and at that time brick brought \$16.00 per M. The present lessees do not wish to release, and have made the proposition to the landlord that they run the yard the coming season and pay 50 rent, and let that go for the improvements on their yards. Say that they make twelve million, it would be only six thousand dollars for sheds, engines and boilers and line of shafting. As there are eight machines on the two yards, six thousand dollars would not go far in putting them up. Second-hand brickyard stuff brings low figures. On the same property parties leased a four machine yard with all improvements on it, for a term of ten years, at a rental of 10 per cent. on net returns, paying for all the improvements the sum of \$39,500. At the expiration of lease they sold the fixtures for less than \$4,000. Along the Hudson, New Jersey and Long Island, there are yards for sale or looking for tenants. It would be a hard man to suit who could not find a yard, if he only has faith and the needful capital, to carry him along till the tide sets in his favor. When will it set that way?

The ship association has not been reported as yet, but the hope is strong that she has not wrecked on the "Bar" of those who wished some one else to lay still and let them mould last spring. As all the best harbors of the United States are "Bar" locked, just so all that keeps the ship brick from making a good harbor for her cargo, is the "Bar" of those who would like some one to pull their "Chestnuts out of the fire."

#### WHAT THE CAPTAINS SAY.

When you meet a captain, about the first question he will ask is, have you heard the price of brick? If you reply in the affirmative, it will drop at that, as the market might as well be in "Frisco," so far as he is concerned; he cannot get anything out of the river, and the present outlook is, that it will be the middle of March if not later before the river opens, and by that time the Hudson will be open to Haverstraw.

The first tow from there will be of 18 or more barges, and will drop the present rate of \$7.00 per M down to — Well, in less than four weeks after navigation opens, to less than a six dollar rate.

The Long Island yards would have done well with their stock if they could have worked the market, but ice has kept them away. Once in a while a cargo gets in. At present writing there is a vessel with a cargo of brick from the east end of Long Island, over one hundred miles from New York, fast in the ice, near Fort Schuyler.

#### INDICATIONS.

March 4th. Heavy snow storm in progress. No signs of navigation opening. The fall of snow will stop building, as it will be impossible to draw stuff through the streets. The yards will have lots of pumping to do this spring, as the surface water will begin to run in the clay holes as soon as a thaw begins.

Will Village Brickmaker in next number please inform A. N. T. where the kiln pile is around the shed?

A. N. OLDTIMER.

#### St. Louis News.

#### Editor Clay-Worker:

The building season is being begun with a vengeance. There is not a brickyard in St. Louis which is not sold up to its capacity, and orders are still rolling in. Prices, too, are fair, as merchantable are now held at \$6.75. The prospects for the year can be said to be extremely flattering and a strong effort will be made by all makers to maintain prices at a fair average on common brick and make them yield a profit. Everyone seems tired of making common brick as a sort of premium on ornamental, the only profit to be derived from the sale of the latter.

The prime causes of the auspicious opening of the new year are, first, the fact that extremely light stocks were carried over, owing to heavy sales last fall, and, secondly, the weather seems to have conspired to this desirable end. The past winter has been an unusually severe one and it remained cold up to the last days of February. Then it moderated and there has been nice enough weather to permit building operations ever since. This, of course, held back the demand until a proper season, and it has been uninterrupted since. However, the year is not over yet, and in spite of the favorable out-



look there are some who predict an early decline in prices.

A matter which is demanding and receiving considerable attention from the local brick, sewer pipe and terra cotta burners is the anti-smoke nuisance recently passed by the municipal assembly and signed by the Mayor. While the bill was under consideration the clayworkers were active in trying to have some saving clause introduced which would let them out, but in spite of the fact that with this important industry it is a question of "smoke or quit," the wise city fathers practically told them they could quit. Then an effort was made to secure a "stay of execution," so to speak, until some compromise could be effected. Six years were asked, but the representative of the brick-makers were laughed at. This was finally argued down to two years, which was the very shortest time, the brick-makers said, in which they could make any changes. The committee from the assembly considered this a few moments and then told the brick people they could have—six months! The bill was drawn up and became an ordinance containing this provision. As the ordinance went into effect March 1st, this leaves until September 1st for a definite line of action to be agreed upon.

The first attack under the new ordinance is expected to be made on the Illinois Supply & Construction Co., on account of their yard on North Broadway. A citizen in the neighborhood has long been violent in his opposition to the yard and as he is wealthy and determined it is probable he will be prompt to act when the six months are up. A movement is now under way to make a combined fight against the bill, and it is probable that its own injustice will kill it, at least as applied to brick-makers.

The Hydraulic Press Brick Company is buying a new process of enameling brick, by which they hope to greatly lessen the expense. The great number of brick which were destroyed in enameling has always made this branch of the business a losing one, in spite of the fact that prices have been so high as to make the brick practically unmarketable except for unusually fine work.

As the frost comes out of the ground the sewer pipe manufacturers are taking a renewed interest in the world, especially that part of it in need of their wares. The number of inquiries received would indicate that the season

will be unusually brisk and all of the local manufacturers are preparing for a greatly increased trade.

TERRA COTTA.

#### Ohio Valley News.

*Editor Clay-Worker:*

The brick and clay works in this neighborhood are running steadily; mostly stocking their material preparatory to supply the demand in the spring.

The Forest City Sewer Pipe Works of Toronto, Ohio, has resumed, after a lengthy shut down for repairs, much new machinery has been added and their capacity largely increased.

The steamer Bennett left New Cumberland, W. Va., on Feb. 18th with the largest tow of brick and sewer pipe for southern markets, ever having left that port.

Many of the clay manufacturers in this region consider it more economical to let the mining of their clay out by contract. The lucky bidder agreeing to supply a specified tonnage and keep the mine in satisfactory condition.

On February 21st a meeting of the prominent sewer pipe manufacturers was held in Toronto; evidently chasing the same old rainbow; better and uniform prices, which are to be strictly adhered to. The idea of consolidation has not been entirely abandoned by some.

Articles of agreement against this price cutting were presented by the executive committee and are being signed by the various firms. One manufacturer who attended the meeting was heard to say, "Pipe men meet and agree unanimously on their honor to strictly observe a given scale of prices, and then on the road home each man studies up a scheme to get around the agreement." We feel sure he is mistaken.

February 27th the boiler of the Enterprise Brick Works, operated by the Minor Fire Clay Co., at Empire, Ohio, exploded, fatally injuring two persons, one a boy of sixteen and another a man of 30; neither were employees but were friends of the engineer who dropped in to have a friendly chat. He asked them to look after the boiler, while he went to the village on some business, during his absence the accident occurred.

The works were very badly shattered and the boiler blown into a thousand pieces. New boilers have been ordered and repairs being made, and the works will shortly be turning out pavers.

On February 23rd the stockholders of the Clifton Brick Works at New Cum-

berland, W. Va., held their final meeting closing up all matters relative to the sale of their immense plant to the John Porter Co.

A meeting of the fire and paving brick manufacturers was held March 1st, at Toronto, Ohio. The object being to effect a combination for their betterment and embrace all the smaller corporations in order to compete successfully against some of the large companies who are monopolizing the business.

The Jno. Porter Co., of New Cumberland, W. Va., reduced the wages of the hands employed in their various brick works from \$1.35 to \$1.20, and 700 men on March 1st, went out on a strike. The management have asked for police protection, as the men threaten violence, and some lively happenings will no doubt occur in that quiet old river town.

Steubenville, O.

BUCKEYE.

#### Philadelphia News.

*Editor Clay-Worker:*

The extreme bad weather has delayed building operations until the present time. Owners and builders, however are taking advantage of the present change in the weather and are pushing small work. All sorts of repairs made necessary by the hard winter are being undertaken, and a good quantity of new work is intermingled. The dwelling builders are preparing for big work, but are holding back the actual commencement of operations until later in the month. There has been quite a number of large operations announced to begin as soon as the weather is suitable for such work. There will also be quite an active demand for rural residences, and it is thought the number to be erected will more than equal that of last year. The proposed extension of old roads and the building of new roads to be operated under the trolley system has started land speculators into increasing activity, and in consequence of which; new operations may be looked for in that direction.

Stocks of brick on hand, while not large, are quite sufficient for the early spring work. Prices have been very low on all grades of brick, and if an increased demand should spring up it will warrant an advance of a dollar or two a thousand, especially on press brick, which are now quoted at \$18 per M.

In fact an advance is looked for in some of the lower grades. Hard brick seems to be in better demand than any of the other grades, to be used for sewer



purposes, as they are required to be extra hard in order to pass inspection.

The Sub-Committee of Councils Highway Committee, have agreed to parcel out the paving of the city under the direction of Director Windrim and the Chief Commissioner of Highways, for which \$300,000 has been set apart out of this year's appropriation. This paving is independent of Broad Street. It is understood that vitrified brick will be used for the small thoroughfares. There seems to be a disposition abroad among the city authorities to condemn West Virginia brick in the interest of vulcanite paving. It is claimed that this class of brick has not withstood the test. If this is the case it is the fault of contractors, who have substituted ordinary house brick in order to save expenses. The first streets laid, which are in the neighborhood of the 49th St. Station, and where the travel is more than ordinarily heavy, has withstood the test remarkably well. So it looks as though the over zealous Director of Public Works has been imposed upon by somebody.

ANON.

#### The Sunny South.

*Editor Clay-Worker:*

Drifting down along the sunlit banks of the "Father of Waters," I gaze out on the dream of my childhood, until now never seen, never realized—the old southern mansion house. It stands broad guaged and many columned, speaking abundantly of hospitality, comfort and good cheer, shaded by live oak and magnolia and surrounded by its clustering village of cabins, all glistening white like a snowy swan and her brood nestling in a park. Along in front stretches the protecting bank of the levee, while stretched back from the river lie the hundreds of acres of fertile sugar land well kept and tended back and forth across which the jolly brigade of workmen drive their plows.

I had always looked for this in the South and never found it until I almost doubted whether I should really ever find it, but now I saw it over and over again, along the banks of the Mississippi, as we approached New Orleans from the North. But if this was new to me, what of the sudden plunge into this strange city, so unlike anything else in the country, making me think I had suddenly dropped in a foreign country and then bringing me up suddenly against something very much "United States." Meeting friends who smilingly ask, "What

are you doing down here?" Suddenly recalling the suspiciousness of the date, I come directly to the front and state that I came to see the prize fight, which proves to be the only unexpected thing I could do, and disarms and places them on the defensive.

Organizing a party to inspect the town, we decide to take a ride, and it being my treat we go on a street car, propelled by a sad, weary and dejected mule whose attention is so wholly occupied in trying to skate across the smooth, slippery and uneven pavement, that he has no time left to pay attention to the efforts of the driver who, apparently, draws a salary for working a big whip in an unending effort to find some spot on the mule that has some feeling left. The mule don't pay any attention, he hasn't time, he don't realize that the man is there for his benefit; he is busy, as I said, with the pavement, and the other comes along anyway, just as the car does. These streets were paved, I learn, with stones brought over from France as ballast. All the edges and corners have been knocked off and worn down by the various successive generations of mules, or, possibly, by these same mules, as their appearance indicates that they may have personally attended to it for some generations. These stones being of uneven size and shape, all the edges and corners being broken off and worn way down and whole surface being polished very smooth by the wear, the mule's foot never stops where it strikes but slides into the nearest crevice. It is possible that someone may have invented a worse pavement than this, but if such is the case I am of the opinion that they have suppressed and hidden it.

The driver, tiring of his useless exertion, and, recognizing us as strangers, acts the guide, and points out various objects of interest, and all goes well, until we approach the slender shaft and graceful figure, which the driver points out as "The Lee Monument."

Then Smiththing looking absolutely blank and empty, says, calmly, "What Lee?"

The driver bridles some and shouts, "Robert E. Lee!" Smiththing responds, "Whosehe?" at which Jonesling comes to the rescue nobly by saying, "Oh, some local politician; probably Mayor or something."

I thought I had seen examples of scorn, but I never had seen the straight goods before. The look of that driver

was enough to wither a wooden Indian while his mouth looked as though quinine would feel sweet in it, he applied himself to the mule as a safety valve, in a manner that actually aroused that long suffering animal. From time to time he would look back at us, turn back suddenly, say something under his breath, and "lam" the mule. We very soon got off, satisfied that walking was safer.

This being with me essentially a business trip, I only turned to two pleasures, one of which was the filling of my anatomy with the most delicious oysters at the very minimum cost, and the other, that which I regard as being, to all of us, at the same time a duty and pleasure—that is, looking in on the resident members of the craft. This resulted, in this case, in meeting those whole-souled and generous old friends, J. A. and A. S. Blaffer, courteous and full of hospitality as ever. I noted two things particularly, on their yard, one, that they were entirely out of brick, such has been the demand with them, and the other was even more of a novelty. I have always heard of those inexhaustible supplies of clay but had never seen such before. Here a bend of the great river leaves an eddy, which, in high water, fills in the clay in front of their yard; when the waters recede this is dug out, piled high on the bank, and the next high water fills it in again, and so, year after year, over and over again.

Speaking of calling on the resident brothers, I want to reiterate that I believe in it, and always do it, and shall so continue—unless headed off. Not only this, but I want to urge you all to do it. I always find a hearty greeting, such as I had recently from the Memphis brothers, and, particularly, from our staunch old friend, John Cubbins, whom I found reading up the Convention number of the CLAY-WORKER, and deploring that he could not have been present. And this leads me to say one thing further, and that is, that I find some of the brethren have been skipping me in their visits to Chicago, which is one thing I won't stand, and so I say that, even though there are announcements of two sets of headquarters in Chicago already out, I want you to remember that 605 Manhattan Building has been open to visiting brothers as headquarters for years, and will so remain as long as I remain, and I trust none will skip me hereafter.

Sincerely Yours,

WM. D. GATES.



## Wants to Hear More From Texas.

*Editor Clay-Worker:*

It was with the greatest pleasure I opened the current number of the CLAY-WORKER, to find so much of interest appertaining to clayworking industry. For years past this industry has been very interesting to me, although, for several reasons, I strayed from the fold for a long time. When one glances over the proceedings of the N. B. M. A. it tends to elevate one's ideas of being a brickmaker, and to read the experiences of different ones, makes one feel like being in an old-fashioned Methodist love feast.

The writer's desire was to be one among the number of visitors at Louisville, but owing to the burning of our first kiln of dry press brick coming just at that time, business had to be looked to instead of pleasure.

I have read with great interest the article on "Dry Press Brick," by "the gentleman from Texas." I should like to ask him what *kind* of up draft kilns he uses? and whether in watersmoking he feels safe in pushing the fires very fast before all the watersmoke has disappeared?

In burning our first kiln we have been astonished at the vast amount of sulphur arising from the kiln. The kiln is an old Wingard and we use soft coke instead of wood for watersmoking. Before this is mailed I expect to be able to tell you results of the first effort in the dry press line, in this "neck o' woods."

The building trade has been almost stagnated in this city, owing to too much of the "beautiful."

The city school authorities have contracted to erect additions to two of the public school buildings during the coming season. This will create a demand for nearly a million of brick, and I suppose, cause some hustling among the various yards for the job. It is to be sincerely hoped there will be no slashing of prices, as \$7 per M. can be had just as well as \$6. Erie needs an association of brickmakers, and one that will keep a stiff upper lip, and a fair price can be realized for every brick produced. We understand contractors are cutting each other at a great rate; this should not be in as thriving a city as this.

In looking over the photos in the Convention number of the CLAY-WORKER, one is astonished at the number of high foreheads, and what a fine looking lot of fellows the brickmakers are, to be sure. No doubt the handsome southern ladies

we hear so much about, away up here in the North, were much pleased to find so many handsome men in their city at one time. You must not understand me to say that none of the Southern gentlemen, as well as the ladies, are handsome, for it stands to reason that if the female portion of the population is handsome, they should impart a *portion* of their charms to their sons as well as daughters.

Our neighbor, H. C. Dunn, returned from the Convention safely, and apparently in good health, and, by the way, he very kindly remembered us while with you in Louisville, with a copy of a Louisville paper containing the first days proceedings, etc., for which our thanks are due him.

I see many of your members in discussing the mistakes of brickmakers, complain of machinery men recommending too small power. Just the ground I spoke of a month or so ago. Alsip of Chicago is pretty level-headed upon the subject. Although we had to double our engine power we have none too much, and if we increase our machinery, out this new engine will have to go, and a larger one will have to replace it.

By the way, I should like to ask the fraternity if a screen can be built that will not require the services of an able bodied boy to keep clean. This is one nuisance of a dry press plant, and no mistake.

\* \* \* \* \*

Well, since penning the first of this (interesting) epistle, we have met the enemy and he is ours, that is to say, the first kiln of dry press brick ever made in this city has been opened and "they all" say "By jiminey, aint they beauties."

If my letter is not already too long, perhaps a short sketch of this undertaking might interest some of your many readers. Upon the spot this present plant stands, and many years before the writer ever thought of making his living out of burned clay, the material on the lake shore was examined by experts and claimed to be wanting in the qualities necessary to making a good brick, but afterwards a yard was established, first, I believe, with a horse-power machine, as I see an old one still in the junk pile, then the various advances followed. Steam power took the place of horse flesh, a Martin, then a Potts' machine, a steam dryer, which was a failure, then a hot air blast that cost more than it was worth to drive it night

and day, the brick that were run out on an open yard actually drying in less time than those in the dryer. In the mean time many million brick were made but the second generation of owners were more progressive even than the first. Some fellow came around with the dry press bee in his ear, result: many talks, experiments, etc. Towards the close of last season's work, a gentleman came to make measurements for the dry press, then a shut down of all outside work and a tearing up of old buildings. But what is the use, all those who have been there before, know of the vexatious delays, appertaining as Mr. Webster (not Daniel nor the man of dictionary fame) puts it, "the transition from the old to the new."

Finally, after making the first kiln, at an endless delay from one cause or another,—every mother's son of us being green at the dry press business—the brick were set in the open kiln during the coldest days we have had this winter, and some of them very damp at that—many visitors prophesying a lot of frozen brick. Indeed, we felt somewhat anxious upon this score ourselves, but went on the theory that what others do we *might* do also. Then on a Monday morning, early, the fires were started. After watersmoking a whole week and a couple of days extra, and while the watersmoke was still rolling out in clouds, the soft coal was turned on. 15 days is quite a while to burn a kiln of brick, especially when a fellow dislikes to sit up nights. Feeling that we had fire enough to do the business, we closed the kiln. And then what a wait until it would be cool enough to look at. After a fellow spends many thousands of dollars on a plant that may after all be a decided failure, it tends to make one feel that the reward should be *very* great, if he is successful. If a failure, of course they would all say, (at least the knowing ones,) "I told you brick could not be made out of stone."

This city should be very proud of the success of this undertaking as the results are up to all expectations, and, perhaps, your correspondent can in the future tell you that an entirely new era will have opened up in the clay industry in this city.

But, methinks, if you see fit to publish even the half of this, those who will be interested enough to read it, will say: "What a blower." So with regards to all the fraternity I shall stop. W. R. O.

Erie, Pa., March 4, 1893.



## Preparing for Spring Work.

*Editor Clay-Worker:*

This is the season when brickmakers are laying plans for next season's campaign, and perfecting arrangements for an early start. The first move with the progressive brickmaker was to attend the annual convention at Louisville, Ky. He went to learn something regarding the business, that could only be learned by personal contact and acquaintance with those who, like himself, were directly interested in that particular line. He picked up much that was new and valuable, and learned that men who are so intensely interested in their business as are brickmakers, are sometimes very careless, and drop valuable hints, and never stop to pick them up. They throw out and scatter broadcast ideas and suggestions that seem to be valueless to themselves, which they allow any one to carry away with him if he will only take the trouble.

And as every one seemed to be good natured and happy, and wanted everybody to understand that this was an experience meeting, it was an easy matter for a man, who went prepared, to come home just "bulging with knowledge."

Then, after squaring accounts with the old year, renews his subscription to *THE CLAY-WORKER*, which includes a copy for his foreman or superintendent, and purchasing what books he can find on brickmaking, he decides to put in the time while the blizzards are howling around the clay pit and brickyard, in reading up on the knotty points in the business. Some of our craftsmen will remark on this and say, "We have no use for a brickmaker who gets his knowledge of the business out of books and magazines."

I wish to remind this class that the man who goes groping his way through life trying to do business without consulting the authorities and recognized leaders, will come to grief most certainly. The doctor, lawyer, merchant, banker, teacher, or any and all of the trades and professions have had the journals and publications as aids, and, in fact, whole libraries at their disposal to help them along.

But it is only within the past decade that the brickmaker had anything to turn to for assistance or advice.

The writer has a file of *THE CLAY-WORKER*, which dates from September, 1885, to the present time, and it is interesting to note the improvement made

in the journal in that time, and compare it with the January number of 1893, with its thirty-five pages of reading matter and illustrations, and one hundred and fourteen pages complete, including the advertising. Or the Convention number, with its full and complete report of the national meeting at Louisville, besides its numerous pages of valuable reading on matters of interest to the craft.

Then there is its album of portraits that is worth much more than the price asked for the journal. Twenty-five of the eminent personages and bright lights in brick lore are represented in a single issue.

To secure our friend's pictures the artist would charge us not less than \$3 per dozen. We have at this rate twelve hundred and fifty dollars worth of portraits in a year's subscription. And what a rush of memories comes over us as we look over these pictured pages, and into those honest faces.

The brickmaker who pursues this plan is the gainer in many ways. He needs the short respite from business, and the few days of enforced suspension of carking care comes to him as a benison. Then there is the added enjoyment of a renewed acquaintance with his family.

But spring creeps on apace, and he must begin work early. A drive out to the yard during the rainy season in March will show him several things that need attention. A brickyard on a wet or cold winter day is not a cheerful place, but it will pay to take that time to inspect the works, and look them over carefully.

Provided with his memorandum book and pencil, he notes that there are pools of water standing on the yard and over the hacking ground, or among the racks. He drives a stake to mark the center of the pool and the water level, and makes a record to fill up low places. Another can be drained by a slight grade or ditch. The clay bank shows up now in water colors, and a plan of drainage is suggested. Here at one point the water from the eaves must be conducted away from the buildings. There is a leak in the roof of the engine house, another over the dryer floor. The sheds over the kiln furnaces need attention and drainage in front of them. He determines on paving this place with a lot of refuse brick and bats that have accumulated and are not salable. These bricks make an excellent pave-

ment if pains are taken, and carefully laid setting them on edge, and discarding the soft or salmons.

About this time the proprietor will receive a visit from a few of his former employees. Good fellows they are; hard workers, sober, industrious, and the winter seems long to them. They want to get to work, and only dropped in to see how you are, or to learn what your plans are for next spring, or when you propose starting up. They want to know if there is going to be any change, etc. They want to work for you. And haven't you some odd job you want cleared up?

There is probably some job that you promised should be attended to during the winter or idle time, and they casually hint that you should or could attend to it now. They are needing the wages, and don't feel right, unless they are doing something.

Now make a bargain with these men and gain their esteem by giving them substantial aid, while you do yourself a good service.

Carts and harness, trucks and barrows should be overhauled and put in good repair. Your handy man can do this overhauling on pleasant days, when the weather is moderate, and by making part time during short days or cold mornings. Help to ease him over a rough place in his domestic concerns. If the water tank and supply pipes need repairs, now is the best time to provide for that by putting them in properly, or repairing leaking valves and bursted pipes.

Have the engine and machinery put in good order, shafting lined up, journals babbited, buildings braced, if needed, and everything put in good shape for a steady, continuous run. See to the furnace lining and bridge wall under your boiler, for there may be a great waste of fuel in making steam, by a low bridge wall or too much space at the sides or in front for cold air to circulate and scatter your heat.

The approaches and roadways to the brickyard need attention. The coal ashes and brick bats can be disposed of by paving and filling up the holes and ruts. If you wait until after work has started next spring, a slight affair may cause a hitch or stop in the work that will cost dollars then, that can be remedied now with an outlay costing dimes.

This, too, with brickmakers whose output is not large, and who use wood for fuel in burning, is the time of year to



make contracts for the season's fuel. Wood can usually be had cheaper in winter. There are plenty of men who can be hired as choppers at lower wages in winter, than during the summer, when other work is pressing and wages higher.

Coal can be bought cheaper in summer, because of the less amount needed to supply the market, which becomes overstocked and the price falls.

Where the output of the yard is small the clay should be thrown up in ridges, to let the frost and rain have free action, to assist in pulverizing it. When the weather is at all favorable, clay can be hauled in and piled up near the machine or put in stock for emergencies next spring, in case of wet days or floods, which inundate the clay bank.

J. A. REEP.

#### Roofing Tiles.

*Editor Clay-Worker:*

The roofing tile having been successfully made, the thorough burning of them is a matter of first and last importance. A soft brick may "pass muster" in a sheltered part of a wall, but there is no place on a roof where time and the elements will not find out a defective roofing tile.

The selection of a good kiln is a serious consideration. Those in quest of such a thing will find no lack of variety to choose from in the advertising columns of THE CLAY-WORKER. The up and down draft kiln seems to offer advantages, as the tile can be set somewhat higher with less risk of damage to the lower courses. I have received lately many circulars of continuous kilns, and am very much struck with the advantages of the system on which they work. The idea of a kiln which will utilize every heat unit is very attractive, and I think it not improbable that manufacturers situated in localities where competition is strongest will shortly be forced largely to adopt this method of burning.

The writer, however, unfortunately has no practical experience of any of these improved forms of kiln. There are many serious obstacles in the way of undertaking anything of this kind in Mexico. First, the exceedingly excessive cost of the necessary material; also of the bringing and employing of competent men, etc.; and second, the uncertainty of being able to find men to operate it successfully when completed.

We will, therefore, confine ourselves

to the consideration of the burning of roofing tile in the old fashioned up-draft kiln, with permanent walls and open top, which, a matter of some surprise to me, is still so largely used, even in countries where every facility is offered for the substitution of better methods of burning.

The idea largely prevails that roofing tile and, indeed, all kinds of fancy ware can, if given the best place in the kiln, be successfully burned in common clamps in conjunction with brick. This is most certainly a great mistake. The exact point of temperature at which the thin, pressed roofing tile is perfectly burned is inadequate for the brick. More especially is this the case where the tile occupies the best portion of the kiln. Also the long time required to watersmoke, and the excessive moisture which has to be driven off the brick, through the roofing tile, are direct and most serious injuries to this article. Only as many brick as are required to protect the tile from the first flash of the fire, should be admitted into a kiln of roofing tile. This knowledge has been forced into the writer's head through his breeches pockets, when, after days and nights spent in personally superintending the burning of roofing tile, large quantities (sometimes 15 to 20 per cent.) would come out checked and cracked in spite of every care and precaution. Another great trouble in a clamp kiln, where the air is admitted at the doors, directly to the ware, is the difficulty in getting the heads properly burned. Apparently the only way to accomplish this is to burn the heads separately, which is altogether out of the question in anything like successful burning.

To overcome these difficulties it is necessary to build permanent arches on which to set the tile, and to admit the air otherwise than through the kiln doors.

I therefore constructed a small kiln, with permanent fire brick benches and arches. Each fire space between the benches is extended, furnace fashion, two feet beyond the wall of the kiln, and is furnished with means of admitting air inside the kiln by means of openings left at each side in the benches, running the entire length of the kiln, and divided from the fire by the thickness of one brick. These openings are four inches by nine high and covered by headers, between which spaces of from 1½ inches, from within a

yard of the heads of the kiln, to 2½ inches at center are left, through which the air enters the kiln.

The great advantage of this is that hot air enters the center, driving the heat evenly to every part of the kiln.

I have only burned this kiln six times, but the result has been, in every instance, most completely satisfactory. The accounts of these six burns show an average of 95 per cent. first class tile, less than 5 per cent. checked and cracked, and, best of all, absolutely no soft tile. A wheelbarrow half full was sufficient to remove the broken ware after each burn.

This kiln is very small, holding only about 6,000 tile, and was made principally for an experiment, but I propose building larger next month. The benches are twenty-four inches wide and sixty inches to top of arch, and fire spaces 16 inches wide. The air channels are 4x9 inches and fitted with hinged wooden doors, by which the exact amount of air required can be regulated. Of course these dimensions can be altered as experience proves advisable. The arches are the breadth of a fire brick (9 inches), with a space between each arch of seven inches, so that two eight-inch brick just fill from center to center of arches. I set three courses of brick over the arches, the first at right angles with the arch and set closest where the heat is strongest, the other two herring bone; then the tile, as before described, platted with one layer of green brick on flat, 1½ inches apart, and hard burned flooring tile close.

I intend also to make kilns of this pattern to burn brick, the permanent arches only high enough to form the air drafts, and finished with green brick in the usual way.

I know the saving of fuel is very considerable, but cannot say exactly how much. As the kiln is very small, it is impossible to form a correct estimate.

R. M. GREER.

Tuxpam, Mexico, Feb. 23.

TO BE CONTINUED.

P. S.—Since writing previous letter regarding the pressing of roofing tile, I have received a photo from Mr. D. J. C. Arnold of a press which appears to me to possess very marked advantages for the manufacture of this article. One feature of it is an annular revolving table, on which the ware is fed to the press at one side of the die and removed at the other. This gives the feeder time to get a little ahead and does not crowd him so much, one of the greatest troubles in fast repressing. Also the strain is taken by steel rods instead of a solid casting, which may have a weak spot, and is very much heavier in proportion to the strength developed.

I know nothing of the practical working of this press, but I think its merits well worth inquiring into by all intending manufacturers of roofing tile.

R. M. G.



## THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, MARCH 15, 1893.

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ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL & CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

### COMBINATION.

Individual effort is the most stimulating. A man likes to conduct his own business in his own way. The idea of combinations, pools, trusts and large business schemes of that kind is repugnant to all who have originality and genius for affairs. One who is running a clayworking establishment of the better class, does not like to believe that there is probability of his having to merge his establishment in combination with the apparatus of others. As said before, individual effort is more stimulating, and is altogether more human. Nevertheless, the movement of affairs is in the other direction. The tendency is towards combination. However much we may dislike the idea, however repugnant it may be to us, however much we may think of the satisfaction of working out our own salvation, the movement of affairs is against us. There has not been a great deal of combination among those engaged in the manufacture of brick. That does not come so long as such manufacture is profitable and fairly satisfactory to individual workers. However, it does come during periods of over production. Outside capital looks into the business of clayworking, sees or thinks it is profitable, rushes into it and in time there is more brick manufactured, than is actually necessary. Then will come vigorous efforts, looking to local organiza-

tion. The tendency among the workers of clay at this time, is to reduce the cost of production through mechanical means. This has been the history in other lines of business involving mechanical operations. After that comes the means looking to the reduction of the cost of doing business. We will find in the future, that the profits from working clay will be developed from the waste of the present time. This is the history of cotton and woolen milling, of flour milling and all advanced manufactures—and it will follow in clayworking, at least in a degree.

### READ OUR ADVERTISING COLUMNS.

We take it for granted that American clayworkers generally read carefully the matter prepared for them each month and arranged in the most attractive manner possible. Our reading columns contain the maturest thoughts of the best informed brickmakers in the country, but no one engaged in brickmaking can afford to neglect our advertising columns. These not only tell you what you want but where to get it. The wise merchant so displays his goods that customers coming in see what they were not looking for, and at once seeing its adaptability to a felt want, they buy and both they and the seller are the gainer. Just so the owner of a good thing in brick-making displays his goods. It is not possible for him to put them on shelves, in the sight of those who need them, hardly knowing what they do need, as the merchant may, but he can display them in our advertising columns so photographed by cuts and descriptions that the *living* machine is before you. Read the advertisements first to see if there is not something that competitors in business have that you need, and have not, and that you may know where to find it, being reasonably sure that every good thing is advertised in the CLAY-WORKER.

### COLORED BRICK WORK.

During the last few months the CLAY-WORKER has devoted not a little attention to the question of color in brick work. We have gone to the expense of procuring from abroad, the best work which has been done in color brick decoration. The French, who are phenomenally artistic in anything they touch, who never do a bad thing from an artistic standpoint, have done much beautiful work with colored

brick. It has been the province of the CLAY-WORKER to reproduce some of the best examples of their work in this line. We find that these suggestions are being followed up. Many manufacturers are now advertising that they will furnish any color or any shade of brick demanded by architects for buildings which they have in hand. We heard it said at the recent National Convention that the result of undertaking to do this is gray hairs, much trouble, great anxiety. This is natural; it always follows. Those who do a new thing; those who depart from the usual lines, are usually met with anxiety, antagonism and trouble. While the individual suffers, the public is benefitted. In the end comes success. While in times past it has taken two or three hundred years to develop results in color in connection with claywork, two or three years in America in this fast moving age, which has the resources of centuries back of it, are sufficient to justify large investment in this line. Tribulation and a silvered crown may be the portion of those who pioneer the work, but when the public know and appreciate their work a rich reward is certain.

### HOLLOW BRICK.

This material is now coming very largely into use in connection not alone with the better class of building work, partitions and that sort of construction, but for frame house foundations, cellar walls, and like structures. Its merit is apparent to any one who will give this material due consideration. Its strength is unquestioned as in the nature of the material out of which it is made, any form conducive to strength may be added to it. Being hollow, it is dry, and vitrified, it is clean. Thus, we have an ideal material, not alone for the better class of structures named, but for frame house foundations, and any objection which may be made for a brick foundation for a frame house, is done away with by the use of hollow brick.

In some sections where it is very damp, the cellar is not as dry on account of the use of brick, as it would be were the foundation made of stone of an impervious character. To be sure brick can be made which are absolutely impervious, but frequently they are not. The hollow brick or building blocks, as they are called, meets this requirement. We have mentioned be-



fore, in the columns of this journal, the advantages which are to be derived from building blocks, how they are to be carried into artistic forms, and structures of all kinds to be built from them. We illustrated some months ago, by photographs and drawings, some well known French structures which were made of stone, and showed that from the forms of the stones and their sizes, that the methods considered were much more readily adaptable to terra cotta or building block construction than to the stone. We hope to see in America, the realization of the acme of clay building, and we expect to see it come through the use of hollow brick and terra cotta used exclusively for the construction of such parts of the building as is naturally and properly suggested through the practical requirements of the structure. We expect to see building blocks made for fronts and the decorative material supplied in a way that good design may be selected from stock and set up in distant parts of the country or in places removed from the place of manufacture, in a way that will give not only a good building, but one which is a pleasure to look upon. The building block industry is in its infancy. In combination with the material not known as ornamental brick, and of all this brick, vitrified or glazed, we will see the highest class of building through the means of skillfully handled clay. It is interesting to see the encroachments of clay upon other building material.

#### SECOND-HAND MACHINERY.

Said one having to do with the sale of second-hand machinery: "The purchasers of this class of goods pay more for it quite frequently than those who buy new machinery. I have been connected with mills, factories and other establishments which make changes in their plants and for one cause or another throw out a certain amount of machinery every year. Because of the ready sale which it has, they do not hesitate very long about making changes. If something better appears, we can count on getting a fair value for our machinery, and for that reason we do not hesitate to discard anything which is not wholly satisfactory."

The tendency to buy something cheap leads, sometimes, to the purchase of second-hand machinery. There is

not much sense in this sort thing. There is frequently good reason why machinery is on sale as a refuse product. Generally, it is because it does not pay to operate it, or because those who have operated it recognize that there is something better.

In the case of a brick machine or other part of a brick plant thrown on the market as a second-hand product, it may be assured that there is very good commercial reasons why such a sale is made. Not that there is always justice in throwing out a machine, but there are frequently good reasons for displacing expensive machinery. The owners judge, rightly or otherwise, that something else is better. There is no guarantee, there is no integrity back of a second-hand purchase. You see what it is, you buy it on your judgement, and you pay its price. It is sufficient to say that successful brickmakers, successful clayworkers, and business men, generally, are not large purchasers of second-hand goods. They buy the best that the market affords, buy it new and under specific conditions.

#### ALABAMA BRICKMAKERS MEET AND ORGANIZE A STATE ASSOCIATION.

Quite a large number of brick manufacturers met last night at the office of the Coaldale Brick and Tile Company, and organized the Alabama Brick Exchange. This is not a combine to extort exorbitant prices from builders, but a mutual benefit and protective association.

Capt. C. T. Hardeman was made chairman of the meeting, and Mr. John W. Sibley secretary.

It was moved and unanimously adopted that the association be called the Alabama Brick Exchange. All brick manufacturers are eligible for membership.

The chairman appointed a committee on by-laws and constitution, consisting of J. C. Kyle, Z. T. Mosely, J. V. Glass and John W. Sibley, who will report at the next meeting, which will take place Tuesday of next week. Time and place will be given later.

The second of the series of papers by Jas. Taylor, entitled "Grotesque, Finials," was delayed en transit and reached us too late for insertion in this issue. It will appear in our April number. We also have some special illustrations for that issue that will prove interesting.

#### EDITORIAL NOTES and CLIPPINGS.

Sedalia, Mo., is said to be a good point for the establishment of brick works.

North Galveston, Texas, has an abundant supply of good brick clay.

A large brick works will be established at Hamburg, Pa. B. F. Morett, of Reading, Pa., is interested.

Gardner & Marcy will operate the brickyard at South Amherst, Mass., recently run by C. L. Alexander & Co.

Messrs. Yates & Pike, North Cambridge, Mass., have sold their kiln to the Parmenter Pottery Co., East Brookfield, Mass.

The Old Bridge (N. J.) Enamelled Brick Co., has been incorporated by Wm. E. Rivers and others. Capital, \$250,000.

Several sheds belonging to the Summitville (Ind.) Brick Works were destroyed by fire. Loss partly covered by insurance.

H. M. Hadley & E. J. Dimmick of Salt Lake City, Utah, will erect works for the manufacture of terra cotta and vitrified brick.

The J. M. Blair Brick Co., Cincinnati, are going to put up one of the "Perfect" continuous kilns advertised on page 364 of this issue.

The West End Brick Co., Roanoke, Va., has been incorporated by W. H. Pinsley and A. B. Hammond. Capital stock, \$10,000.

The Jamestown Shale Paving Brick Co., Jamestown, N. Y., has been organized, and works valued at \$60,000 will be erected at once.

L. K. Davis, of Springfield, Ill., and others, have organized the Farmersville Tile and Brick Co., and will erect works near Morrisonville.

John J. Parker, for many years a prominent brick manufacturer at West Chester, Pa., died at his home in West Goshen, Pa., Feb. 26th.

Messrs. J. W. Penfield & Son make a new departure in their ad. pages this month that will doubtless be admired by many of our readers.

The Canton Brick Co., Canton, Ohio, has just purchased a complete outfit of machinery from The Frey-Sheckler Co., Bucyrus, Ohio, which consists of the following: No. 1 Bucyrus Giant Brick



Machine, Wellsville side cut table, tailings crusher, and one double die steam power repressing machine.

The Ludowici Roofing Tile Co., Chicago, has been incorporated by Henry B. Skeelee, Harris Pomeroy and C. W. Allen. Capital, \$40,000.

Brush & Schmidt, Buffalo, N. Y., have purchased 109 acres of land at Jewettsville, with a view of enlarging their brick manufacturing industry.

The Elmira (N. Y.) Brick Co. was incorporated with a capital stock of \$12,000. The directors are Justus H. Harris, C. B. Losie and A. T. Losie.

A boiler explosion at the brick works of Porter & Minor at Toronto, Ohio, resulted in the death of two men, and the wrecking of a portion of the works.

The works of the Kirkham Art Tile Co., at Barbertown, Ohio, were completely destroyed by fire March 6th. Loss \$200,000, with an insurance of \$140,700.

Robert Unzicker has sold the Peru (Ind.) Tile Works to Messrs. S. Lindemeyer and Joseph and Peter Trompeter; who will continue the operation of the works.

The Grand City Brick, Tile and Terra Cotta Co. has been incorporated at Chicago, with a capital stock of \$100,000. Incorporators are Isaac T. Dyer, B. Boss and Charles D. Hyndman.

The Hocking Clay Manufacturing Co., Logan, Ohio, has just contracted with The Frey-Sheckler Co., Bucyrus, Ohio, for one of their double die, steam power repressing machines.

The Smith & Schwartz Brick Co., Baltimore, Md., has been incorporated by N. M. Smith, Wm. Schwartz, Edward E. Smith, Harry A. Remley and John R. Smith, with a capital stock of \$25,000.

A new applicant for trade favors, The American Dryer Co., make their first announcement to our readers on page 366. We bespeak for them the considerate attention of all contemplating the erection of dryers.

A company is being organized with a capital stock of \$50,000 at West Superior, Minn., for the manufacture of paving brick. Extensive works will be erected and the manufacture of the bricks commenced at an early date.

The Fort Dodge Pottery and White's Pottery of Fort Dodge, Iowa, have consolidated and will hereafter be known as the Fort Dodge Stone-ware Co. The principal members of the old firms will continue to manage the business.

The Frey-Sheckler Co., Bucyrus, Ohio, has supplied the Canon Brick & Tile

Manufacturing Co., Canon City, Colo., with one of their famous nine feet diameter, all iron and steel dry pans and No. 5 pug mill.

The Galesburg Brick & Terra Cotta Co., Galesburg, Ill., has just contracted with The Frey-Sheckler Co., Bucyrus, Ohio, for one of their Bucyrus Steam Tunnel Dryers, 90,000 daily capacity. This will be one of the largest steam tunnels dryers in the West.

Carroll, Vick & Co., Toronto, Ont., will erect a shale paving brick plant, and desires information in regard to tunnel dryers and machinery for crushing their clay, which, they write is of "A red color, contains a large quantity of iron, is of irregular form and of a moist, twisting nature."

The H. Nichols & Co., New Lexington, Ohio, has just contracted for a complete set of machinery from the Frey-Sheckler Co., Bucyrus, Ohio, for a capacity of 50,000 brick daily. The outfit consists of one of their largest machines, compound crusher, pug mill, cutting tables, etc.

The firm of T. W. Petersen & Co., of San Jose, Cal., are about to enlarge the capacity of their plant. They have closed contract with P. L. Youngren, of Oakland, Cal., for the erection of a continuous kiln, suitable for burning repressed as well as common building brick.

The Brooklyn, (N. Y.) Fire Brick Works has been incorporated, with a capital stock of \$100,000. The board of directors for the first year are Edward D. White, Seth L. Keeney, Ira N. Stanley, Augustus H. Gutkes, D. H. Valentine, Daniel J. Creem and John McNamee of Brooklyn.

The Iowa Brick Co., of Des Moines, Ia., with a stock capital of \$100,000, has filed articles of incorporation with the county recorder. The incorporators are, J. M. Walker, B. Jackson, J. N. Bryon, W. H. Underwood, S. E. Wilmet and C. H. Gatch. They will establish their plant in the near future for the manufacture of paving and building brick.

Pullman & Mann, Elland Road, Leeds, Eng., who manufacture repressed machinery, especially adapted to the manufacture of ornamental and glazed brick, tiles and terra cotta work, desire an American agent to manufacture and sell their machinery on royalty, and

will be pleased to correspond with parties desirous of making such an arrangement.

The Frey-Sheckler Co., Bucyrus, Ohio, has just sold a complete plant of machinery to J. Meeks, Briggs & Co., Superior, Neb., for their new paving brick plant, to be erected at Table Rock, Neb. The outfit consists of one of their large Giant machines, automatic cutting table, two nine feet diameter dry pans, No. 5 pug mill, tailings crusher, screens, one 100 horse-power engine and two 75 horse-power boilers.

The Lafayette (Ind.) Brick and Mfg. Co. has just been incorporated with a capital stock of \$21,000. Work has been commenced on the buildings and will be pushed rapidly. Machinery of the latest improved character will be put in, with a capacity of 80,000 brick a day. The officers of the new company are, viz:—President, Wm. F. Frey; Vice President, John C. Frey; Secretary and Treasurer, Michael F. Thöennes, Jr.; General Manager, Lambert Bertha.

Geo. C. Videtto & Co. have purchased the Frost brick plant just below Alexandria, Va., on the Potomac river, for \$30,000. The plant is equipped with modern machinery for the manufacture of brick by the soft mud process, and now has a daily capacity of 30,000. They will put in additional machinery and increase the capacity to 80,000, and will also include the manufacture of tile. The new company expect to be ready for operation within a month.

The extensive plant of the Missouri Clay Co., at Deepwater, Henry Co., Mo., which has until recently been in the hands of a receiver, has been purchased by an incorporated company with \$50,000 capital. The new firm will be known as the Deepwater Fire Brick and Clay Goods Co., and will carry on the manufacture of clay goods of various kinds, especially vitrified paving brick and drain tile. Extensive improvements will be made in the plant. New kilns will be built and improved appliances put in to facilitate the work.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., are sending out a circular letter calling special attention to their pug mill, stone separator and clay screen, which they claim are proving remarkably successful. They have a full line of other machinery, including a complete line of their steam power brick



machines in operation at their works, and will be pleased to have any craftsmen, who can do so, visit them and thoroughly inspect same.

The well known firm, The Frey-Sheckler Co., Bucyrus, Ohio, has just closed a contract with T. M. Walker, of Des Moines, Iowa, for a complete plant of machinery, also dry house, for the manufacture of paving brick. The outfit consists of the following: No. 1 Bucyrus Giant Brick Machine, with automatic cutting table; No. 5 double gear pug mill, two nine feet diameter, all steel dry pans, one hoisting drum, clay cars, elevators, tailings crushers, dump cars, all transmitting machinery and a Bucyrus Steam Tunnel Dryer, of 50,000 daily capacity.

H. B. Newton, president of the National Association of Fire Brick Manufacturers, has issued a letter to the manufacturers of fire brick, gas retorts, and fire clay products, urging all who have not already done so, to send their name and address to the secretary of the Association, Mr. Henry Gleason, 106 Beekman St., New York City. Their Association has done that branch of the clayworking craft a vast amount of good, and deserves the earnest support of every one interested in that line of the business. If any of our readers desire further information, they can obtain same by addressing the secretary, as above.

The following from the *Chicago Tribune*, Feb. 14th: "The Louisville, New Albany & Chicago R'y has just added to its rolling stock, two new sleeping and boudoir cars, costing nearly \$45,000 each. These cars are said to be the finest ever placed on any road in the country, and are specially designed for use during the World's Columbian Exposition." These cars are models of elegance and beauty, each Compartment or Boudoir being fitted with a complete toilet set, cleverly hidden from view when not in use. They are in daily service between Chicago and Cincinnati, and should be seen and used, to be fully appreciated. All the Monon's through day trains are made up of smoking cars, new coaches and Parlor and Dining Cars.

A. D. Raub & Co., of Earl Park, Ind., have one of the best equipped and most successful yards in the State. It was built and is superintended by Mr. H. L. Hix. They work from eighteen to twenty feet of clay that is so hard that it is blasted from top to bottom. Under

the driveway, where they dump the clay, they have a storage pit that holds clay sufficient to run six days, to draw on in bad weather. Their building is 80x90 feet, five stories high. Their 75 horse-power Russell engine drives the Little Wonder machine, that turns out a kiln of tile every working day in the year. A Potts disintegrator and an Adrian granulator prepare the clay for the machine. There are two miles of steam pipe under the lower floor that takes up the exhaust steam and dries the tile on the lower floor in twenty-four hours, and on the upper floors in forty-eight hours. They work twenty-five men all told, have five of the finest kilns in Indiana, which are twenty feet in the clear, ten feet to crown, wall are four feet thick to top of arch, and three feet from top of arch to crown, and are lined throughout with fire brick.

Messrs. Penfield & Son, Willoughby, Ohio, report business unusually active, and that they are crowded to their full capacity, having been working night and day in some departments of their factory. One of their late shipments consisted of six car loads of machinery consigned to Dorset, Va. This shipment included a No. 20 A. Plunger machine, five iron frame Wet Pans, elevators, power transmission machinery, etc., and one of their new sewer pipe presses. Messrs. Penfield & Son state that their new Sewer Pipe Press embodies a number of valuable improvements, which will make it of increased strength, greater capacity and more convenient to operate. The weight will be considerably in excess of anything heretofore constructed in this line, and the surplus metal will be distributed where it will do the most good. This new pipe press will have a 50 inch stroke in place of 44 inch, the latter being the length of stroke generally secured in ordinary pipe presses. The increased length of stroke ensures more rapid work on small pipe, as well as better results on the larger sizes. By an improved manner of constructing the clay cylinder, spanner and steam cylinder, these parts are sure to be in perfect alignment with each other, and the work connecting the parts of the press is so simplified as to make it comparatively easy to erect and get everything in perfect running order. The press is provided with an automatic cutting device, and other improvements which will make it especially desirable to sewer pipe manufacturers everywhere.

Cuts of this machine will appear in a subsequent issue of the CLAY-WORKER, and in the meantime anyone contemplating the purchase of such machinery should address Messrs. Penfield & Son, Willoughby, Ohio, for full details.

The Wellington Machine Co., of Wellington, Ohio, are having their usual brisk spring trade, and report the usual number of sales of their "New Quaker" machines. They are especially gratified at the reception their "Monarch" machine is receiving at the hands of the trade. Last fall they decided on the number of machines that they would erect for the spring trade, and put the number as high as they dared have hopes of selling. However, every one of this number was sold by the first of February, and all that they have made since, and all that they can get finished by the first of April. So that parties who are considering placing their orders for one of these machines should order at once. They are particularly pleased at receiving the orders of such prominent firms as are mentioned below, all of whom gave the machine the most thorough investigation before ordering. Nearly every one of them is in the immediate vicinity of yards where "Monarchs" were used last season, and the machine had careful watching by them all of last season. Among their latest orders are the following: From C. H. Carpenter, Martin's Ferry, Ohio; Brush Bros., Buffalo, N. Y.; G. F. Weavers' Sons, Utica, N. Y.; S. L. Alexander, Menomonie, Wis.; Frank O'Brien, Natchez, Miss., for Monroe Brick Co., Monroe, La.; Frank E. Tracy, Toledo, Ohio; Jos. E. Rapp, Norristown, Pa.; C. A. Peck, Woodhull, Ill.; Jos. Gates, Toledo, Ohio; E. H. Snyder, Hanover, Pa.; Rowland & Co., Mansfield, Ohio; Tompkins & Smith, La Salle, N. Y.; McWilliams & McConnell, Shamokin, Pa.; Newman Bros., Des Moines, Iowa.

#### AN HONEST CONFESSION, Etc.

Please put me down as one who shares "Smoky City's" views and opinions as to how our Conventions should be conducted. These long-winded people must be "set down upon." I am quite sorry that I have been placed in the same class with Purington, Eudaly and McCain, by several Convention critics. These men in Keystones estimation say too much for the amount of information they give. Well, possibly I did talk too much and say too little, so I must be on my guard next year.

I believe Keystone's strictures had some effect on Purington, but it never fazed Eudaly. Can't you induce Keystone to give the boys another whirl?

Respectfully,

EDWIN MCGRAW.



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**CURVED SLAT,  
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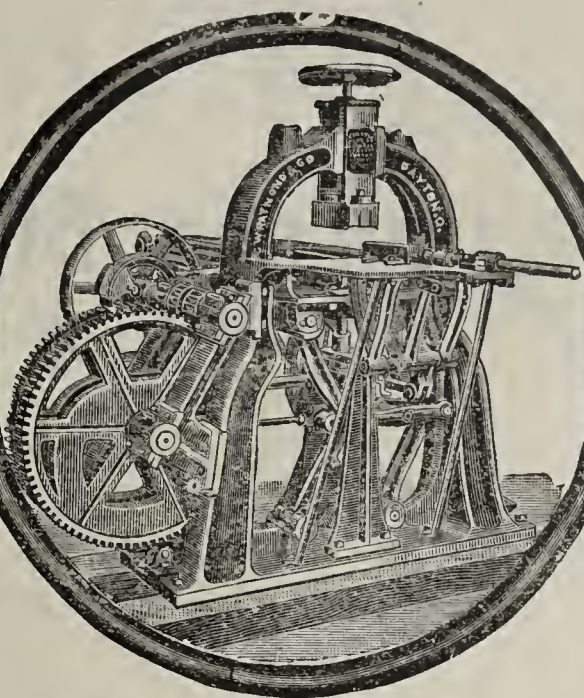
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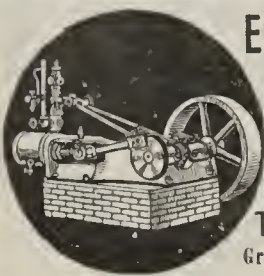
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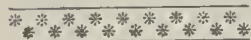
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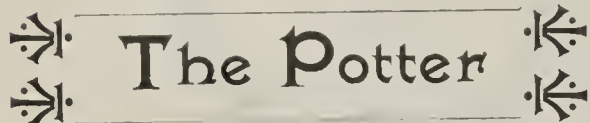
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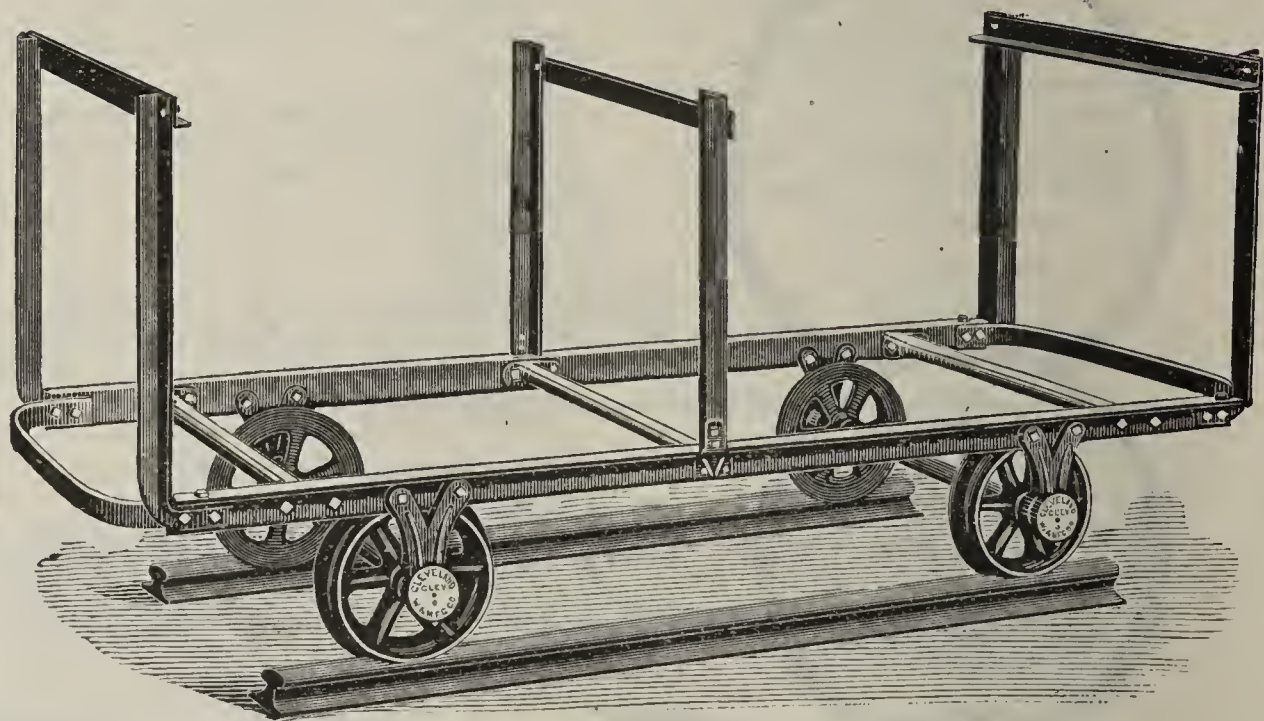
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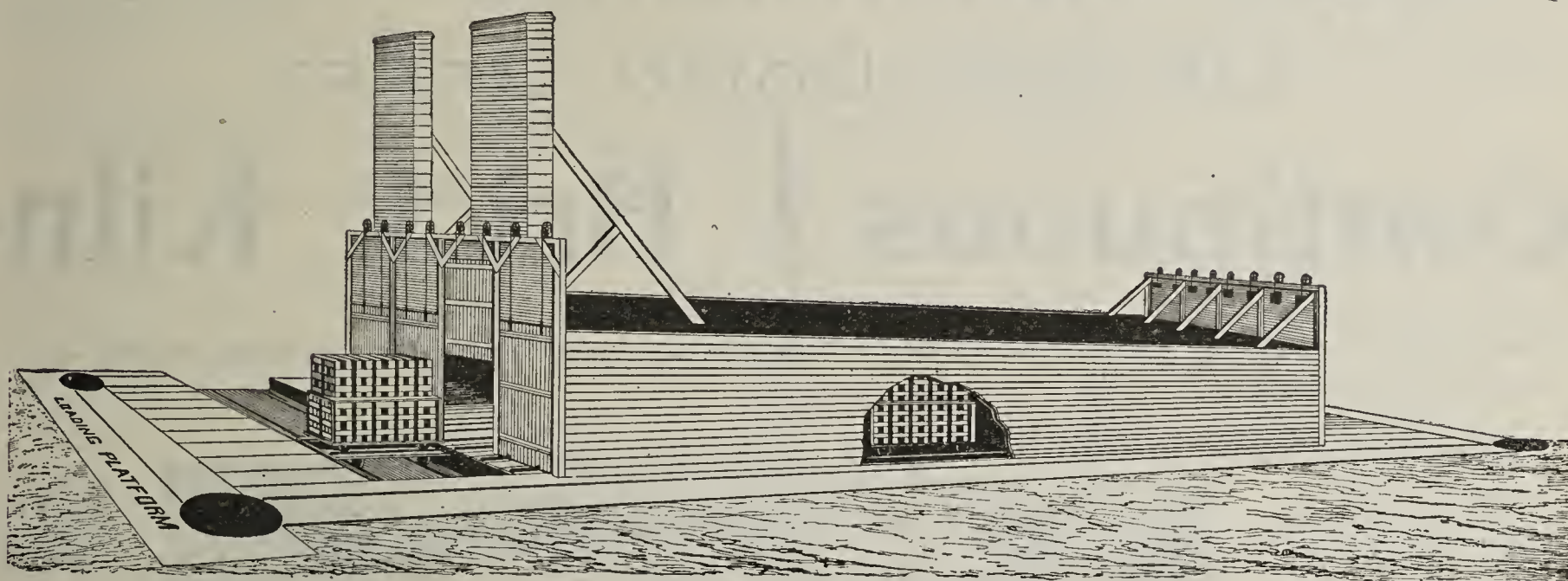
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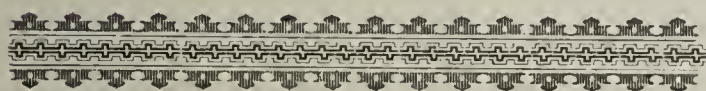


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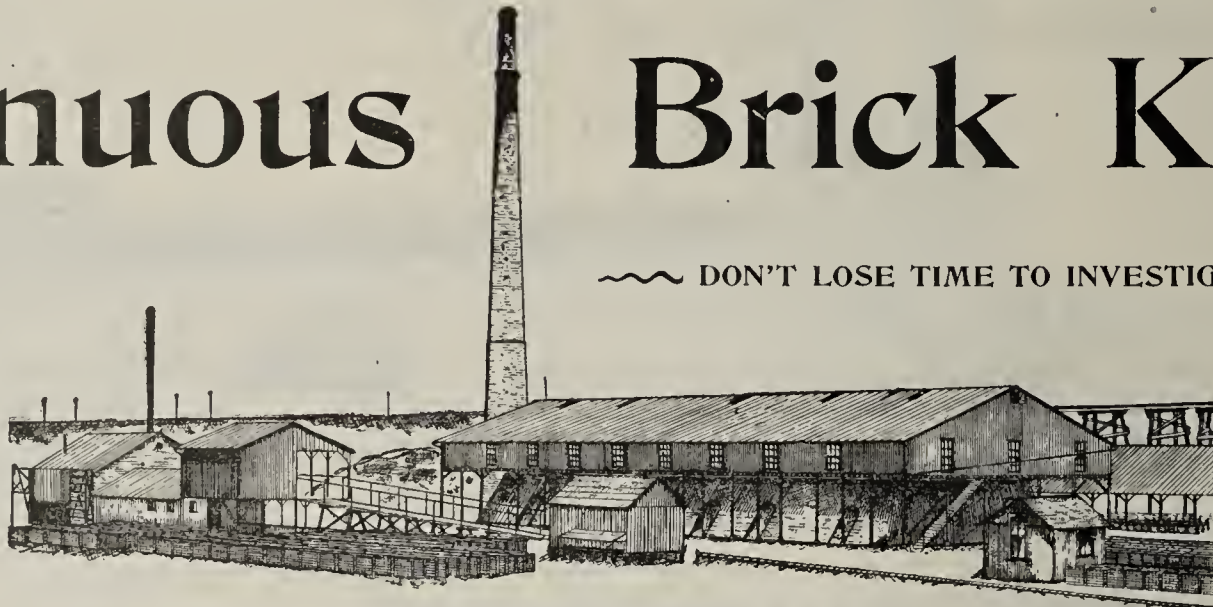
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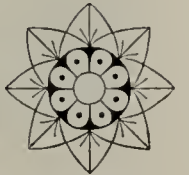
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United States.

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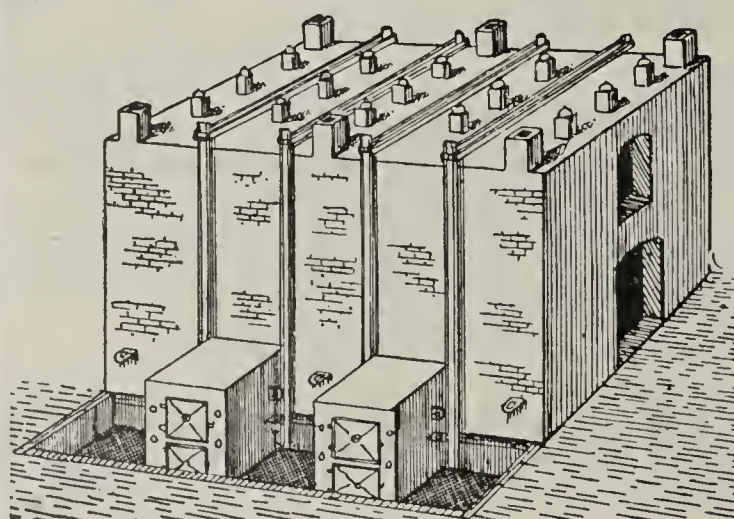


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7. The Kiln is most perfectly drained.
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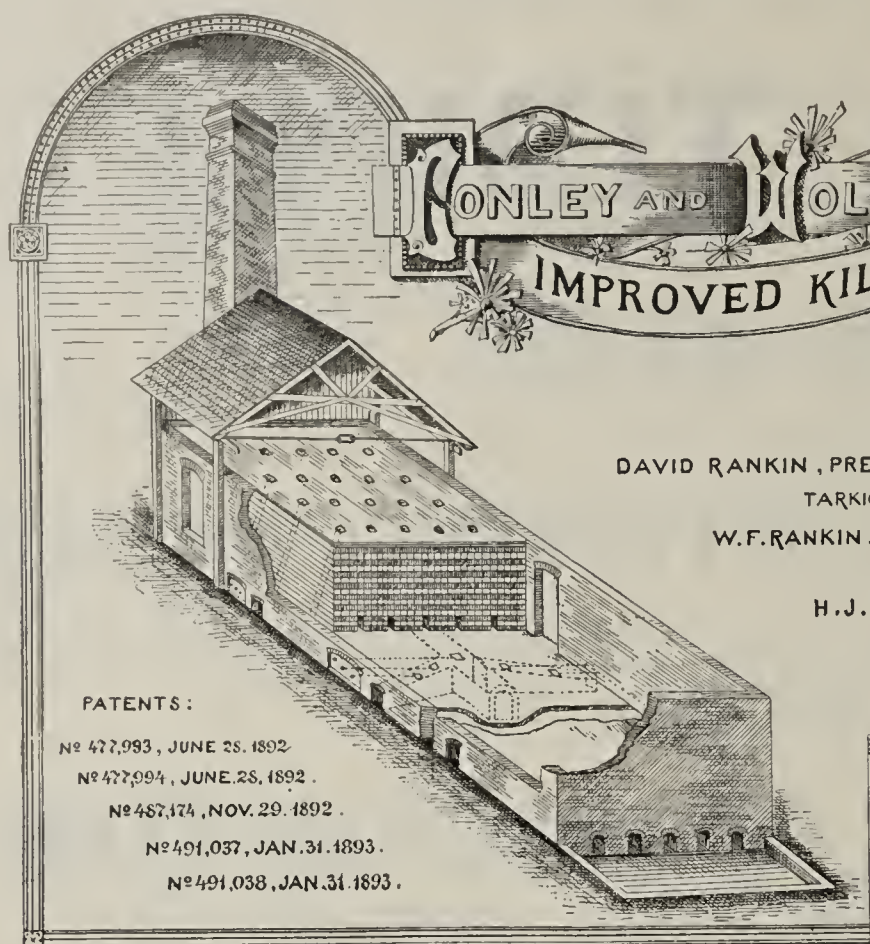
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PATENTS:

No 477,993, JUNE 28, 1892.  
No 477,994, JUNE 28, 1892.  
No 487,174, NOV. 29, 1892.  
No 491,037, JAN. 31, 1893.  
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THIS kiln is cheap to construct, simple in operation and permanent in character. It has no crown to fall in, or braces to keep in repair. The dampers in the bottom give you complete control of the draft. You can burn your brick evenly and thoroughly. It heats the brick gradually and cools them the same way, producing a tough and thoroughly ANNEALED brick. It requires less than 200 lbs. slack per M. to make the very best vitrified shale paving brick. One man can fire the largest sized kiln. The slack is converted into gas and ALL the heat energy of the coal is utilized. It is a smoke consumer and a profit producer. Please write our General Manager at once for full information.

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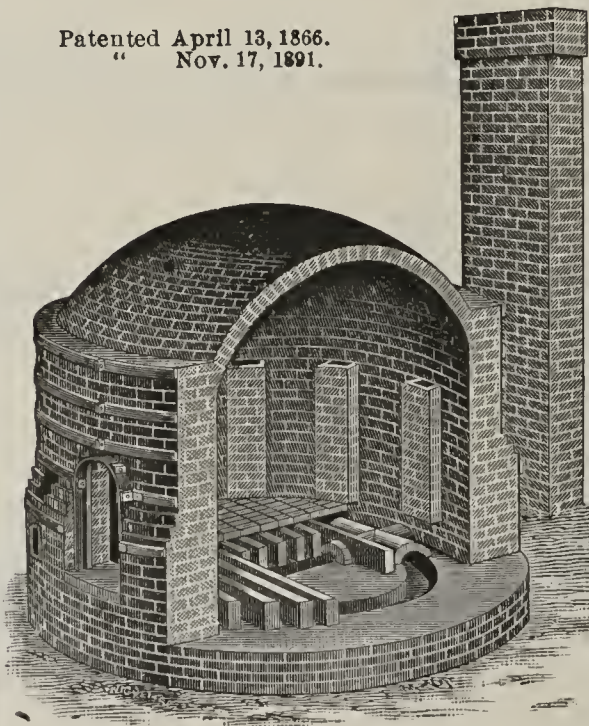
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It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

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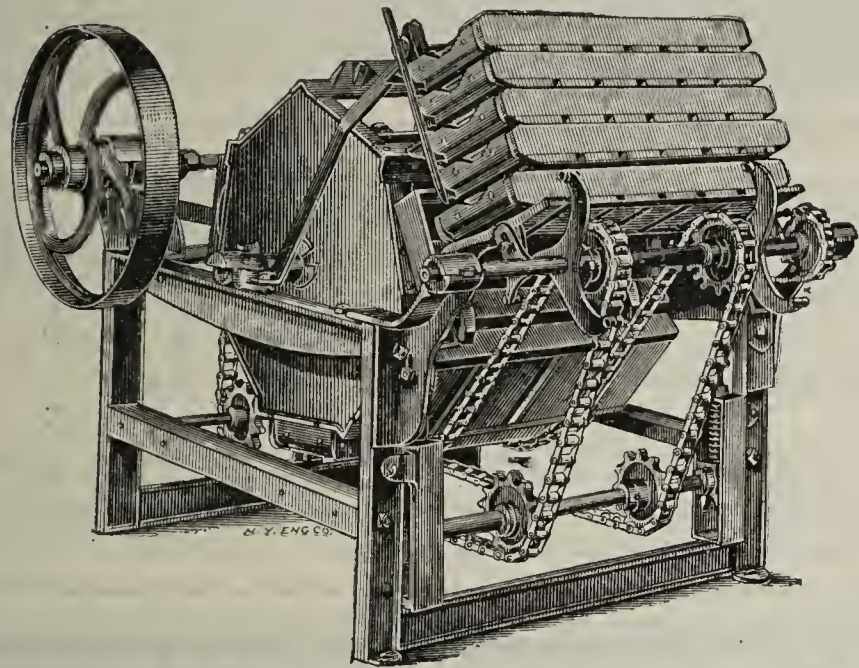
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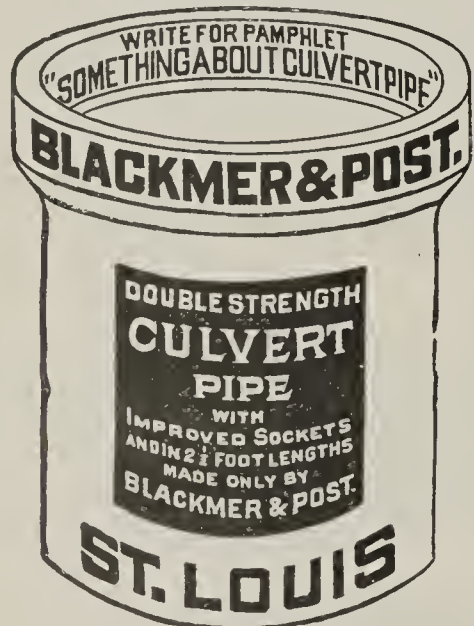
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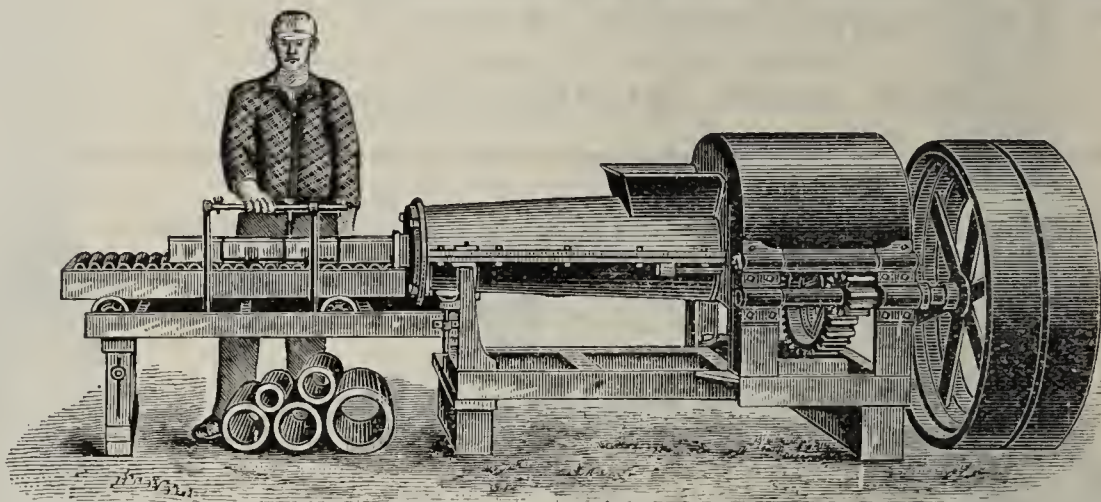
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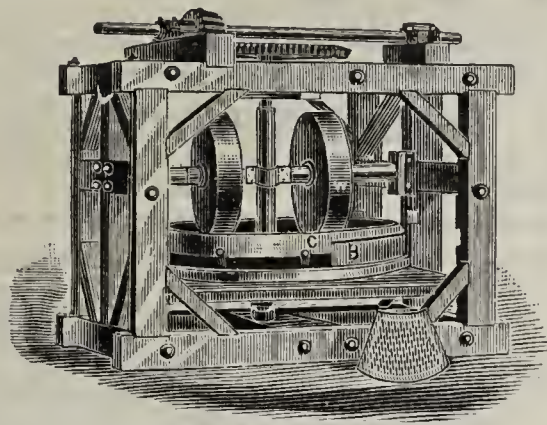
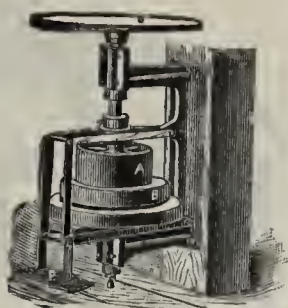
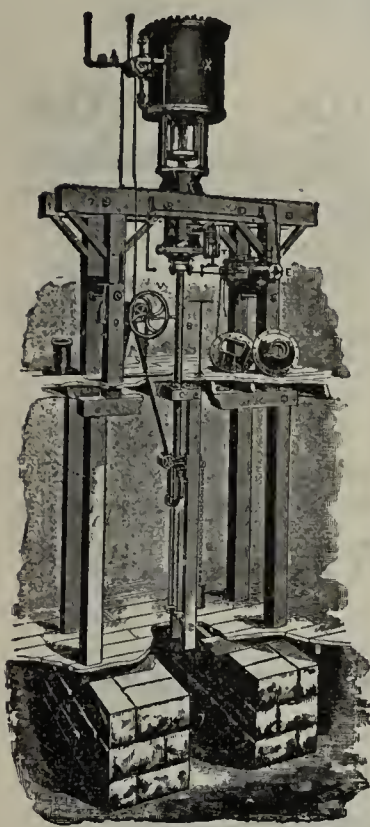


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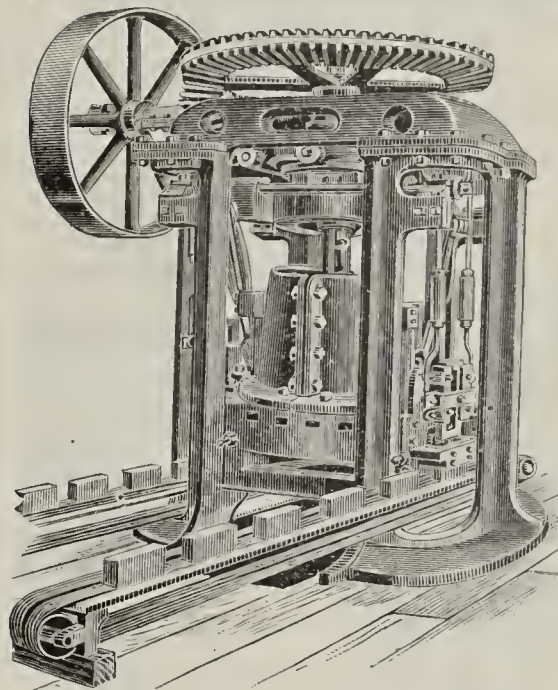
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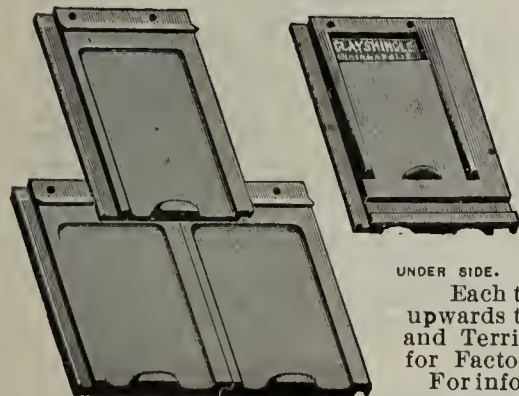
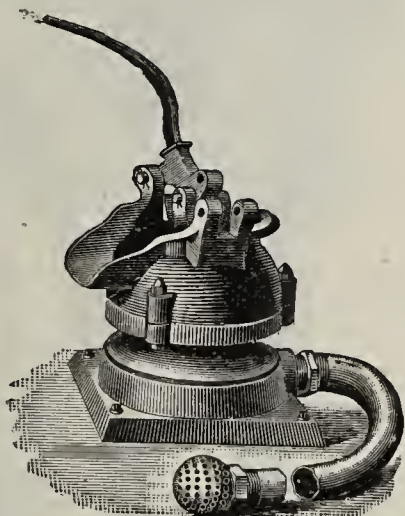
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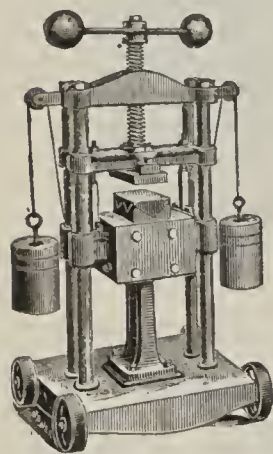


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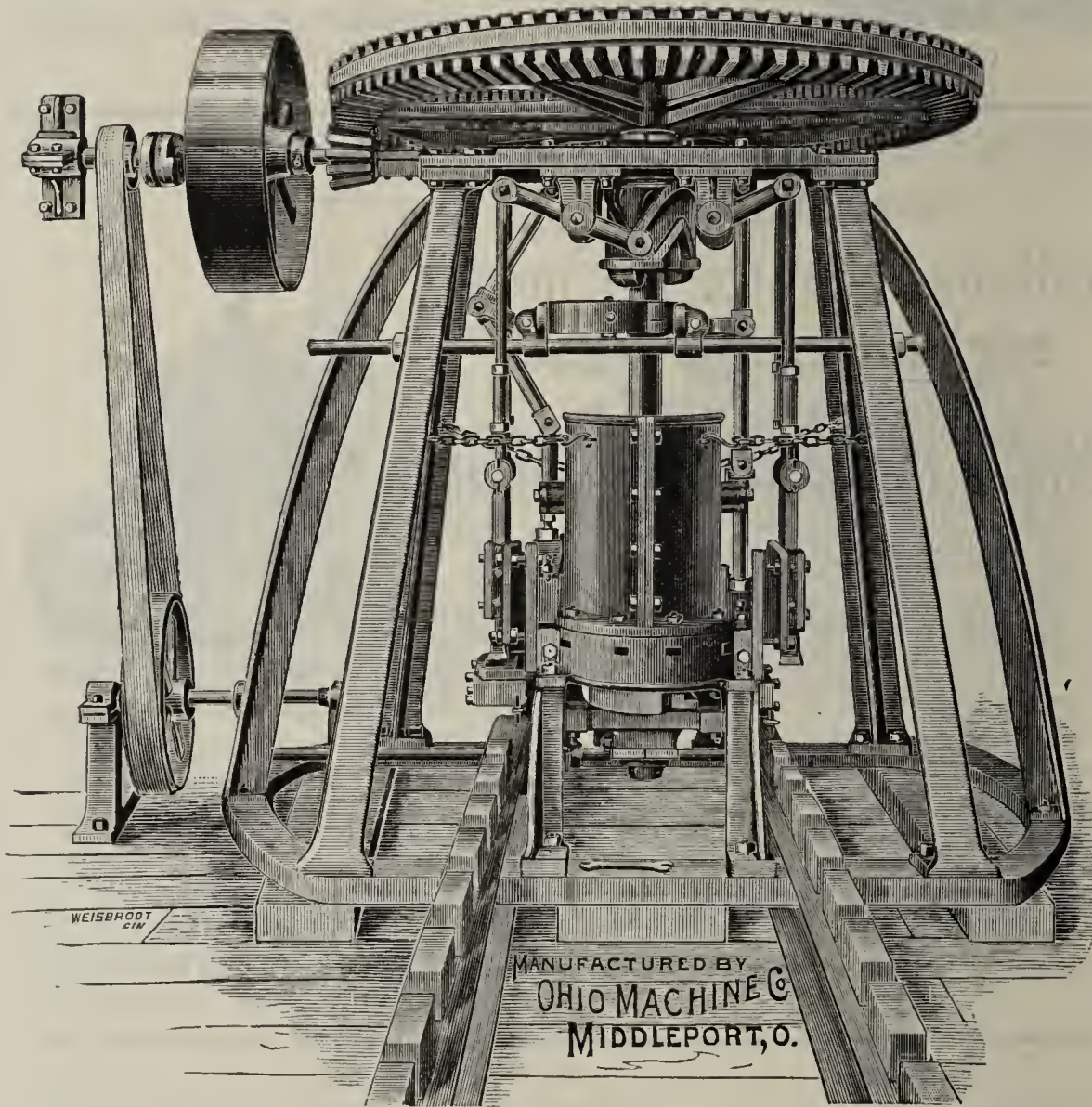
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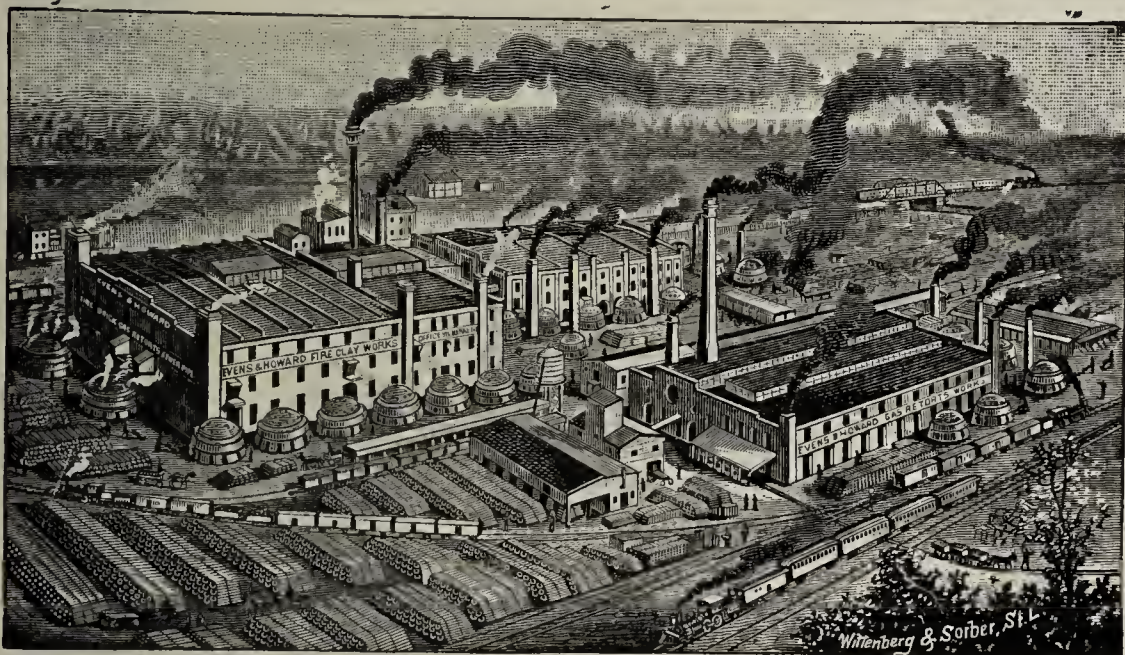
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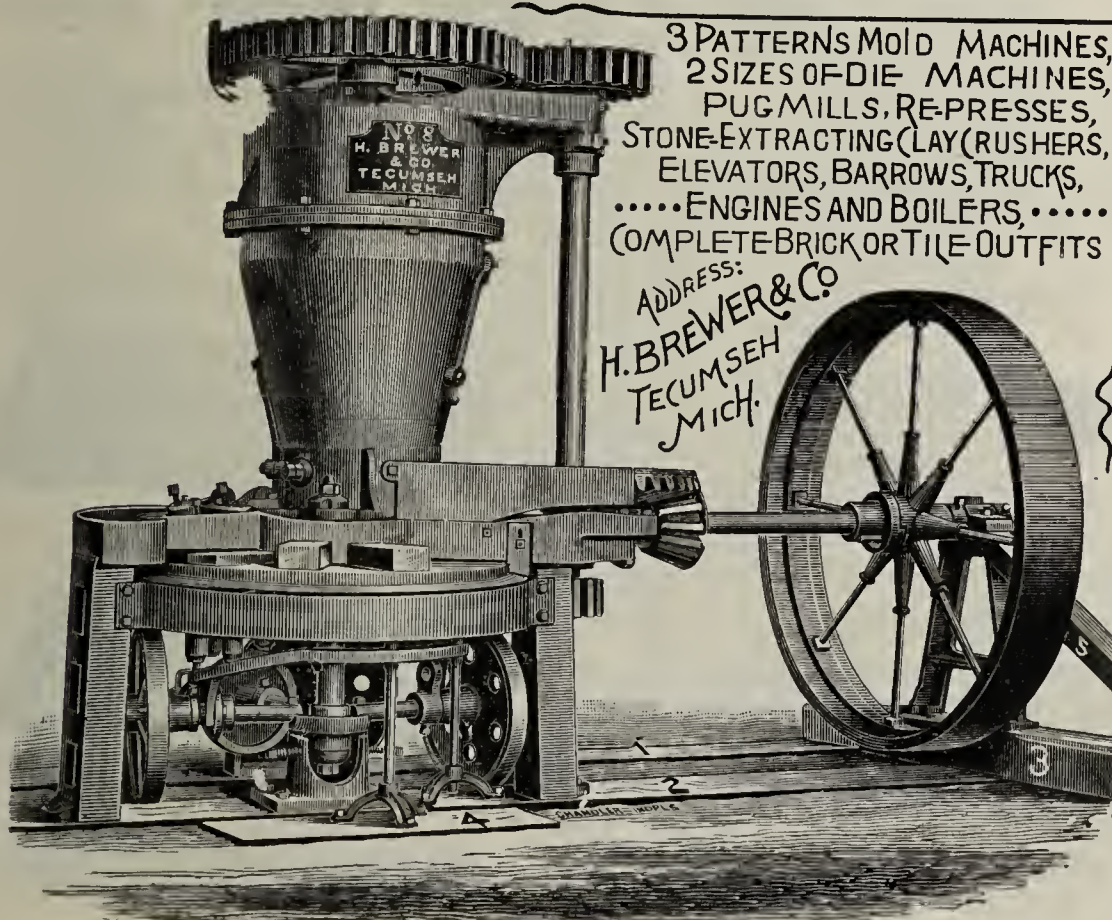
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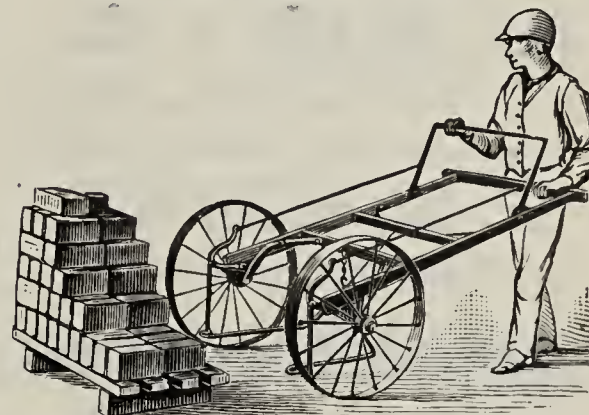


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Brick Truck & Portable Hack**



The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling an time in drying bricks. Can be used in any yard not too steep.

**Extracts from Letters to J. C. Steele.**

J. C. STEELE, ESQ.,                      May 6, 1892.  
STATESVILLE, N. C.

DEAR SIR—We have now been using your Hacking Trucks for the last month and we cannot speak too highly of them. They are perfect, and the greatest labor-saving machine ever put on a brickyard. With one man, and one of your Trucks, we take from the machine and put on the yard 25,000 bricks already hacked and ready to cover in case of rain. This is a saving of three men over the old style of using wheelbarrows. One man will also keep two setters and two tossers going with one truck. But the main thing is that the bricks do not have to be handled so much and they retain their shape so much better. We will gladly answer any enquiries concerning your Trucks who may refer to us. Respectfully Yours,  
Florence, S. C.                      COFFIN & PERRY.

MR. J. C. STEELE,  
STATESVILLE, N. C.

DEAR SIR—I agree with your many subscribing testimonials as to the merits of your Improved Brick Trucks. They are indispensable helpers on a brickyard. Yours Truly,  
Monroe, N. C.                      W. A. WATSON.

For further information address

**J. C. STEELE, Patentee,  
Statesville, N. C.**



## Steubenville Foundry & Machine Works,

Established in 1820.

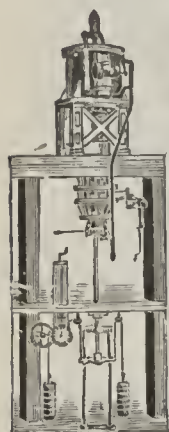
—Manufacturers of—

### STEAM SEWER PIPE PRESSES

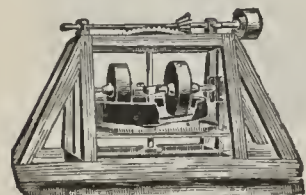
OF DIFFERENT SIZES,  
Making From 2 to 30-Inch  
Pipe Inclusive.

Pipe, Brick, Tile, Copping,  
Fire Proofing, and  
Building Block Dies.

Clay Grinding and Tempering  
Pans and Pug Mills.



FEED  
SCREWS  
FOR  
MINING  
CLAY.



STEAM  
— ENGINES  
— AND —

Every Variety of Iron and Brass Castings  
Shafting and Pulleys.

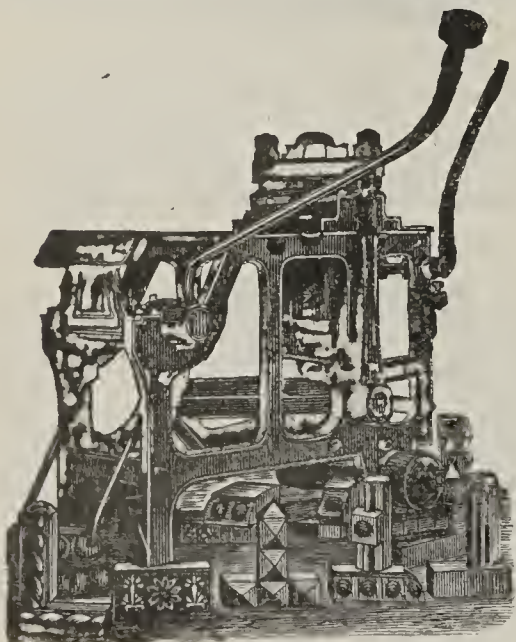
Send for Circulars and Estimates.

**JAS. MEANS & CO.,**  
Steubenville, Ohio.

**N. M. KUENY,**

MANUFACTURER OF

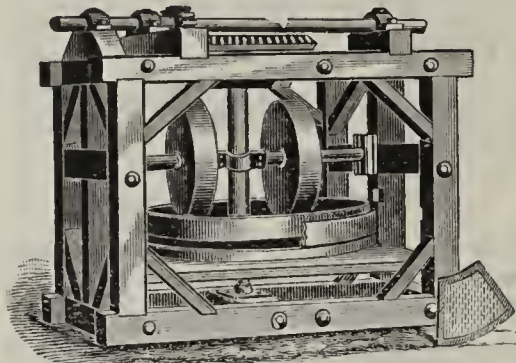
## Brick Presses



Cor. 21st and Point Breeze Avenue,  
PHILADELPHIA.

Mention the Clay-Worker  
When writing to Advertisers  
Mention the Clay-Worker

## EAGLE IRON WORKS, DES MOINES, IOWA.



FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

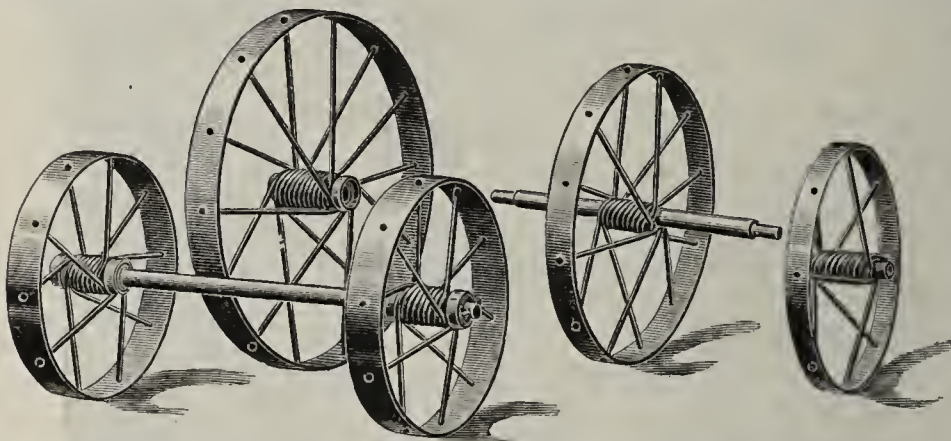
Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,  
**THE ARNOLD METAL WHEEL CO., New London, O.**

Headquarters for Brickyard Supplies in 1893 will be at the  
same place it was in 1892, at

**New London, Ohio,**  
**ADDRESS. D. J. C. Arnold.**

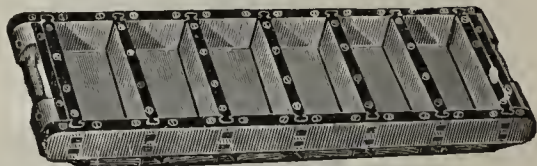
Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

## MOULDS.

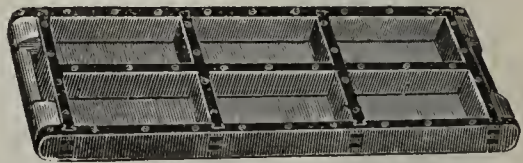


**See!** You can  
buy them  
for less money now than ever  
before. Prices reduced but the  
standard of quality is main-  
tained. Order now for future  
delivery. Satisfaction guaran-  
teed. Standard sizes carried  
in stock.

S B. MACHINE MOULD.



S B. HAND MOULD.



S B. HAND MOULD.



Some odd sizes at about  
half price. Send for list.



## THE AERATED FUEL COMPANY'S SYSTEM

Gives the best oil fire. 200 plants in use. Adopted by large concerns on Terra Cotta, Brick, Pottery and Cement Kilns. Send for Catalogue to Hall Steam Pump Co, Pittsburgh, Pa.

GILBERT & BARKER MFG. CO., Gen'l Agents for U. S., Springfield, Mass

## The J. R. Armstrong System

....OF....

## Burning Crude Petroleum.

The secret of burning oil successfully, lies in atomizing it and furnishing sufficient air at the right point to consume all the gases generated. The setting and equipping is therefore as important as the burner or the boiler.

### POINTS OF SUPERIORITY,

CLAIMED FOR THE J. R. ARMSTRONG SYSTEM ARE AS FOLLOWS:

1. It uses comparatively little steam, as the oil is partly atomized by the air device.
2. It makes comparatively little noise.
3. Its fire extends from the mouth of the burner all the way to the rear of the boiler, utilizing the entire shell.
4. It throws no oil into the combustion chamber to be vaporized on the hot bricks and on the boiler depositing carbon, but burns as a pure white gas flame, without impinging against the boiler.
5. Its fire is not fierce and destructive to boilers

and settings, but mild and harmless, as the boiler inspectors testify.

6. No oil drips from the mouth of the burners while in action.

7. Neither smoke nor smell results from the combustion under boilers.

8. The burner is made of brass and is simple in construction having no delicate parts to wear out or clog up. It is almost indestructible by ordinary use.

9. It is known to be the most economical system in the market.

We are prepared to equip plants of any character. Our burners have demonstrated their superiority over all others. Send for Circular telling of the ADVANTAGES OF OIL as a fuel.

J. R. ARMSTRONG CO.,

"The Temple," Room 616, CHICAGO, ILL.

## EAGLE BRICK MACHINE.

Steam and Horsepower.

THE BEST MACHINE IN THE MARKET.

The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

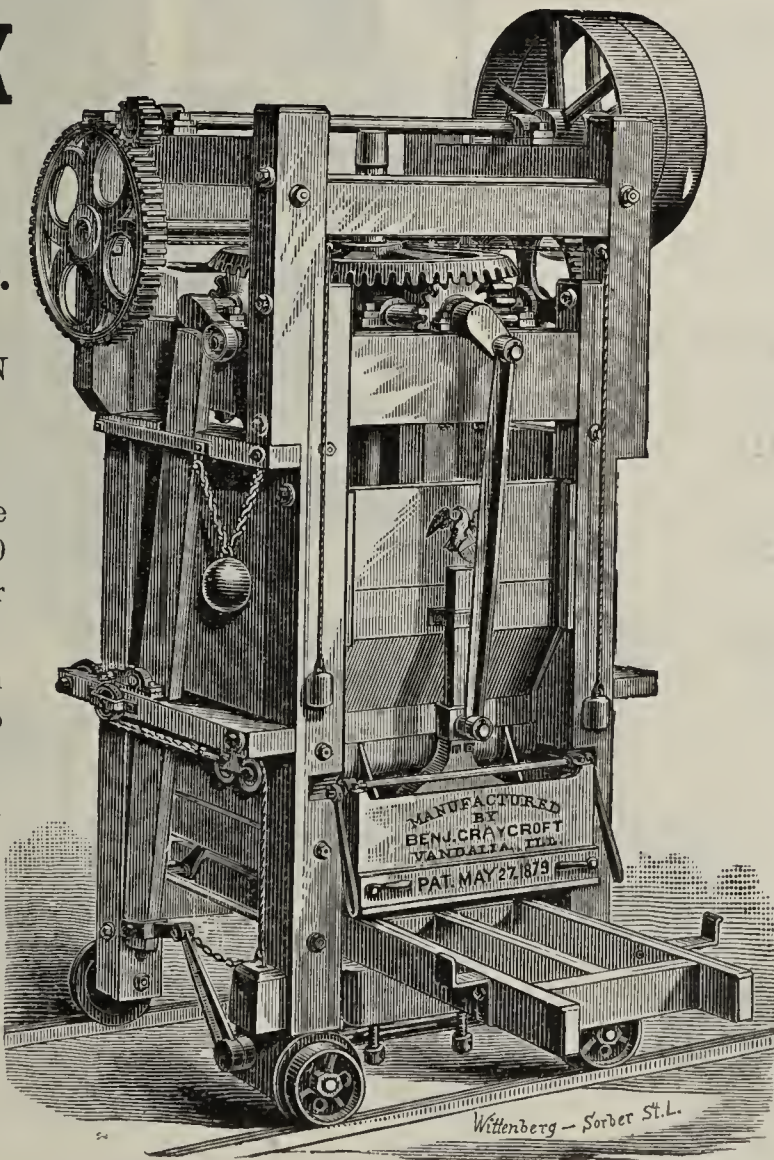
Send for Circular.

**BENJ. CRAYCROFT**

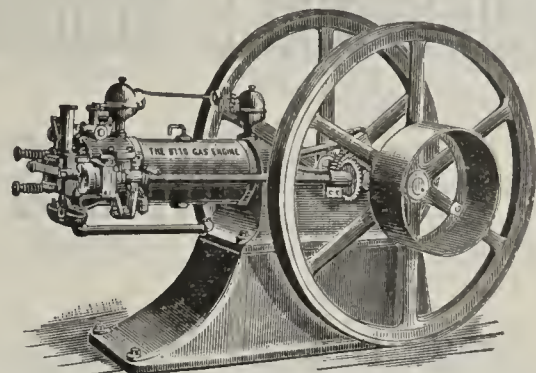
Manufacturer,

**Vandalia, Ills.**

C. J. CRAYCROFT, Fresno City, Cal., Gen'l Agent for Pacific Coast.



OVER 35,000 SOLD.



## Otto Gasoline Engines.

Cheapest Power for the Trade.

NO ENGINEER.

NO STEAM.

NO BOILER.

Starts at any time at once.

Costs only while running.

## Otto Gas Engine Works,

33d and Walnut Sts.,

PHILADELPHIA, PA.

151 Monroe Street,

CHICAGO, ILL.

## The Vandalia Line,

Invites attention to a few facts.

1st. It is the shortest and quickest line between Indianapolis and St. Louis and runs four fast express trains each way in addition to local accommodation trains.

2nd. Pullman Vestibuled Sleeping Cars are carried on all through trains.

3rd. The employees are uniformly polite and attentive.

4th. All complaints of whatever character receive prompt and careful attention.

5th. The mechanical excellence of the road-bed being constantly maintained, and the construction of the train equipments being of the latest and most substantial character, the highest speed can be made with perfect comfort and safety.

6th. The new and beautiful dining cars, with their dainty china, rich silverware, spotless linen, and bounteous bill of fare are a delight to travelers.

7th. Trains are run with remarkable regularity.

8th. For the above and other good reasons the United States Government has chosen the Vandalia Line for its Fast Mail Route between the East and the West.

Test the above statements by giving the line a trial. For through rates, time of trains, sleeping car reservations or other information, call upon or address

W. F. BRUNNER,  
District Passenger Agent, Indianapolis, Ind.



## Waplington's Regenerative Gas Furnaces

Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of **Pottery and Fire Bricks**, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

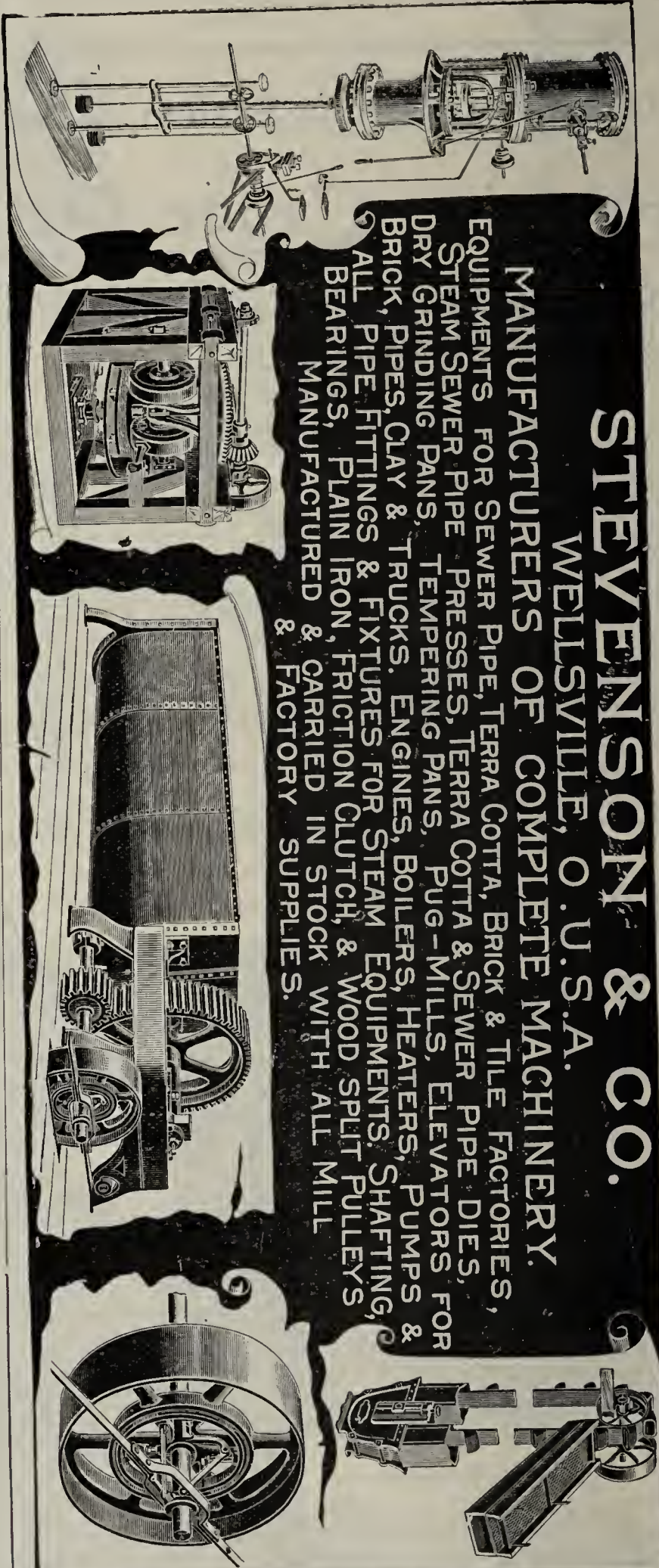
Estimates, specifications and plans on reasonable terms. Plants contracted for on approval to good, responsible parties. Sets of blue prints, 25 cents per set, showing the application of gas to any of the above mentioned purposes.

Send stamp for pamphlet "**Natural versus Artificial Gas.**"

Address,

**WILLIAM WAPLINGTON,**

Westminster Ave., **PHILADELPHIA, PA.**



**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

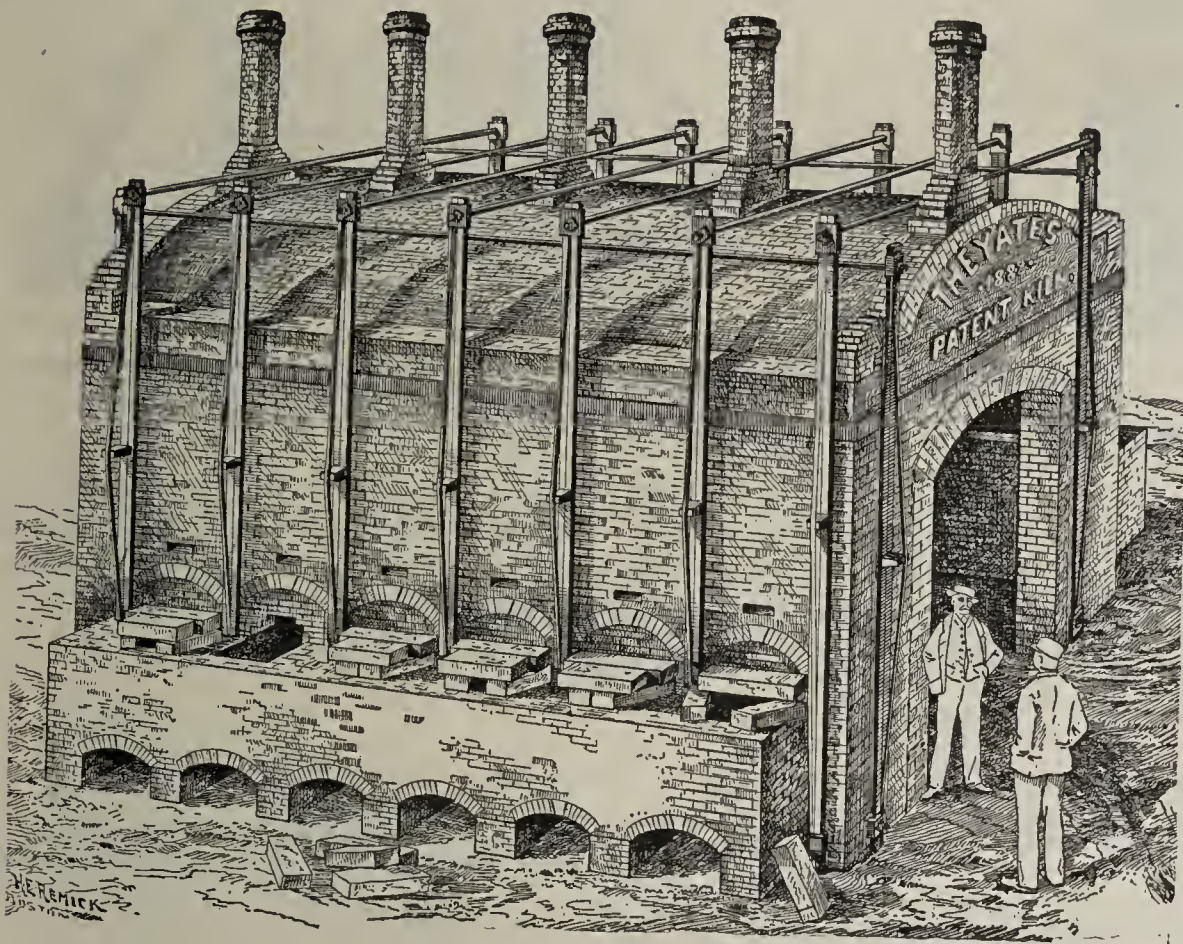
**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS  
& FACTORY SUPPLIES.



# THE YATES IMPROVED DOWN DRAFT KILN

FOR BURNING BRICK OF ALL KINDS.

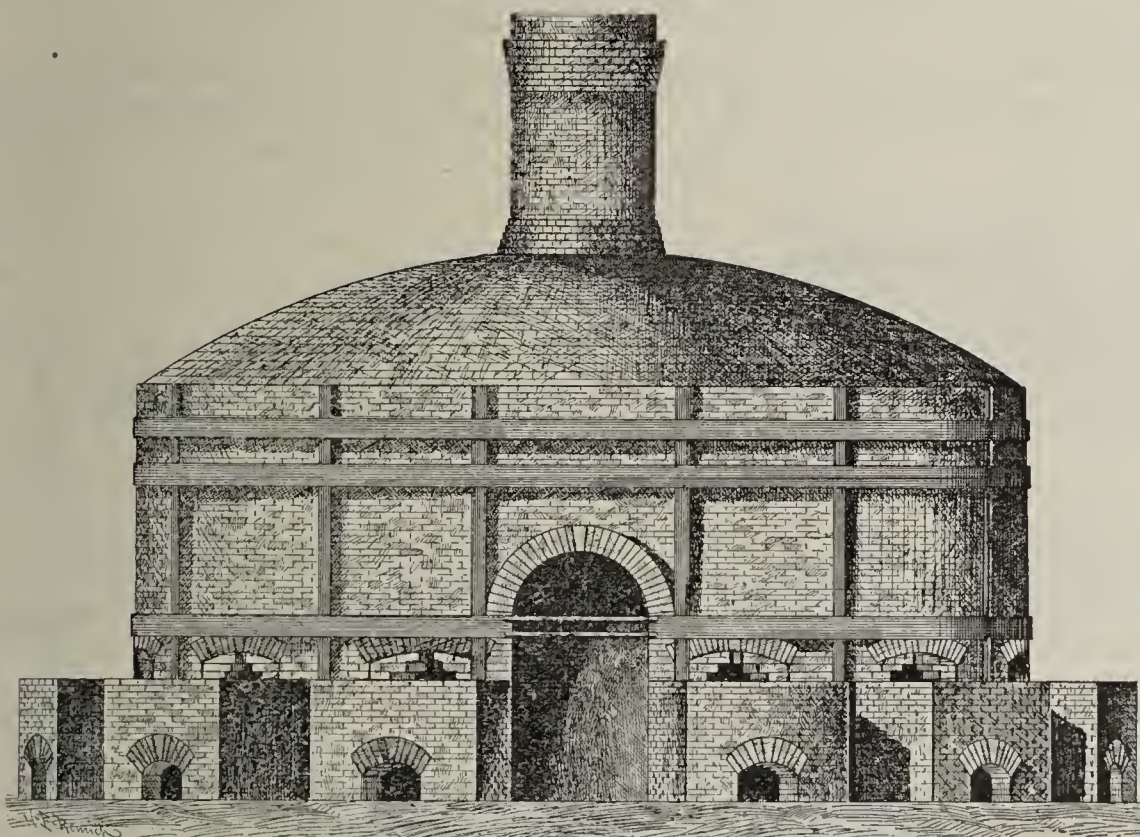


FULLY PROTECTED BY PATENTS.

These Kilns are producing results that make back numbers of their competitors.

We neither buy testimonials or fee superintendents.

❖ WE STAND ON OUR MERITS. ❖



**ALFRED YATES,**

Write for full description. NORTH CAMBRIDGE, MASS.

## COLORIFIC.

For coloring Br'ck, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of  
WESTBROOK & WELLS,  
Ogdensburg, N. Y.

46 d.

## TRAVEL

VIA THE

**MONON ROUTE**

LOUISVILLE, NEW ALBANY & CHICAGO RY.

THE SHORT LINE TO  
**CHICAGO**

Milwaukee, St. Paul, Minneapolis,  
Duluth, Omaha, Denver,  
San Francisco,  
Portland, Seattle, Tacoma,  
Los Angeles, Spokane Falls, Helena

AND ALL POINTS IN

**WEST AND NORTHWEST.**

The only line running Solid Pullman Perfected Safety Vestibuled Trains.

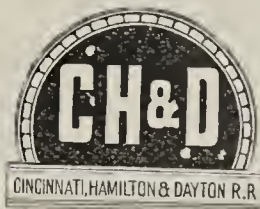
The only line running Dining Cars between Indianapolis and Chicago.

Magnificent Pullman Sleeping and Parlor Cars  
For rates, maps, time tables, etc., apply to

**I. D. BALDWIN, D. P. A.,**

No. 26 S. Illinois St., Indianapolis, Ind

**JAM S BARKER, G. P. A.,** Chicago.



THE  
PULLMAN CAR  
LINE  
Between  
INDIANAPOLIS  
and  
CINCINNATI.

The Favorite and Best Line

With DINING CAR between

**CHICAGO and CINCINNATI.**

**ST. LOUIS and CINCINNATI**

Best Line to Cincinnati, Dayton, Lima  
Toledo, Detroit and Canada.

Through Cars Line between DECATUR  
SPRINGFIELD, QUINCY, KEO-  
KUK and CINCINNATI.

Pullman Sleepers on Night Trains and Palace  
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Direct Connections with or Transfer  
IN **CINCINNATI** FOR

Points in Kentucky, Tennessee, Alabama  
Florida and the South, Washington, Philadelphia New York and Points East.

Ask for tickets and see that they read via  
C.H. & D. On sale at all stations.

**H. J. RHEIN, General Agent.**

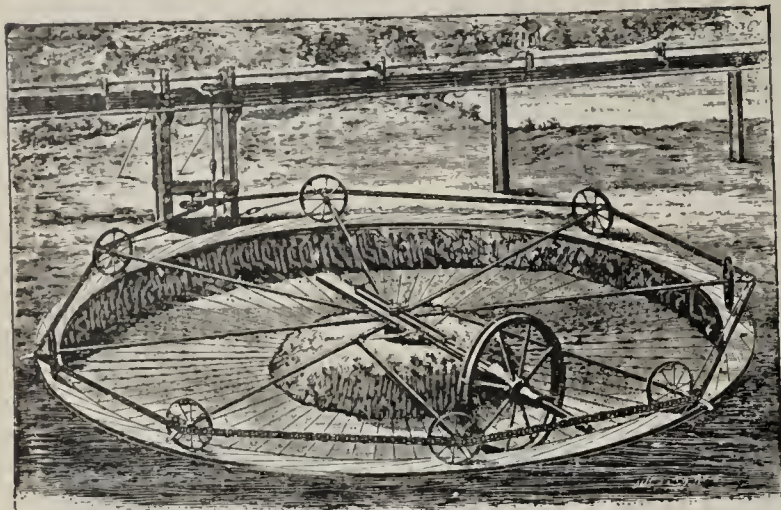
Indianapolis.

**M. D. WOODFORD, E. O. McCORMICK**

President. Gen. Pass. Agt.

Cincinnati, Ohio.





## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

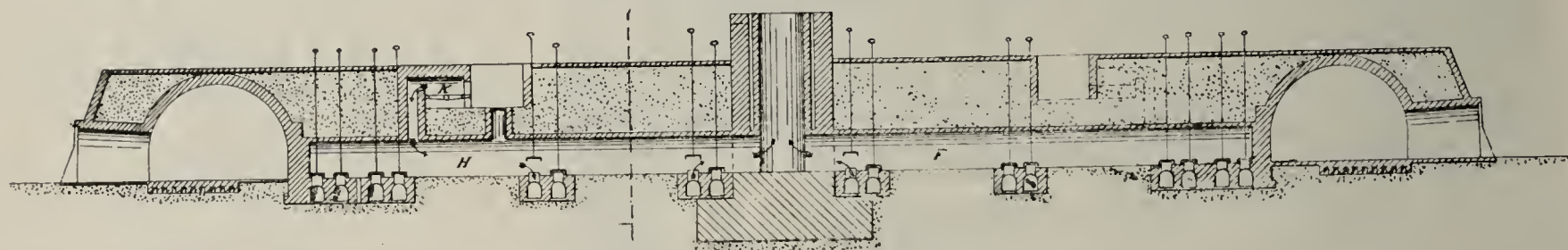
Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.

## YOUNGREN'S IMPROVED CONTINUOUS KILN.



Knocked out the Opponent in the First Round:

This kiln is gaining a reputation that is justly merited. It's superior work is due to the peculiar features which are the result of a careful and systematic consideration of the continuous system of burning. I respectfully invite practical brick manufacturers to a thorough investigation of my methods.

For descriptive pamphlet address

Office of SAN JOSE BRICK CO.

SAN JOSE, Cal., Feb. 11, 1893.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR: In reply to yours of the 13th inst, will say that the Continuous Kiln you erected for us last winter is giving us great satisfaction, having turned out all good brick on the first round, something we did not look for. We are now shutting down our B-ke kiln and contemplate applying your improvements on it. Please forward estimate cost of same if it can be done. We will give you statement in regard to fuel consumption of new kiln later.

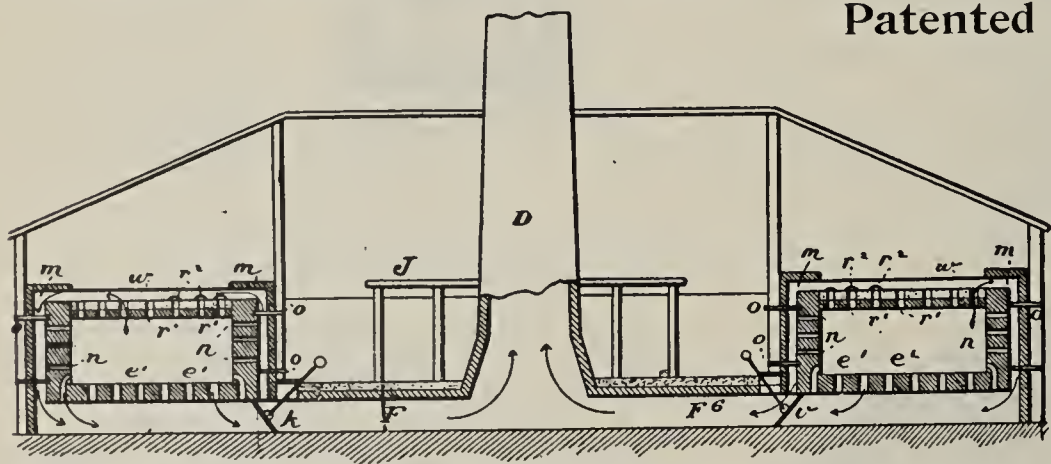
Yours very truly,

D. CORKERY, Manager.

P. L. YOUNGREN, Oakland, Cal.

## The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

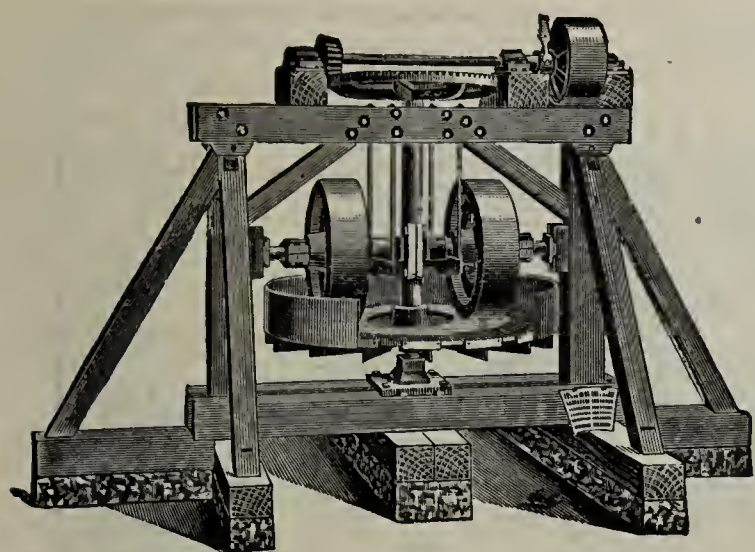
I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

CARL F. KAUL, Madison, Neb.

[Mention the Clay-Worker.]

If you have something you don't want,  
Or want something you haven't got,  
Read our "For Sale, Wanted, Etc." ad's





# Frost Dry Pan Crushers.

8 and 9 Foot Sizes

In operation all over the United States and Canada. Send for Catalogue and List of customers.

COMPLETE POWER PLANTS.

FROST ENGINE CO., - - Galesburg, Ill.

THE STANDARD BRICK MACHINES

MANUFACTURED BY

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

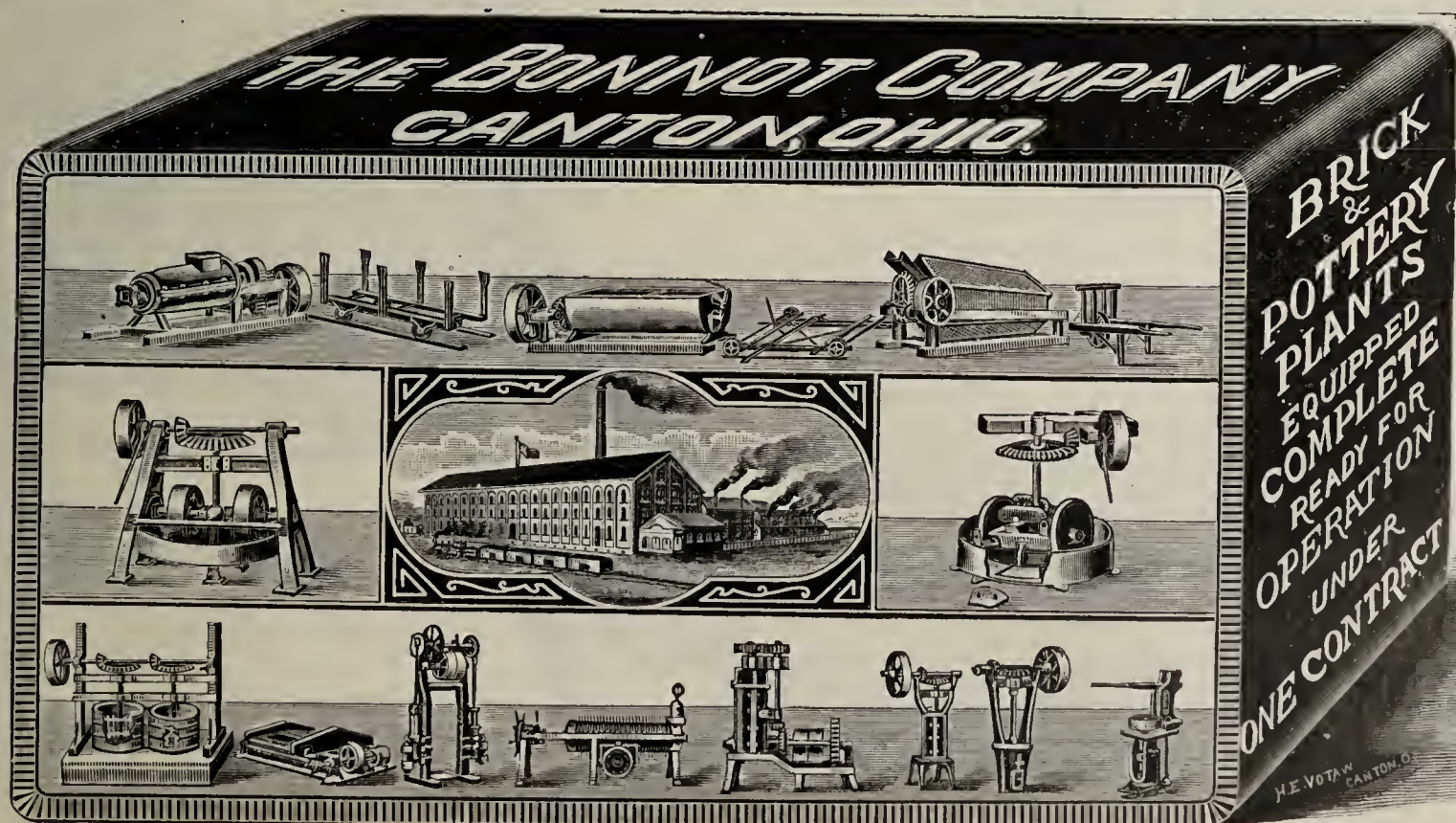
These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.





**COSTS LESS  
BURNS  
WITH  
LESS  
FUEL.**

**THE EXCELSIOR**

**HENNEYS PATENT.**

**HENNEYS PATENT.**

**EASIER TO  
HANDLE  
THAN ANY  
KILN IN  
THE  
COUNTRY.**

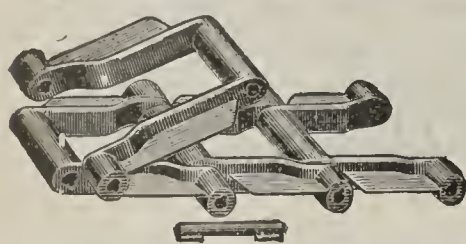
**HEAT  
FROM BURNT  
KILN DRIES  
OFF GREEN  
KILN**

**WILL BURN  
ANY KIND  
OF WARE  
UNIFORM**

**CHEAPER BUILT  
THAN ANY OTHER  
KILN.**

**PERFECT IN COMBUSTION & VITRIFIES FROM TOP TO BOTTOM.**

**JAMES HENNEY INDIANAPOLIS CARE CLAY-WORKER.**

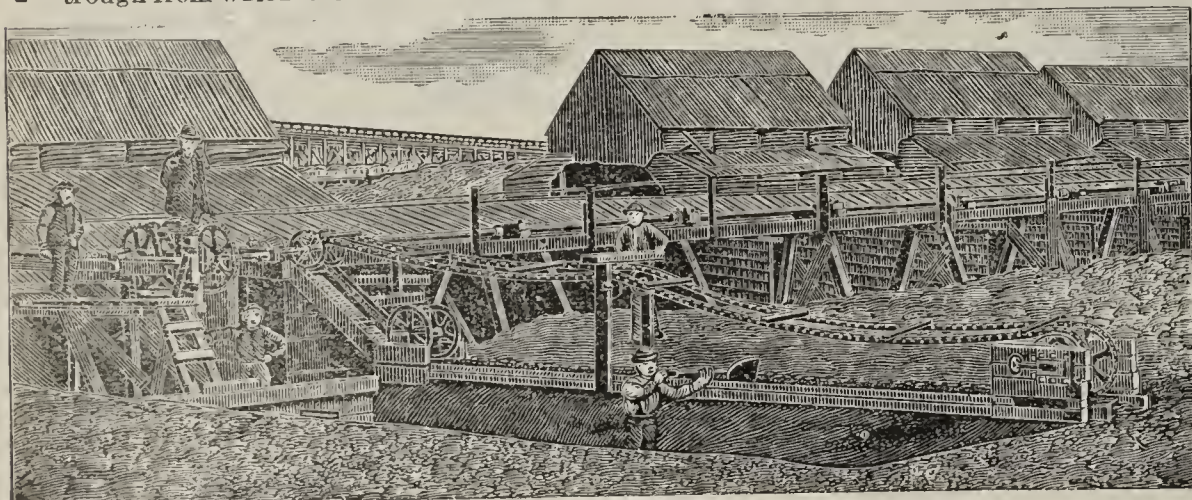


Mey Detachable Chain Belt, Patented Feb. 7, 1888.

**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,  
APPROVED APPLIANCES FOR

**Elevating, Conveying & Transmission of Power**

64 to 68 Columbia St., BUFFALO, N. Y.



Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



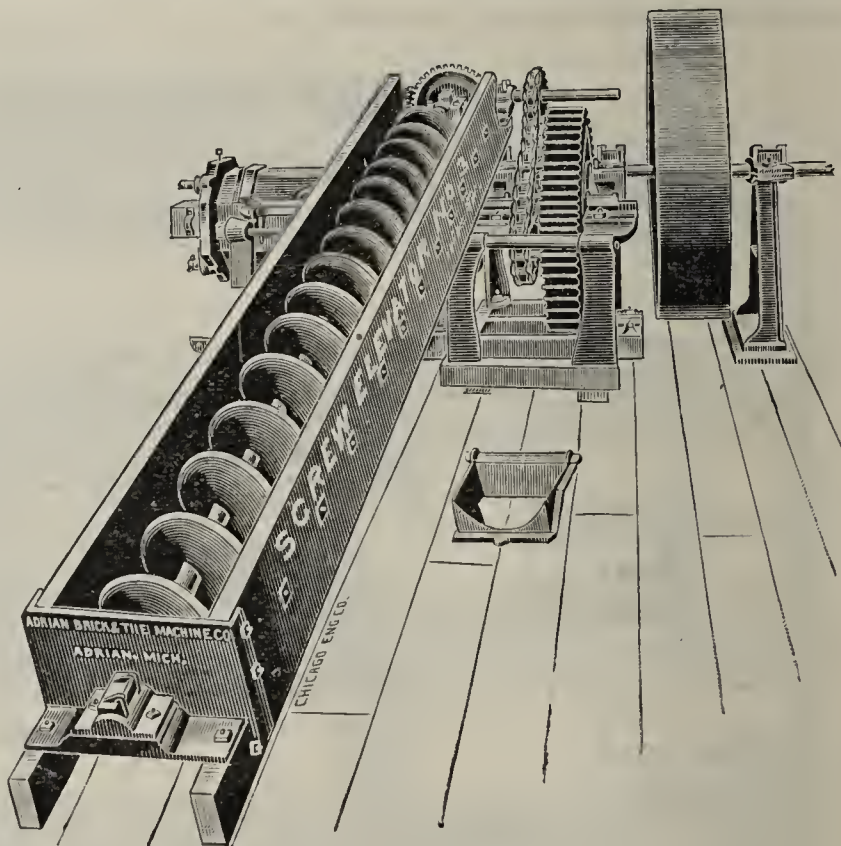
## A LONG FELT WANT SUPPLIED.

### A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**  
ADRIAN, - - MICHIGAN.

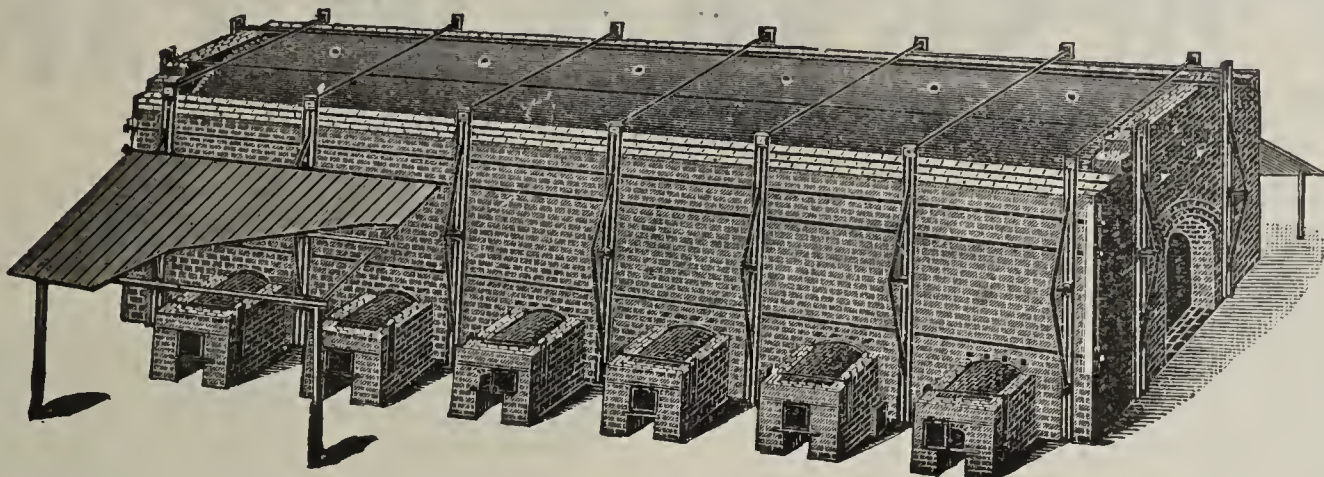




# THE GRISWOLD PATENT IMPROVED BRICK KILN

With  
Its  
Latest  
Improvements  
Has  
No Equal.

For further information and prices for Yard Rights apply to



Works  
with an  
Up and Down  
Draft  
Continuously  
with No  
Change of  
Dampers.

J. B. GRISWOLD & CO.,

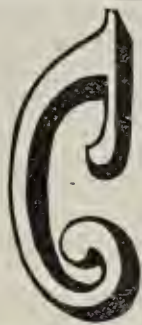
Box 1419, Zanesville, O.

Reference: The Oakland Press Brick Co., Zanesville, O



**BRICK**

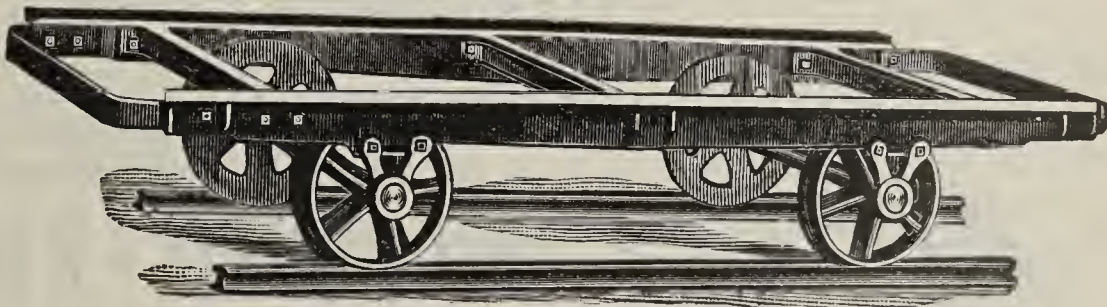
48 Styles.



**ARS**

Send For Price List.

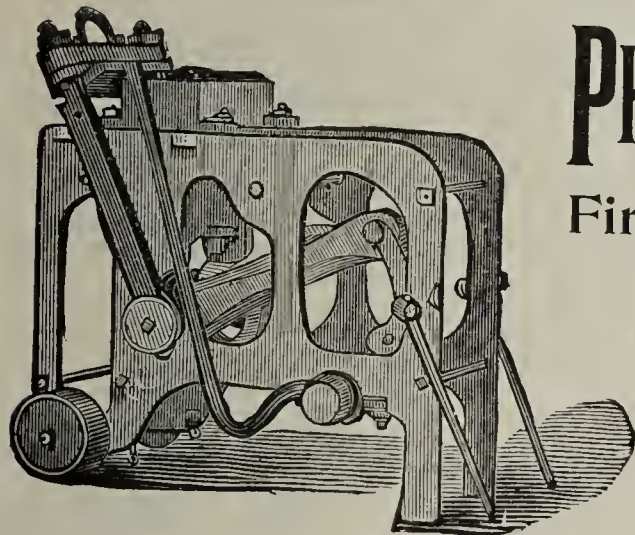
Also  
Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,

Cleveland, O.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

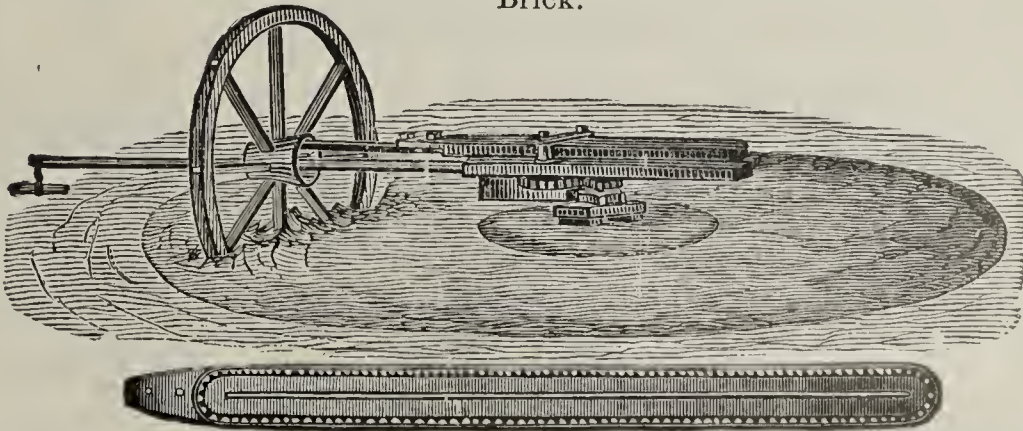
Send for Circular and Price-List.

**PHILADELPHIA BRICK MACHINE WORKS**

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

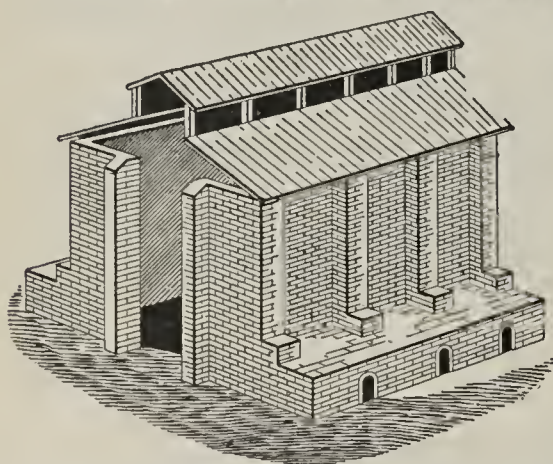
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

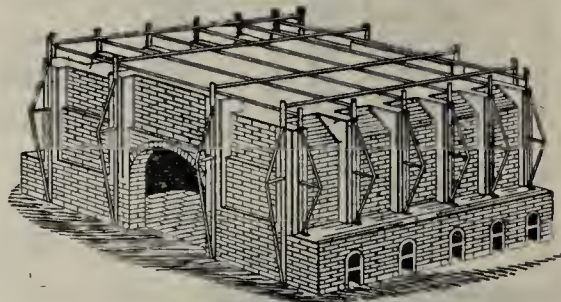
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOI



## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ VITRIFIED PAVING BRICK. ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

L. H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

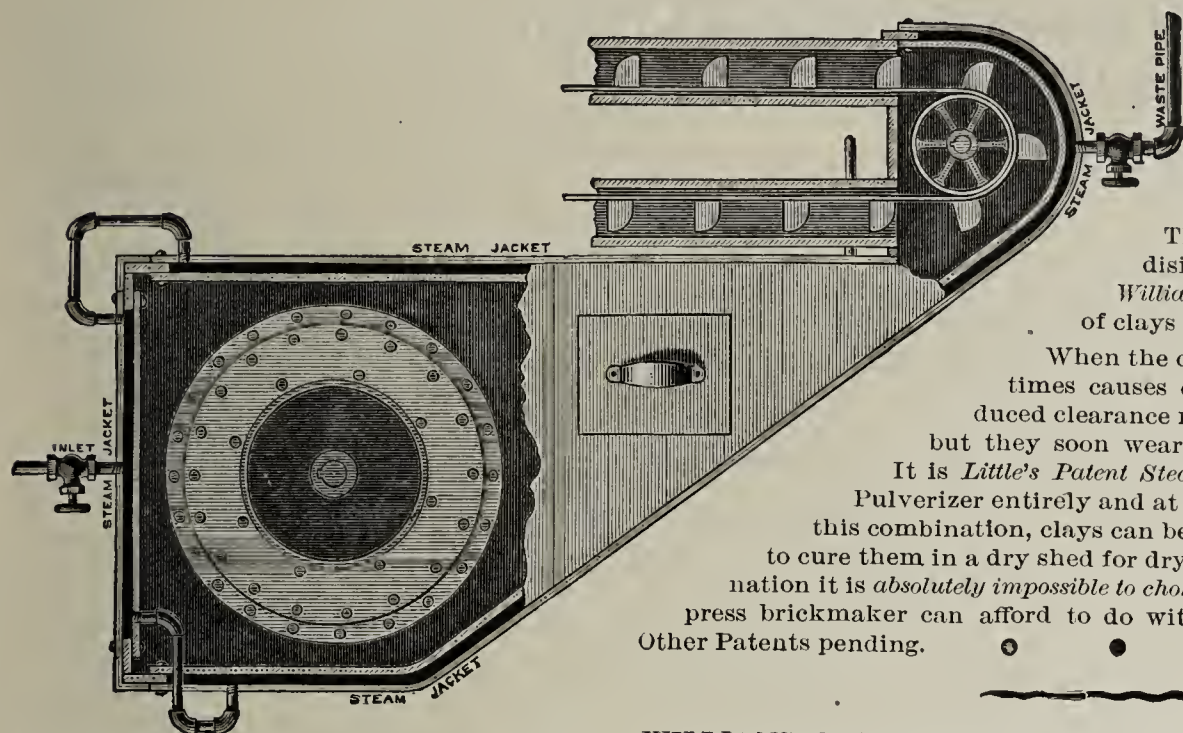
LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



# Williams' Cyclone Clay Pulverizers



and Little's Patent Steam Jacket

FOR CLAY PULVERIZERS.

There is no known machine that will so thoroughly disintegrate and pulverize clays and other substances as Williams' Cyclone Mill. It thoroughly disintegrates all kinds of clays and shales.

When the clay is damp or wet it adheres to the housing and sometimes causes choking of the mill. To obviate this we have introduced clearance rakes which answer all purposes as long as they last; but they soon wear out. We now have found a remedy for all these evils. It is Little's Patent Steam Jacket, represented in above cut. It encases the Pulverizer entirely and at the same time forms the Elevator Boot. By the use of this combination, clays can be worked directly from the bank; but it is preferable to cure them in a dry shed for dry press brickmaking. By the use of the above combination it is absolutely impossible to choke the Pulverizer or Elevator Boot, and, therefore, no dry press brickmaker can afford to do without it when he once knows its value. Patented 1890. Other Patents pending.

WILLIAMS' Cyclone Clay Pulverizer, 30 in. diam.  
WILLIAMS' Cyclone Clay Pulverizer, 36 "  
WILLIAMS' Cyclone Shale Pulverizer, 36 "  
WILLIAMS' Cyclone Clay Pulverizer, 40 "  
WILLIAMS' Cyclone Shale Pulverizer, 40 "  
WILLIAMS' Cyclone Clay Pulverizer, 48 "

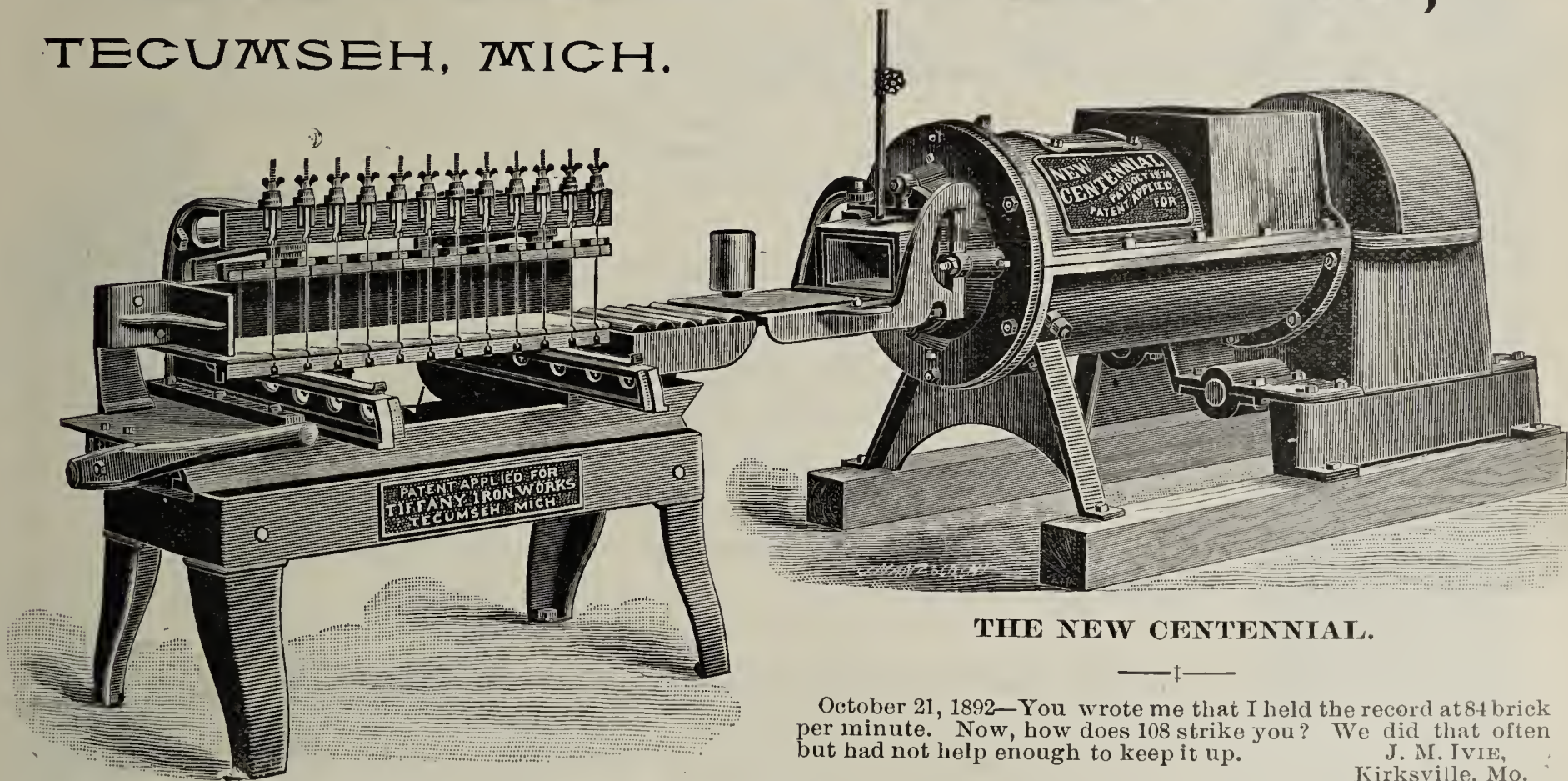
WILLIAMS' Clutch Pulleys and Couplings.  
WILLIAMS' Brick Trucks, 3 sizes.  
WILLIAMS' Cyclone Shale Pulverizer, 48 in. di.  
WILLIAMS' Revolving Clay Screen.  
WILLIAMS' Automatic Feeder for Dry Presses.  
WILLIAMS' Automatic Feeder for Pulverizers.  
WILLIAMS' Triple Roll Crushers.  
WILLIAMS' & Little's Pat. Steam Clay Screen.

LITTLE'S Steam Jacket for Pulverizers.  
WILLIAMS' Clay Elevators.  
WILLIAMS' Sizing Machine for Radial or Angular Brick.  
WILLIAMS' Pony Pulverizer for Testing Clay and shale.  
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO

M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway, ST. LOUIS, MO.

## TIFFANY IRON WORKS, TECUMSEH, MICH.



THE NEW CENTENNIAL.

October 21, 1892—You wrote me that I held the record at 84 brick per minute. Now, how does 108 strike you? We did that often but had not help enough to keep it up.

J. M. IVIE,  
Kirkville, Mo.

The Best Evidence of the Value of a Brick Machine is the Grade of Brick it Makes.

The Board of Engineers that have charge of the Niagara Falls Power Tunnel all say that they are the best red brick they ever saw for their work.

BEAMSVILLE PRESSED BRICK CO.

You ought to see the two houses we are building out of Hollow Blocks. They are fine and look better than anything in Ohio. Our brick will take the first prize sure.

KNOXVILLE SEWER PIPE CO



Good Machinery!

Good Bricks!

Good Money!



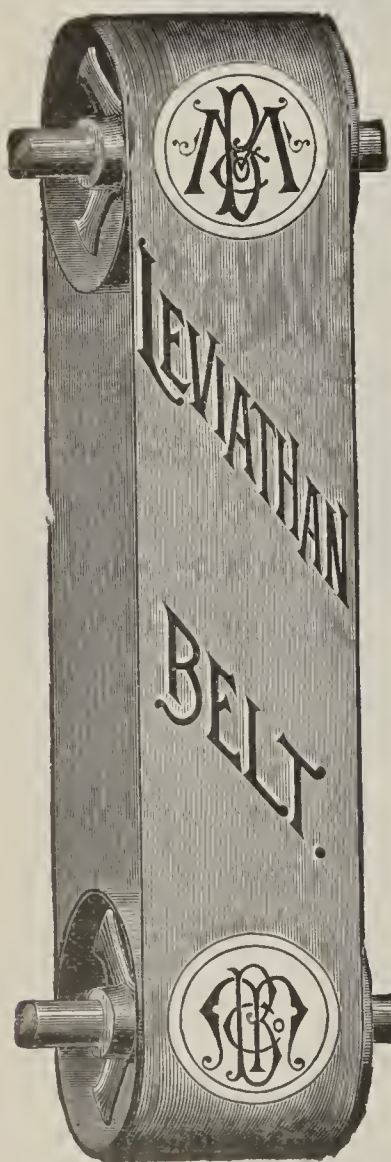
AN ENVIABLE COMBINATION.  
ARE YOU IN IT?

The Latest Improvements—operating with convenience and economy. It being impossible to do something with nothing, neither can you make an Auger hole with a gimlet. Another season with poor appliances may settle you. Behold in the "Creager" machinery your salvation!! Amassing wealth and reputation for hundreds. Why not for you? Complete outfits for small or large service. Honest guarantees. Prices very low, considering those benefits available. Write for estimates, catalogues and information to

Jonathan Creager's Sons,

127 W. SECOND STREET,

Cincinnati, Ohio.

**"Leviathan"**

The only Belt for Brick and Tile Machinery.  
Will outwear any three Belts of other makes in the Market.  
Runs in heat, steam and water without injury.  
Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.**MAIN BELTING CO.,**

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for**  
**Leather, Rubber and Canvas Belting.**

No user of Belting can afford to be without it.



the End.



## THE THISSEN-ARNOLD CONTINUOUS BRICK KILN AND DRYER.

Taking into consideration all the advantages of this kiln over all others, it is undoubtedly the best. It is the best arranged, the most durable, the simplest, uses the least fuel, and gives the most perfect results in any clay, especially in the production of common building and vitrified paving brick. Only very limited shed room is required when the semi-dry clay process is used. Soft mud brick, of course, must be dried until they become hard enough to sustain their weight when set in the kiln.

This kiln works continuously. In other words, when once in operation, it burns a given number of thousands every day in the year; and when properly operated, there will be no loss whatever in burning. It can be easily arranged for work summer or winter, without additional expense for manufacturing and burning. The escaping heat from the cooling brick is successfully used for water-smoking the brick ahead of the fire, without extra expense for labor or fuel they are dried at the same place where burnt, without moving them.

To burn brick successfully it is necessary to have full control of the draft and perfect combustion of the fuel. Our kiln not only possesses these advantages, but it acts also as a smoke consumer, and the heat can be directed, at will, to any desired point. For vitrified paving brick our kiln has no equal, because no heat can escape, and it can be kept in the brick as long as necessary. This kiln will last a lifetime, with very little expenditure for repairs. We now have a kiln of thirty-thousand daily capacity, in operation, and hereby cordially invite examination.

**DESCRIPTION:**—The kiln consists of an endless tunnel, which is lined with fire bricks on the inside to make it substantial, and divided in a series of compartments (18 preferred) by use of shutters and movable partitions which connect and disconnect in any compartment at any time desired. Each compartment has a draft channel in its door, extending transversely across the compartment and further to the smoke chamber, where it is provided with a damper to open and close it. In the compartments these channels are provided with two plates, shorter than the entire width of the compartment, to slide over the top of each, by which means the draft is regulated from one side to the other or to the center of kiln if desired. The firing is done from top of the kiln, through holes about six inches in diameter, in only one compartment at one time. The draft channel is open five or six compartments ahead of the fire, so as to consume the entire heat in the bricks, allowing none to escape. A shutter is drawn across the compartment in which the draft is open, thus making the burning compartments independent of the rest of the kiln. Ahead of this shutter the drying is done, with the escaping heat from the cooling brick, and the heat which is utilized from the sand filling over the burning compartments, by means of channels or pipes imbedded in the filling and extending the entire circuit of the kiln, being connected with each compartment. The channels are provided with dampers, and so regulated as to connect or disconnect them with any compartments, thus operating continuously with the fire.

The drying is done in the same manner as the burning, and as many compartments are used as will consume all the heat. Then the draft is opened in the last compartment and another shutter drawn across, making the desired compartments independent of the rest of the kiln.

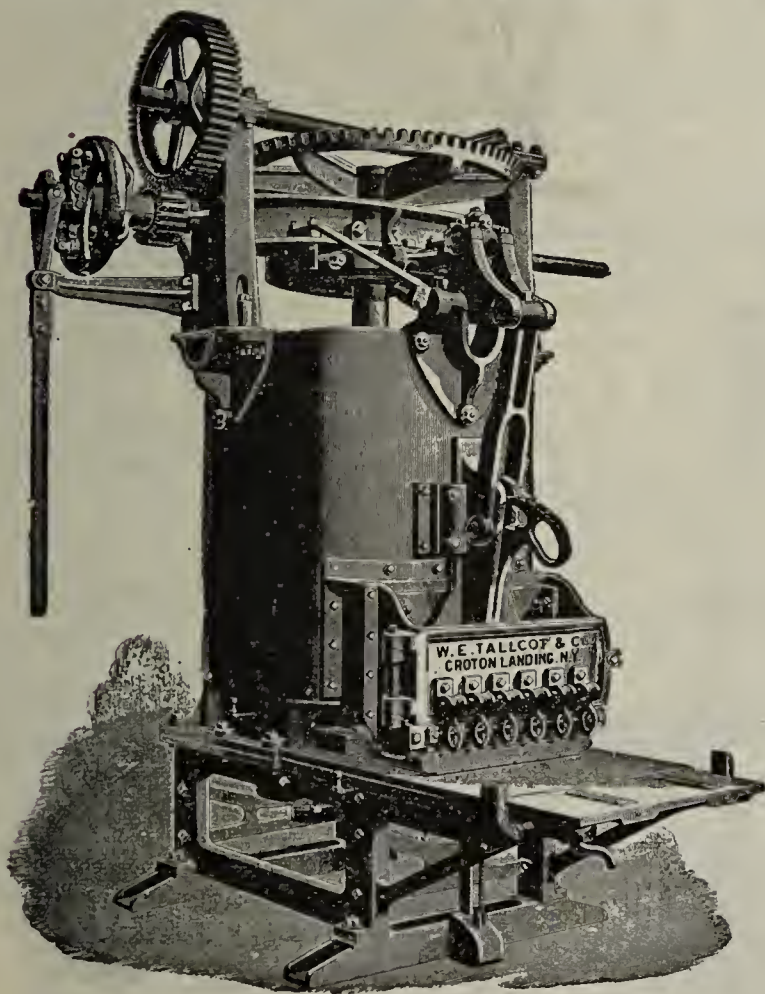
Ahead of the compartments drying, the setting continues, and behind the burning, the bricks are taken out.

The kiln gives the best of results in any kind of clay. It can be built of any daily capacity desired.

For further particulars call on or address,

**THE UNIVERSAL CONTINUOUS BRICK KILN CO.,** 510 New York Life Building,  
(Mention the Clay-Worker.) or 425 Range Building, OMAHA, NEBRASKA.

## The "I. X. L." Brick Machine. A Modern Type of Machine.



Extra Strong,  
Handy to Operate,  
Large Tempering and  
Pressing Capacity.

Made in two sizes:

The "Standard" for ordinary brick.

The "Special" for large brick.

Especially Adapted For

**PALLET BRICK WORK.**

Write for Illustrated Catalogue, stating size of brick to be made and if wanted for pallet work.

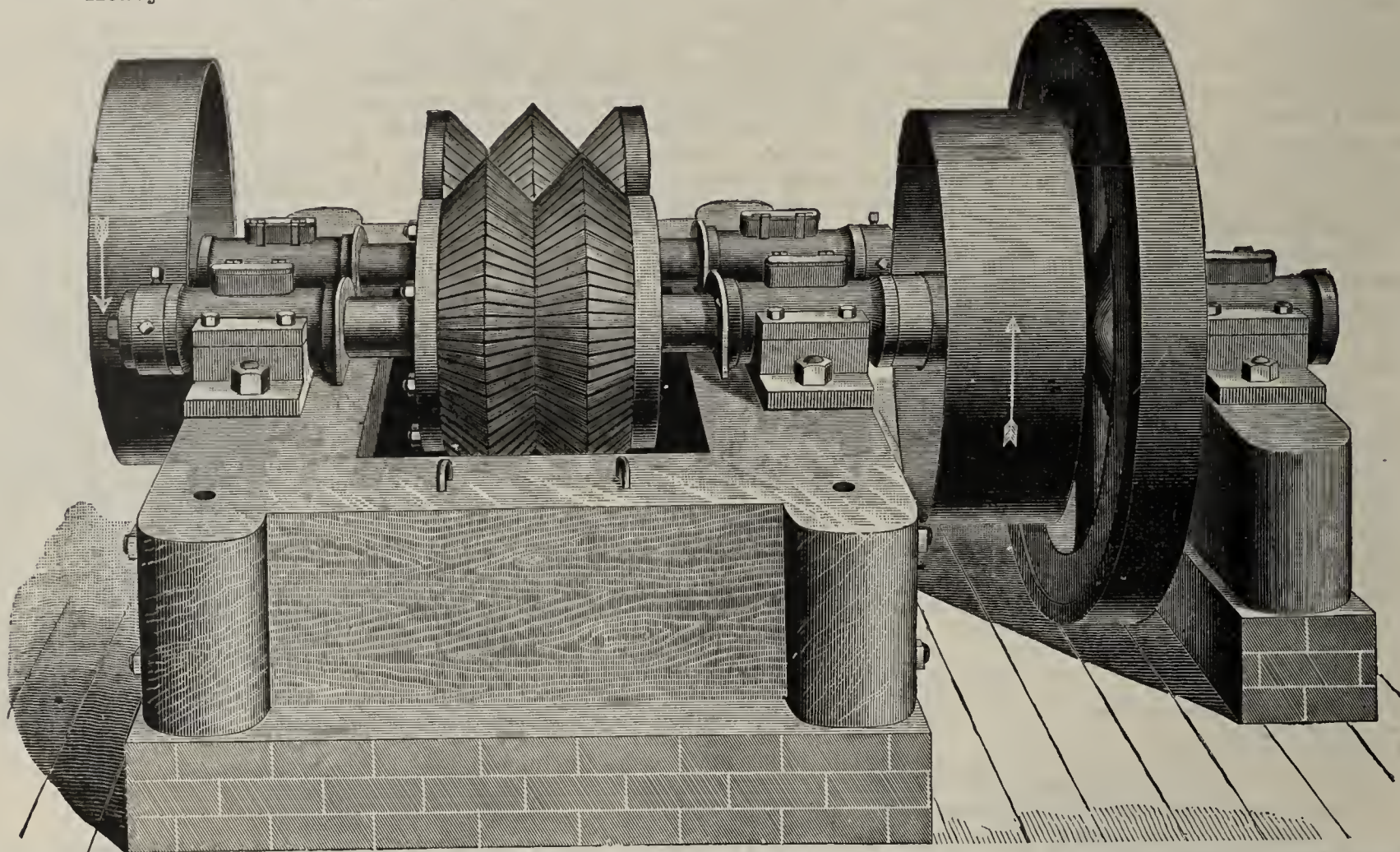
**W. E. Tallcot & Co.,**

**CROTON-ON-HUDSON, - NEW YORK.**



# NEWELL IMPROVED CLAY PULVERIZER

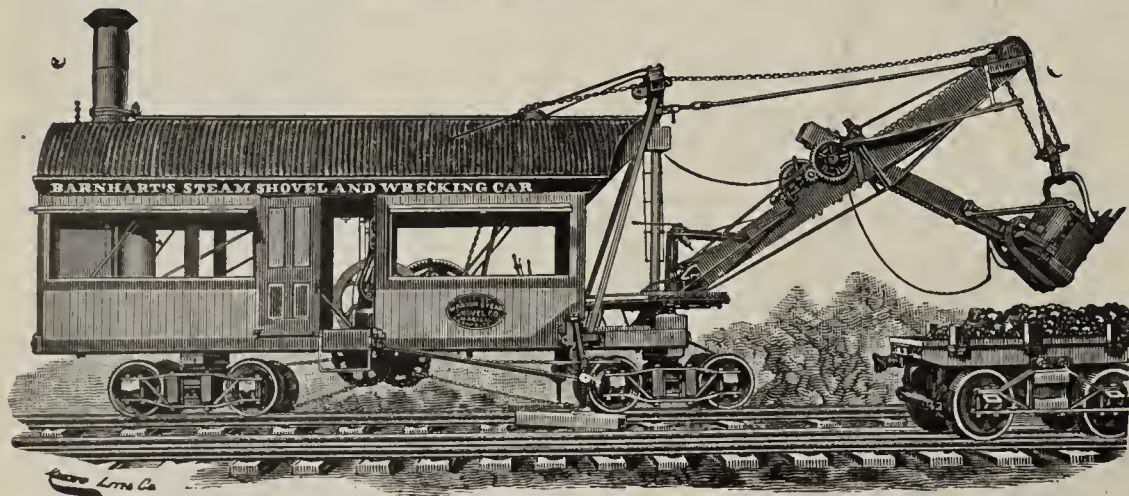
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Electrical Ex. Bldg., 136 Liberty St., N. Y.

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

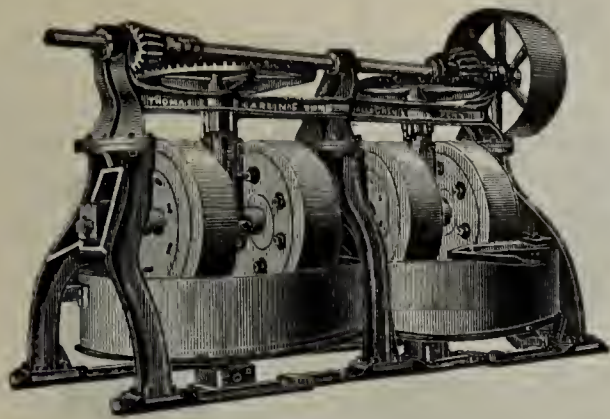
**The Marion Steam Shovel Co.,**  
603 West Center Street,  
MARION. . . . OHIO.



STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick





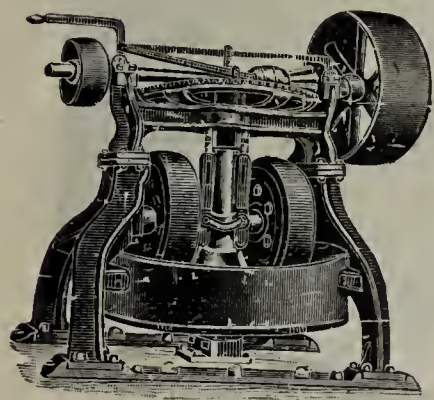
OUR SPECIALTY.

# GRINDING AND MIXING PANS

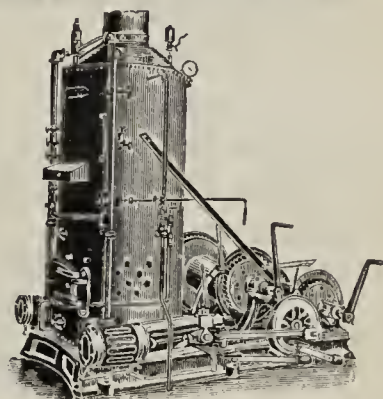
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
ENGINES AND BOILERS, HOISTING ENGINES,  
DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
ALLEGHENY, PA.



One 9 foot Dry Pan.  
One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF  
IMPROVED

# CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

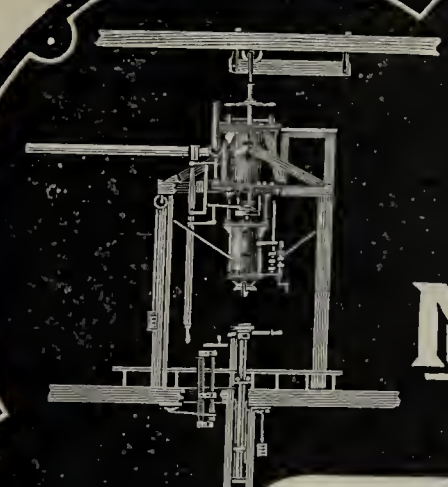
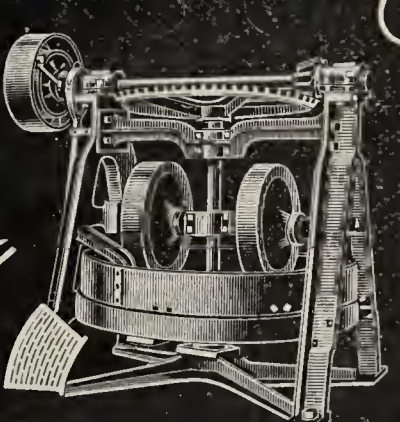
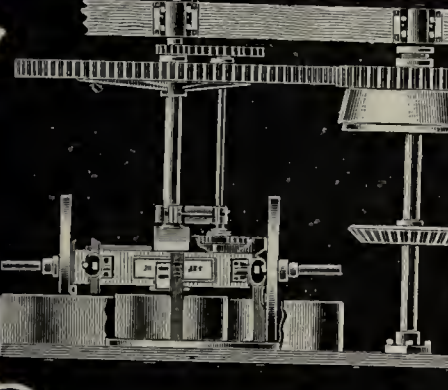
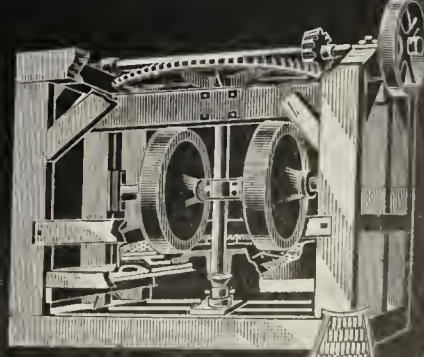
## TAPLIN RICE & CO.

CLAY MILLS,  
STEAM SEWER PIPE PRESS,  
DRY & WET PANS, DIES, CLAY BLOCKERS,  
POTTERS' WHEELS AND  
MACHINERY OF ALL KINDS.

# AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
& DISPATCH GIVEN  
TO ORDERS

SEND FOR  
CATALOGUE  
A





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

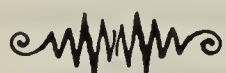
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

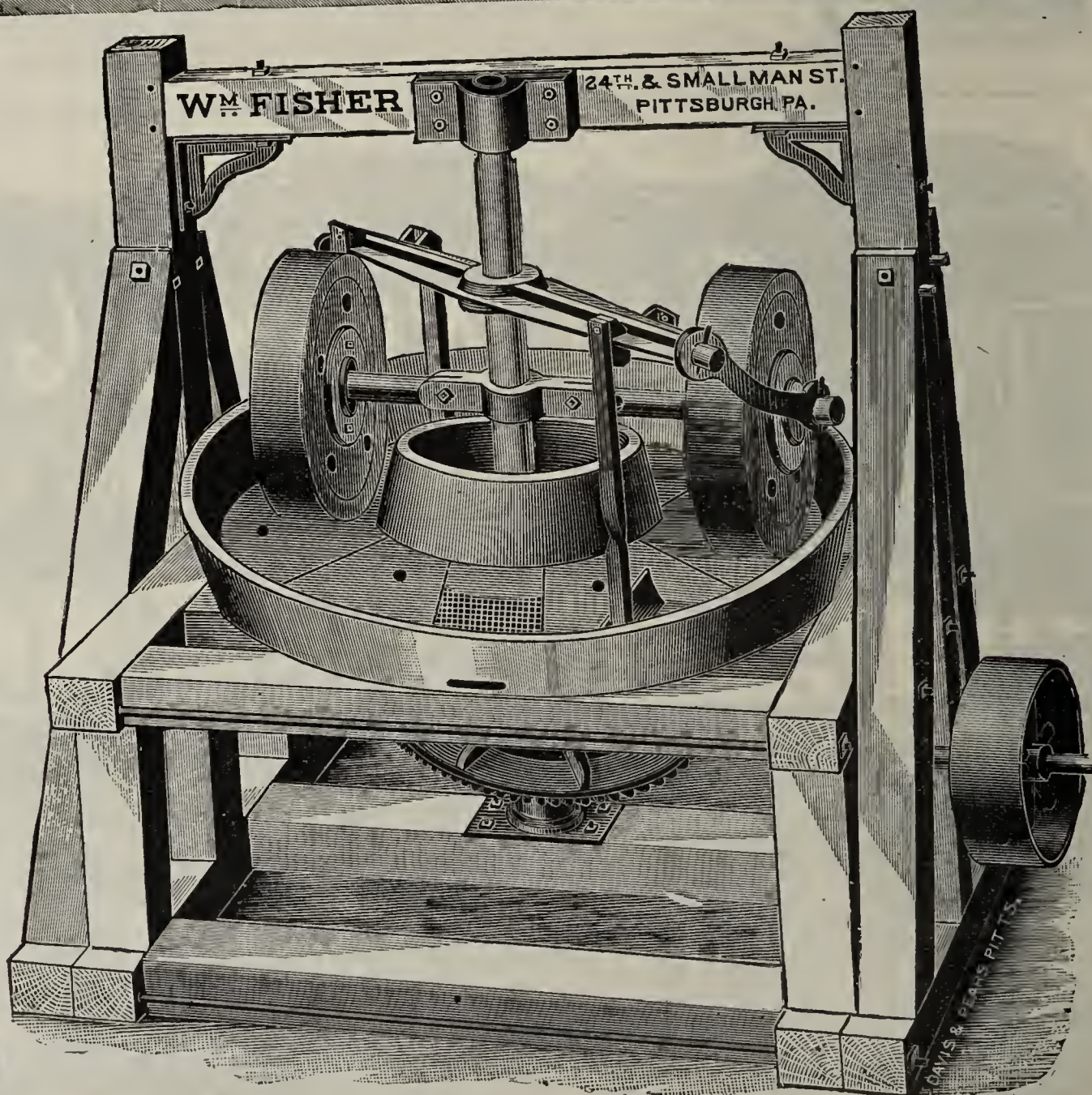
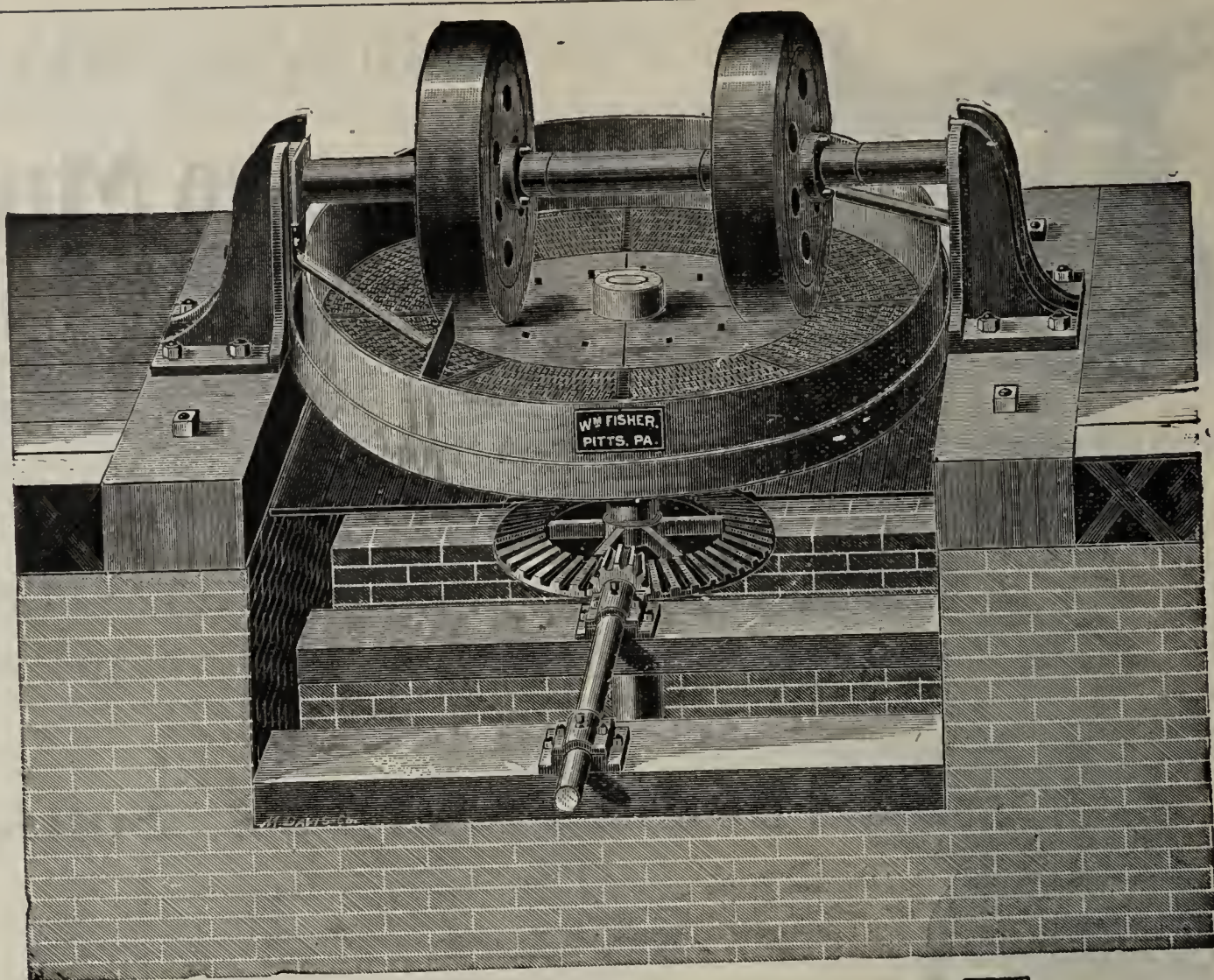
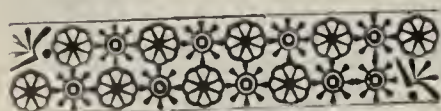
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.

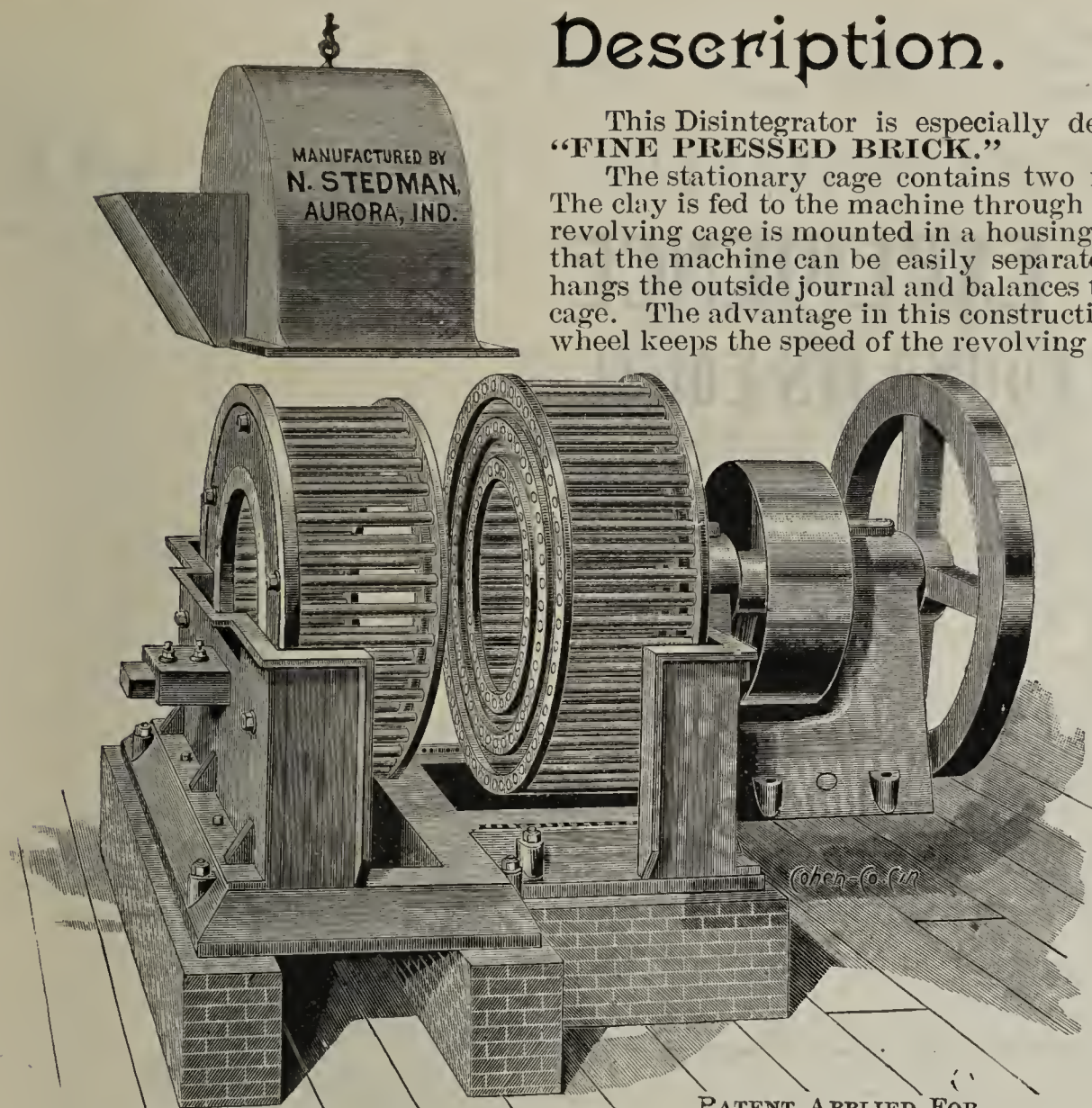


## Description.

This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

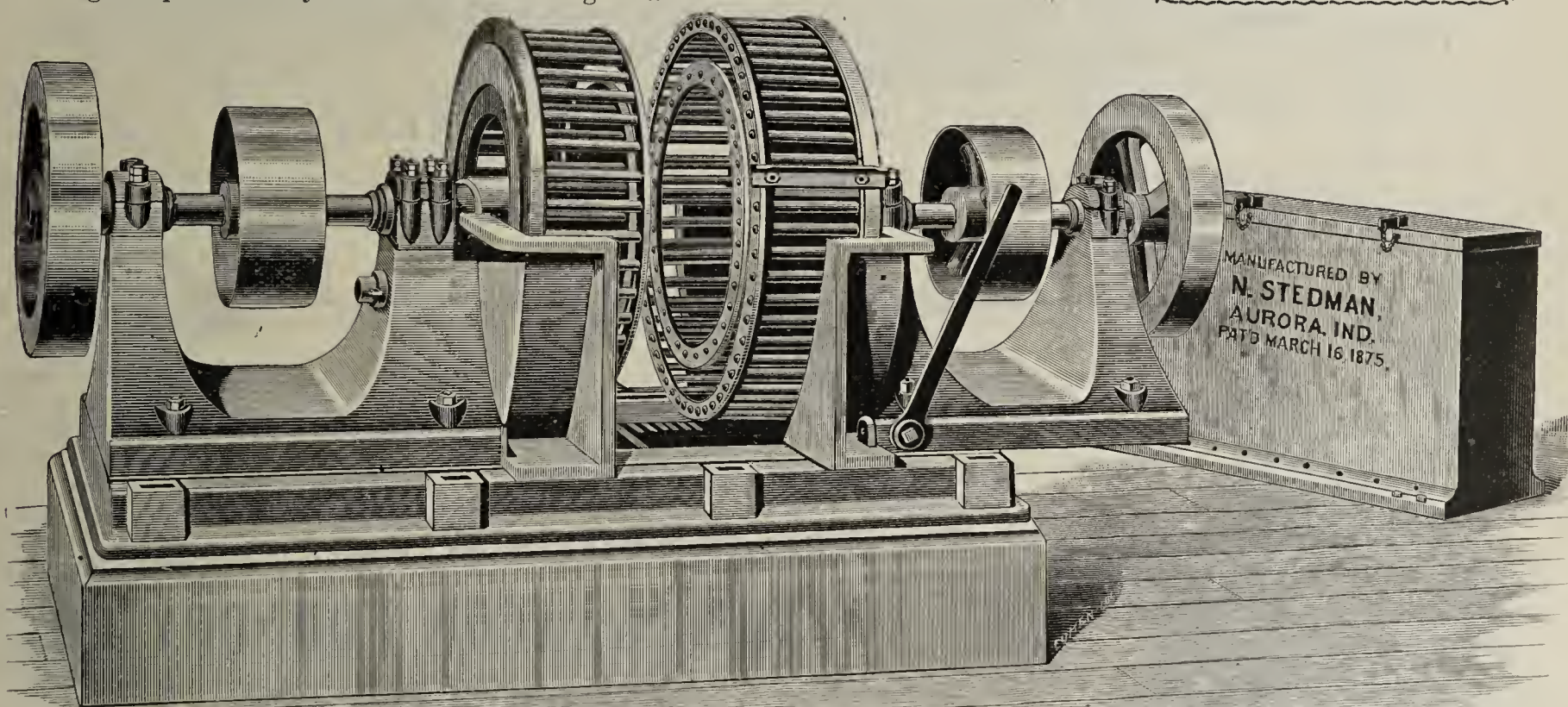
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

Mention the CLAY-WORKER.



**WITH 40 YEARS' EXPERIENCE**  
 **HAS NOT FOUND ITS EQUAL.**

BERLIN, CONN., Dec. 18, 1892.

THE McLAGON FOUNDRY CO.:

GENTLEMEN—After the long experience of forty years in the brick business I find your machine (the "NEW HAVEN"), superior to any I have known for making perfect brick. Having used it with great success for the past season I have been able to test its qualities. It turns out 42,000 brick daily which are unexcelled. I would recommend it to any one about to purchase and am sure it would prove a success as it saves both time and money.

Yours very truly,

RICHARD MURRAY.

Formerly of Haverstraw, N. Y.

For Others Like This, Write

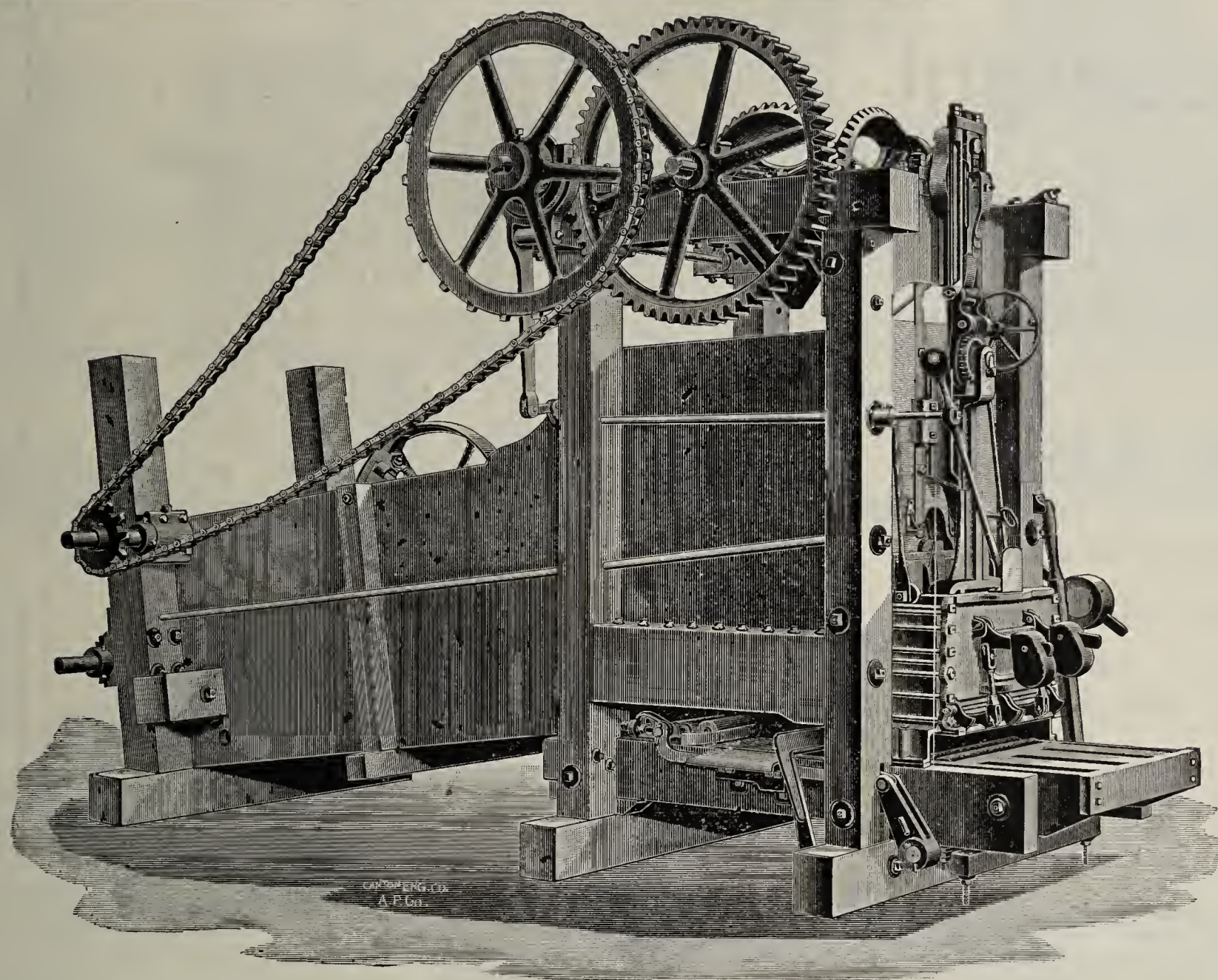
**THE McLAGON FOUNDRY CO.,**

NEW HAVEN, CONN.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



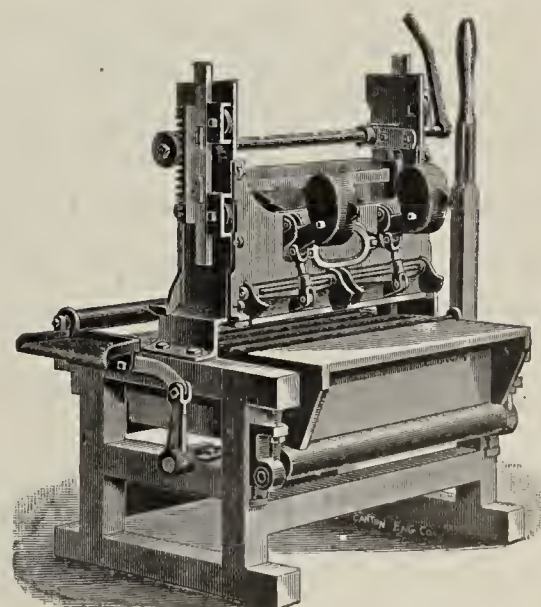
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# No. 10 Upright Machine

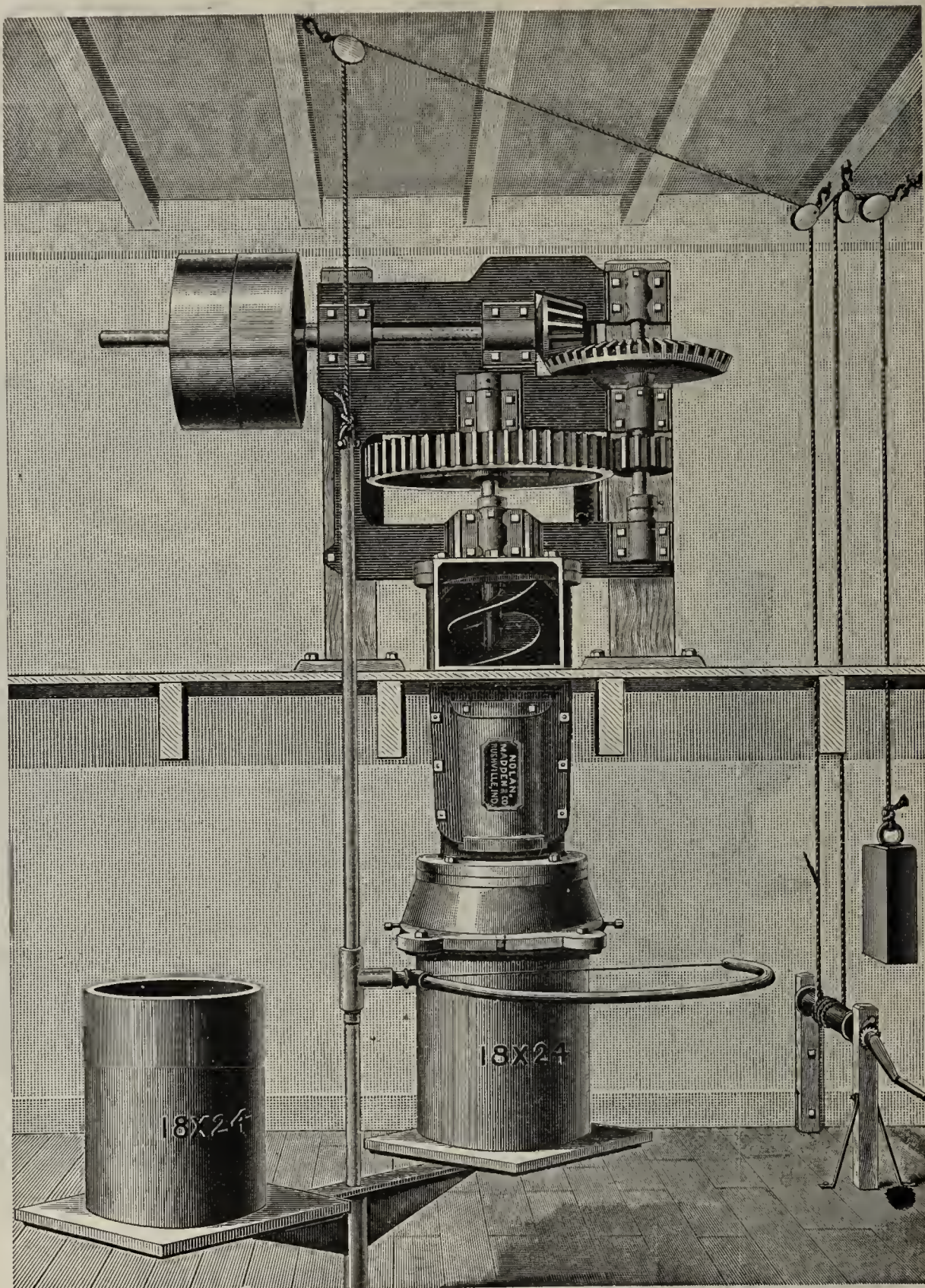
For the Manufacture

—OF THE—

## Larger Sizes of Tile

Including Tile from 10 to 20 Inches.

This Machine has been on the market for three years and has been a success beyond all expectations. It is made from the strongest pattern and built after the most improved style.



Any parties wishing to add a Machine for large tile to their factory will find this is the one that will give them the most and best work with the least power and no breakage. We have seven sizes of Horizontal Auger Machines for Tile, six sizes of Brick Machines with Side Cut Board Delivery Tables, and three sizes of soft clay Brick Machines. Also line of Crushers, Pug Mills, and the best Disintegrator in the market.

We will make it to your interest to write us before you buy and get our prices.

FOR PARTICULARS, ADDRESS,

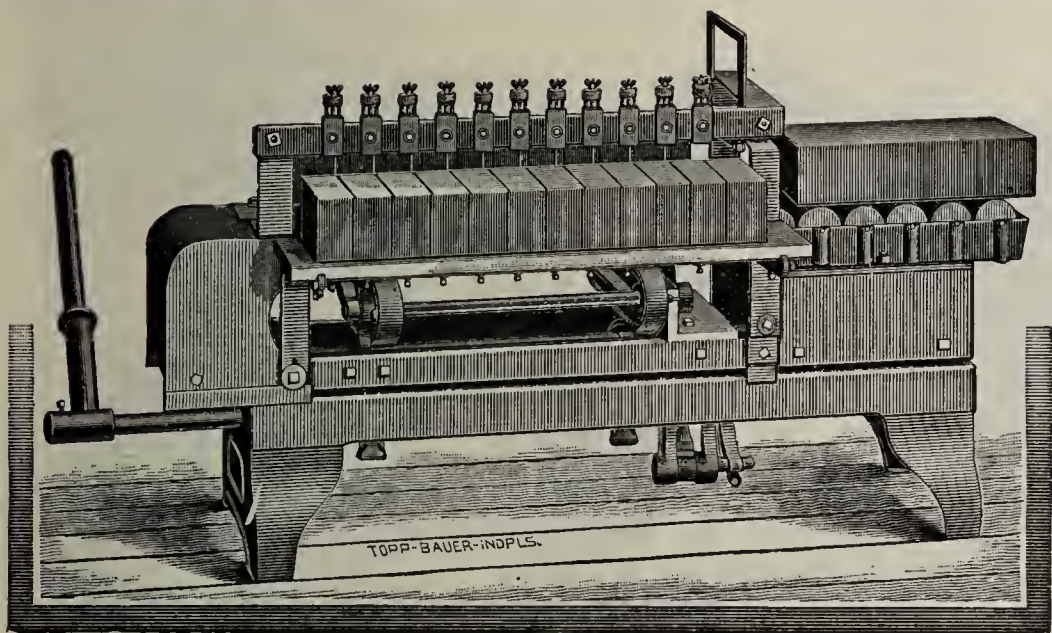
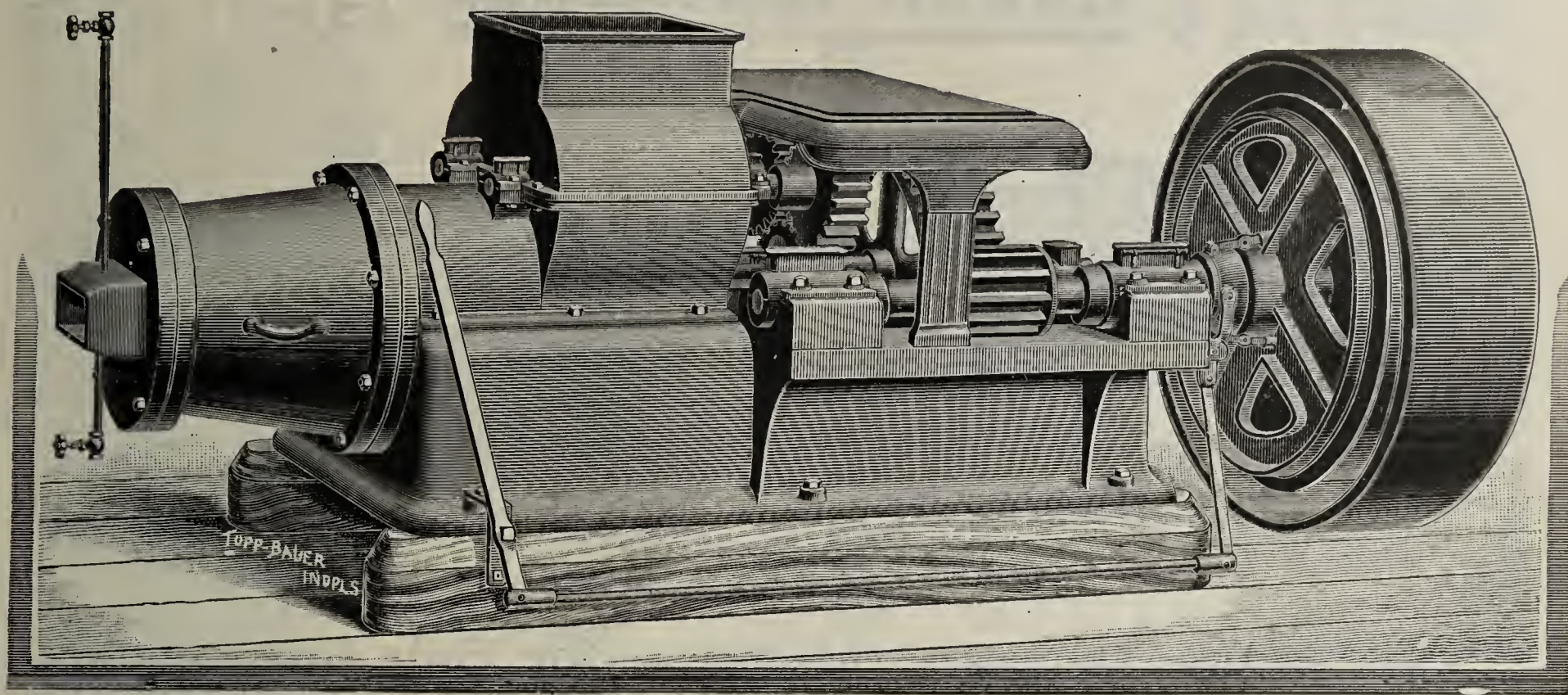
# Nolan, Madden & Co.,

## RUSHVILLE, IND.

[Mention the Clay-Worker.]



# SAVE YOUR MONEY BY BUYING THE BEST.



## THE "PLYMOUTH"

Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and pugging device.



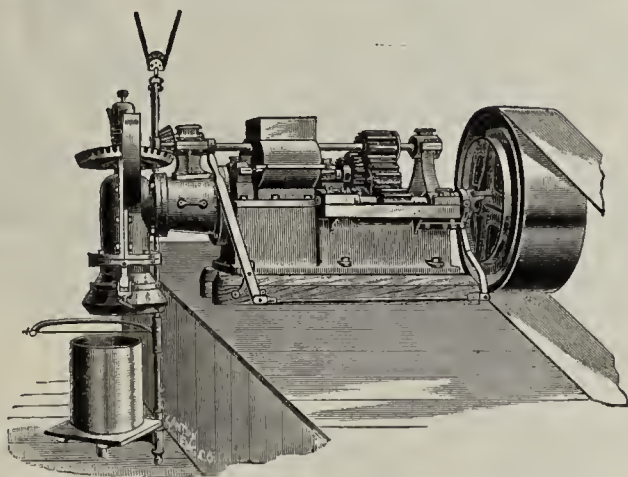
We build our Machines

for

STRENGTH

.. and ..

DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

It will Tell You  
All About It.

# The Fate-Gunsallus Co.,

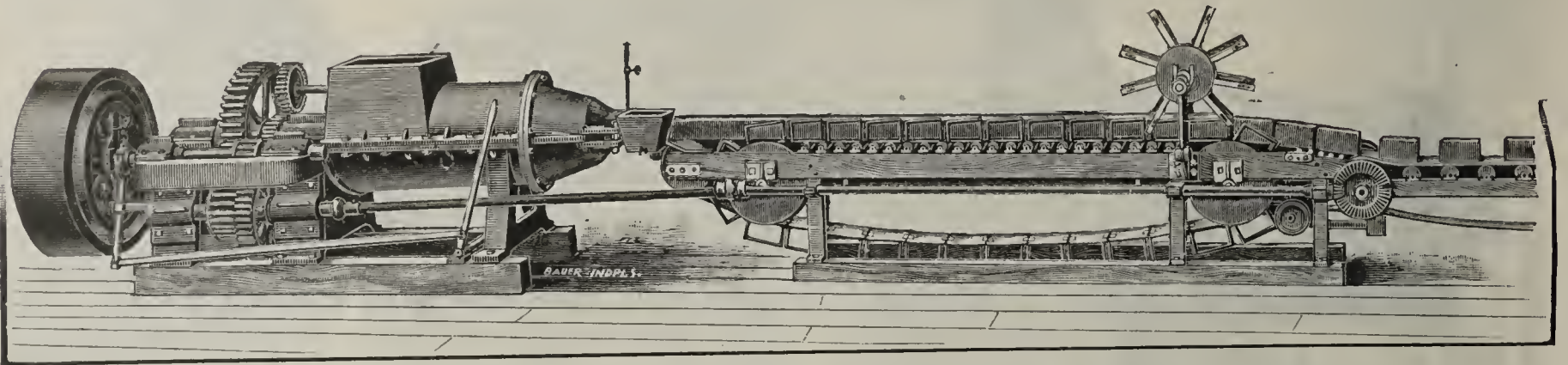
PLYMOUTH, OHIO.

[Mention the Clay-Worker.]



The Best Results are  
Obtained by Using Our

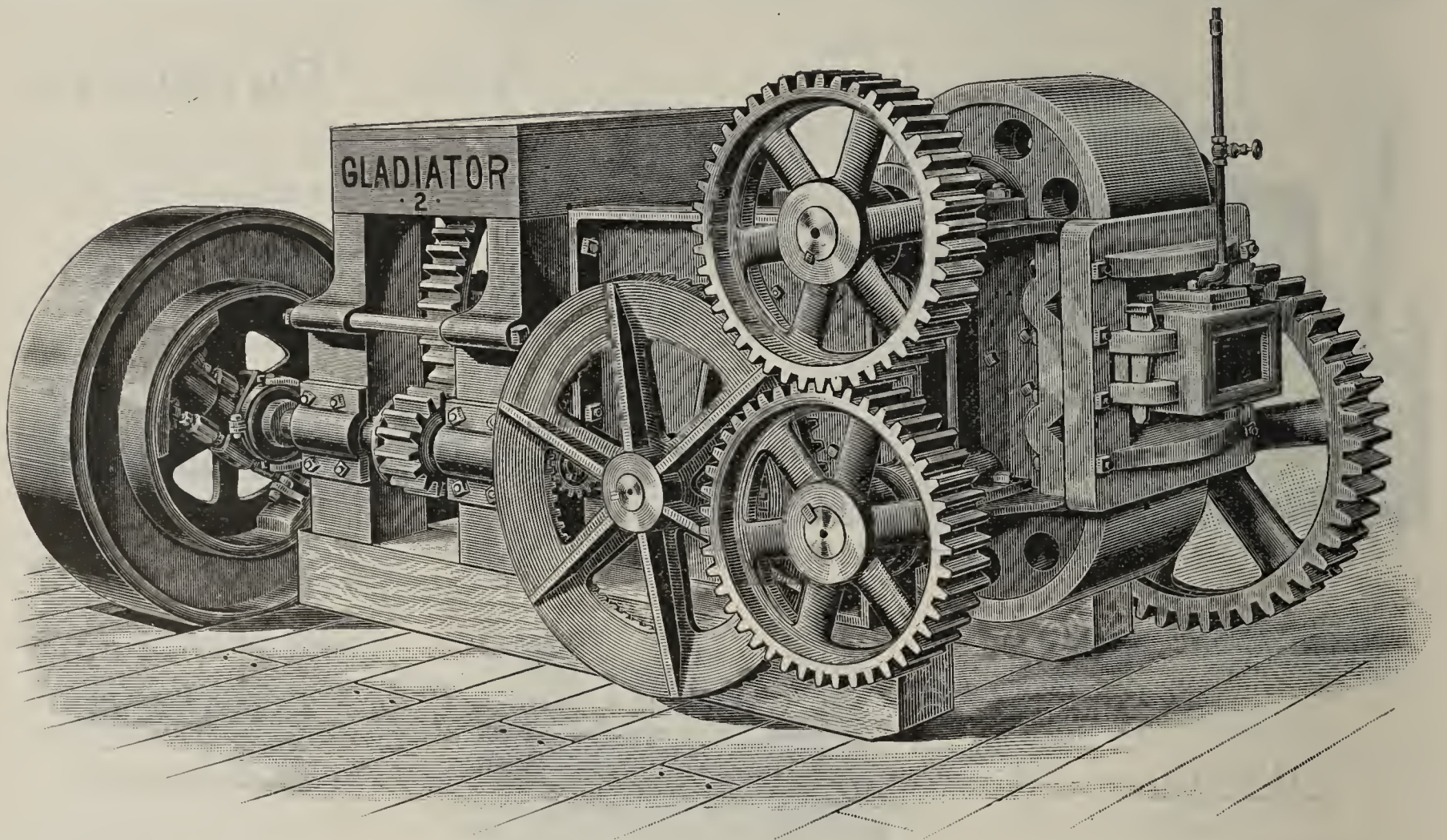
# **AUGER MACHINES** FOR END-CUT BRICKS.



The DECATUR with Automatic Cut-off

AND

Our Roller Delivery Machine for Side Cut Bricks.



THE GLADIATOR.

Full Factory Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,  
Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

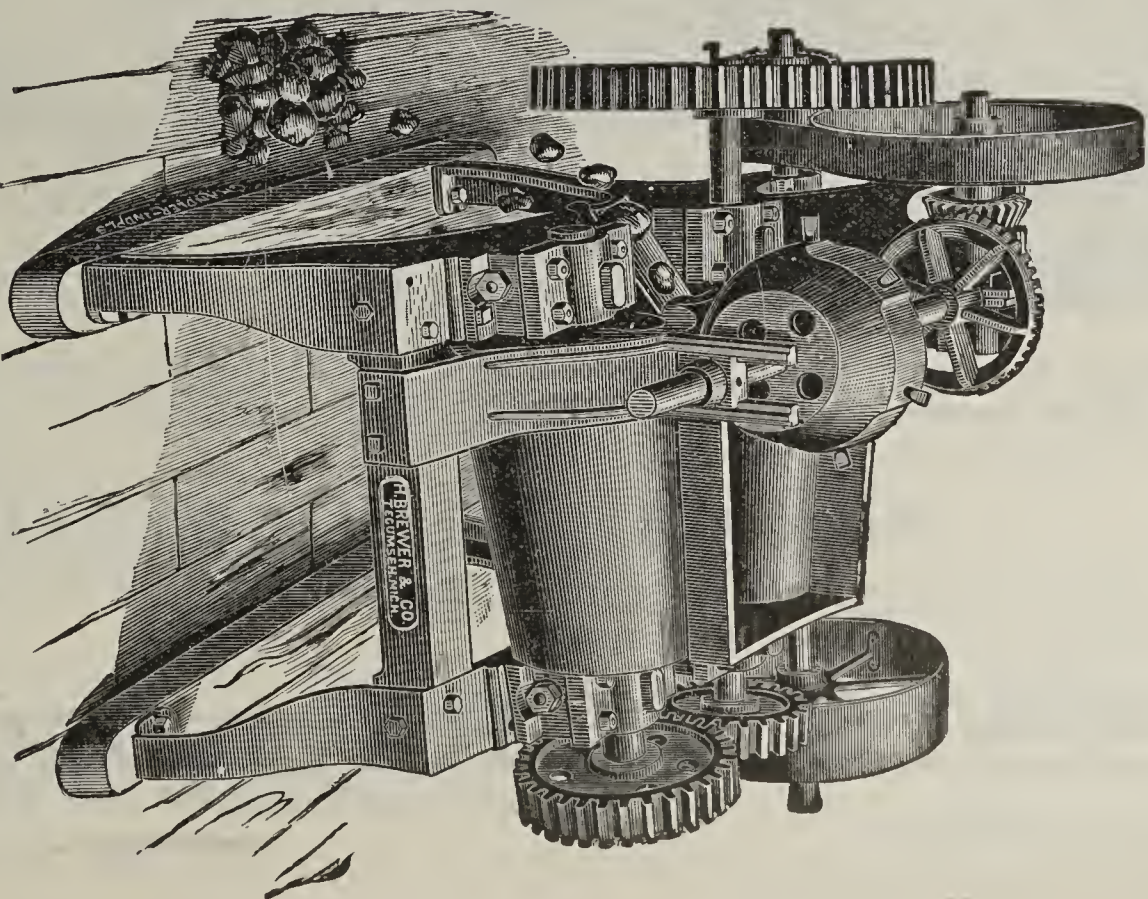
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

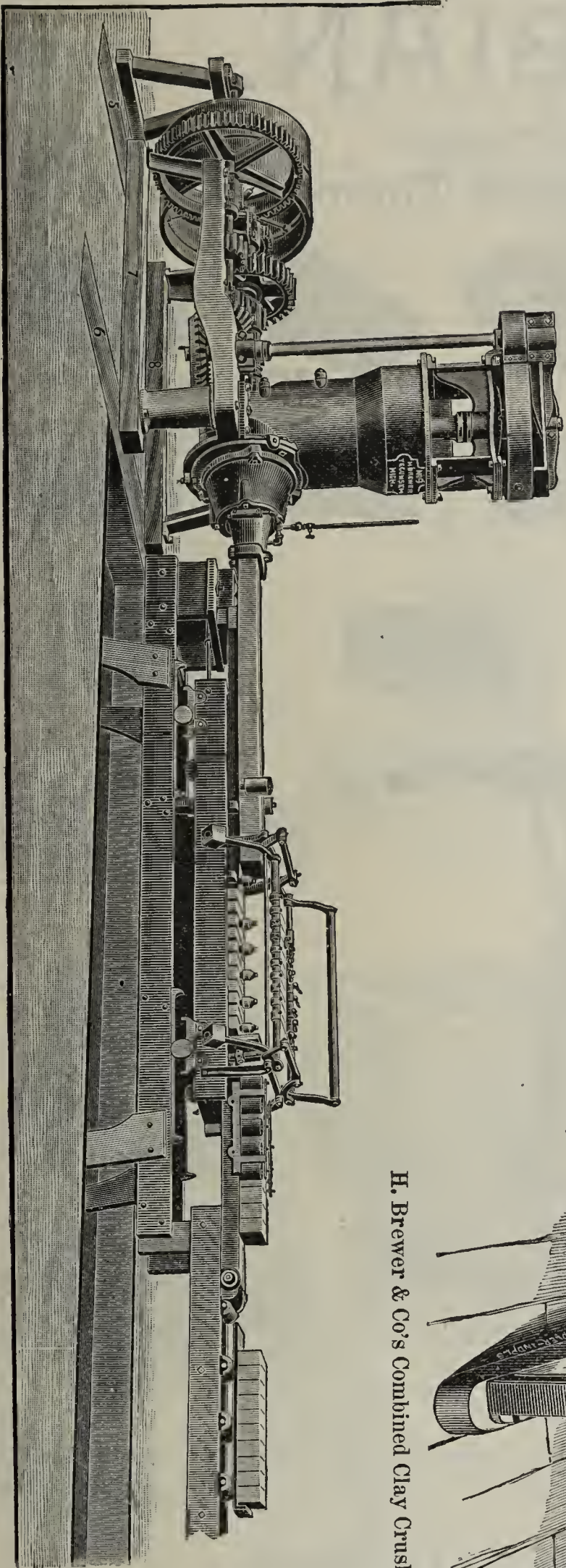
## H. BREWER & CO.,

### Tecumseh, Mich.

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

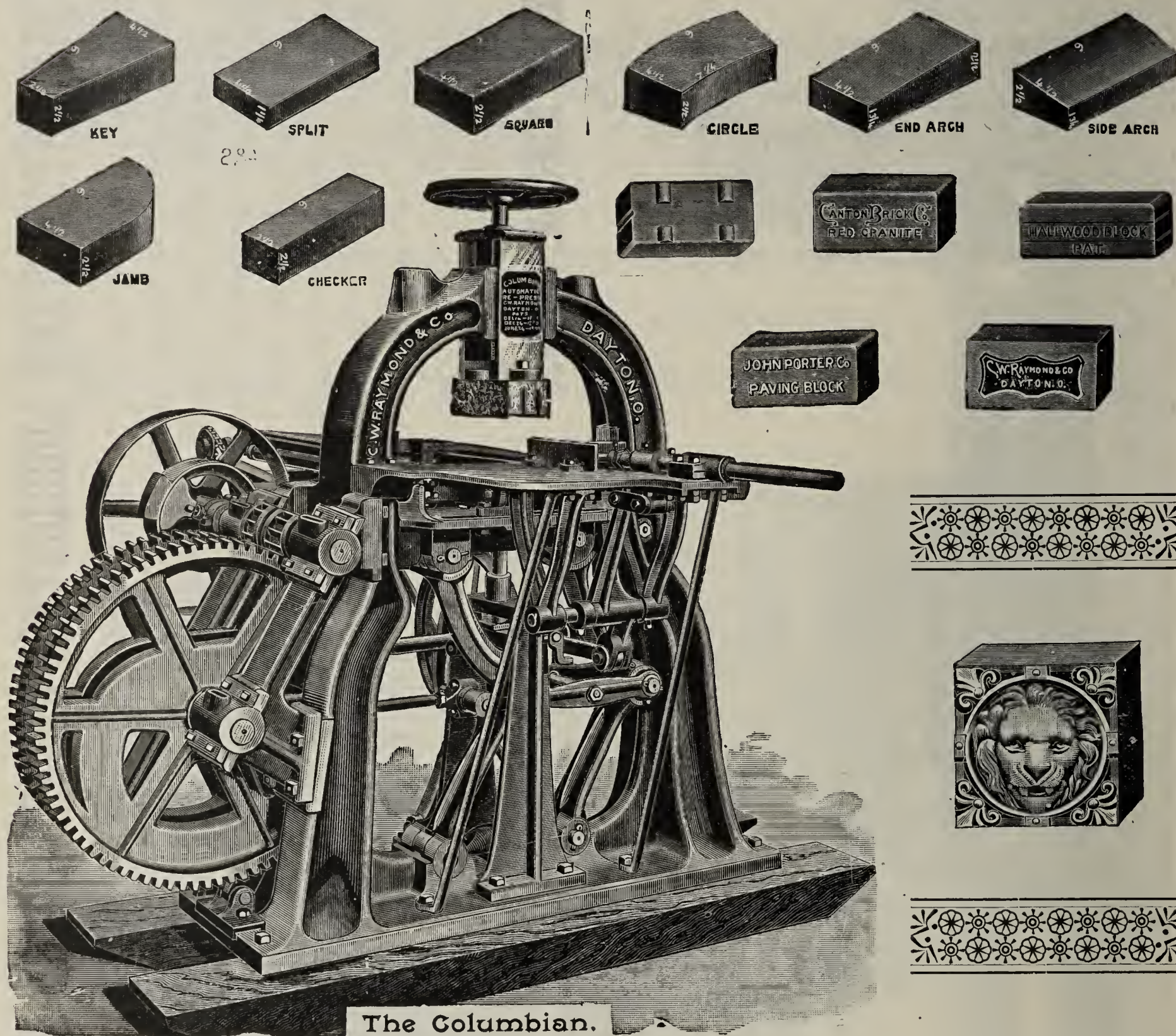


The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



# The COLUMBIAN.

❖❖ The One Press Will Press Them All. ❖❖



The Columbian.

**"That Tired Feeling"** which a brickmaker experiences when he has invested \$600 in an experimental re-press and \$2,580.32 in repairs can be entirely obviated by purchasing

**== A COLUMBIAN, ==**

The only press that made a record of its own, hence, the only one that offers a secure investment for a practical brickmaker.

**Manufactured by C. W. Raymond & Co.,**

[Mention the Clay-Worker.]

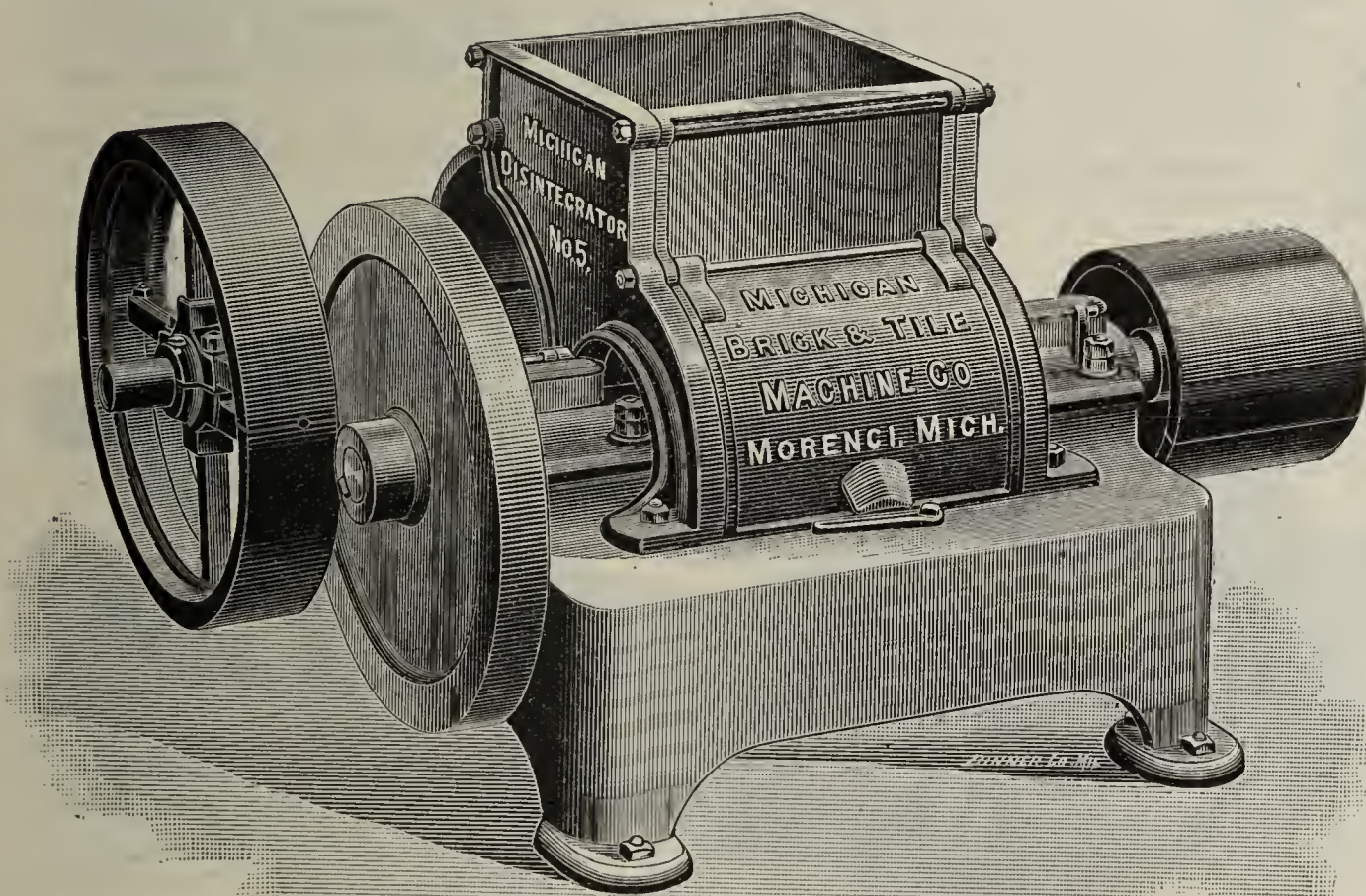
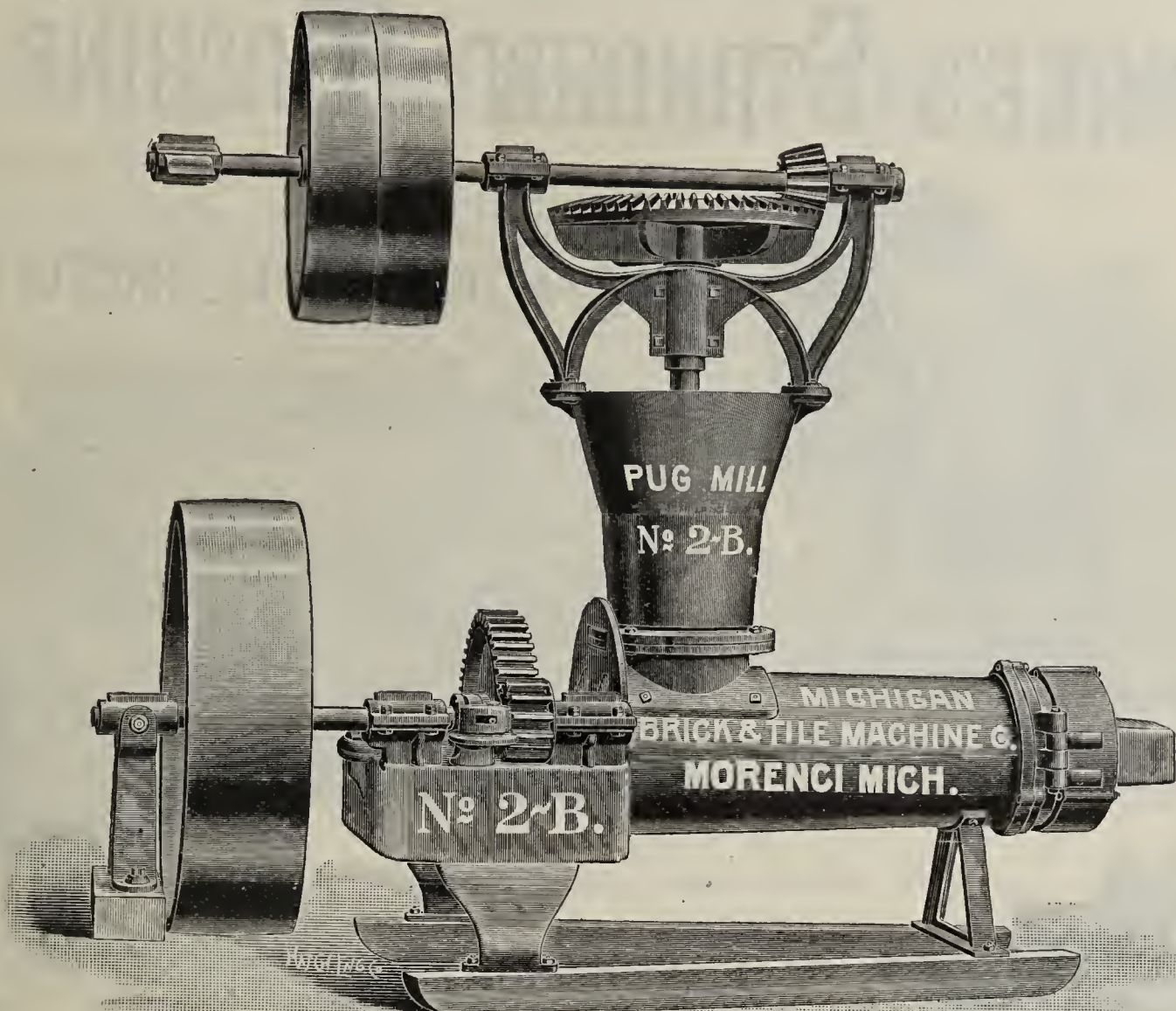
**Dayton, Ohio.**





THIS is the smallest size of our new Machine with Upright Pug Mill attached.

Main frame cast solid. No joints to weaken it. Tub in one piece—hinged safety nose piece. Shafts, steel. Extra long bearings. Seven feet or more of clay under constant pressure, insuring a steady feed, thorough pugging and mixing and overcoming all back slip and turning of the clay, and increasing the capacity.



Something new! The best Disintegrator on the market; no doubt of it.

Main Frame cast solid with bearings for Fast Roll self-contained. No joints and bolts to get loose and cause trouble and expense. Steel Shafts. Bearings 10 inches long. Five Knives. Fast Roll, speeds to 1,000—perfectly balanced.

Capacity 30,000 to 40,000 brick per 10 hours.

Weight 2,500 pounds.

Greatest capacity for price of any on the market.

If you want to know more about it, write us.

We manufacture a complete line of Clayworking Machinery for Brick, Tile, Terra Cotta Lumber and Fire-proofing.

Write to **MICHIGAN BRICK AND TILE MACHINE CO., MORENCI, MICH.**, for Catalogue. Tell them about the capacity of machine you want, the kind of clay you have and ask for prices.

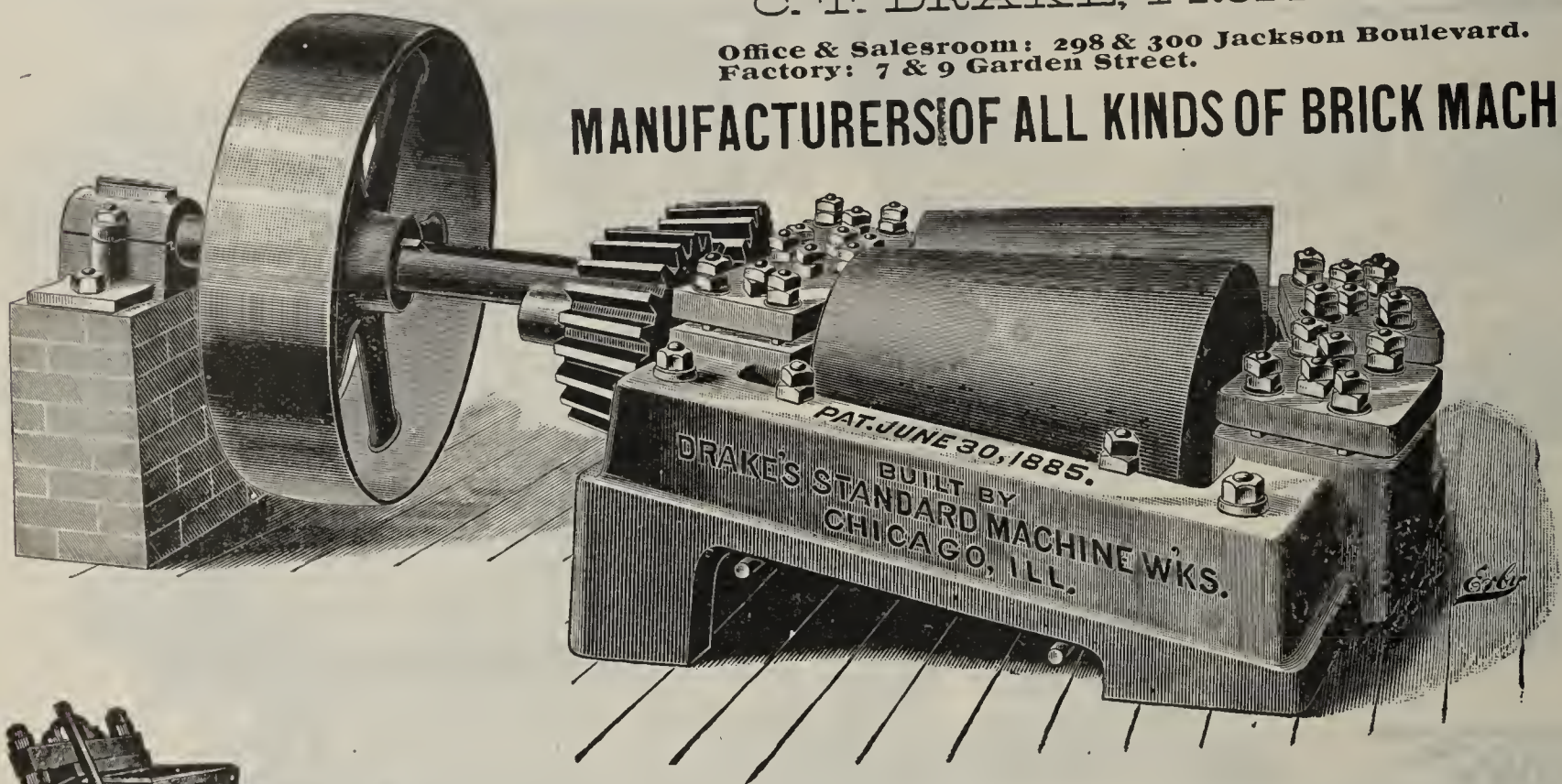


# Drake's Standard Machine Works,

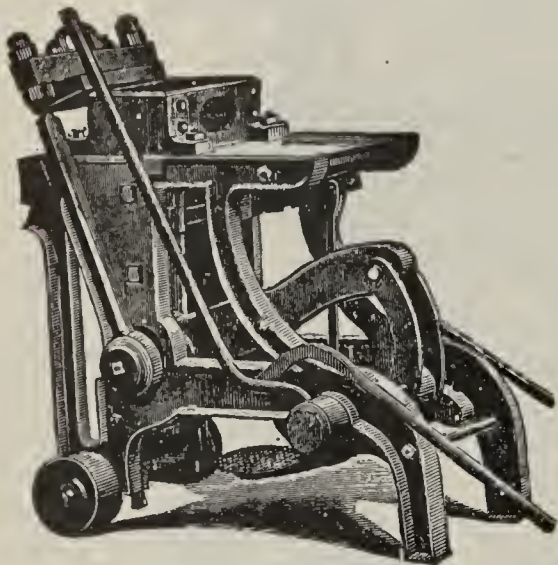
C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY



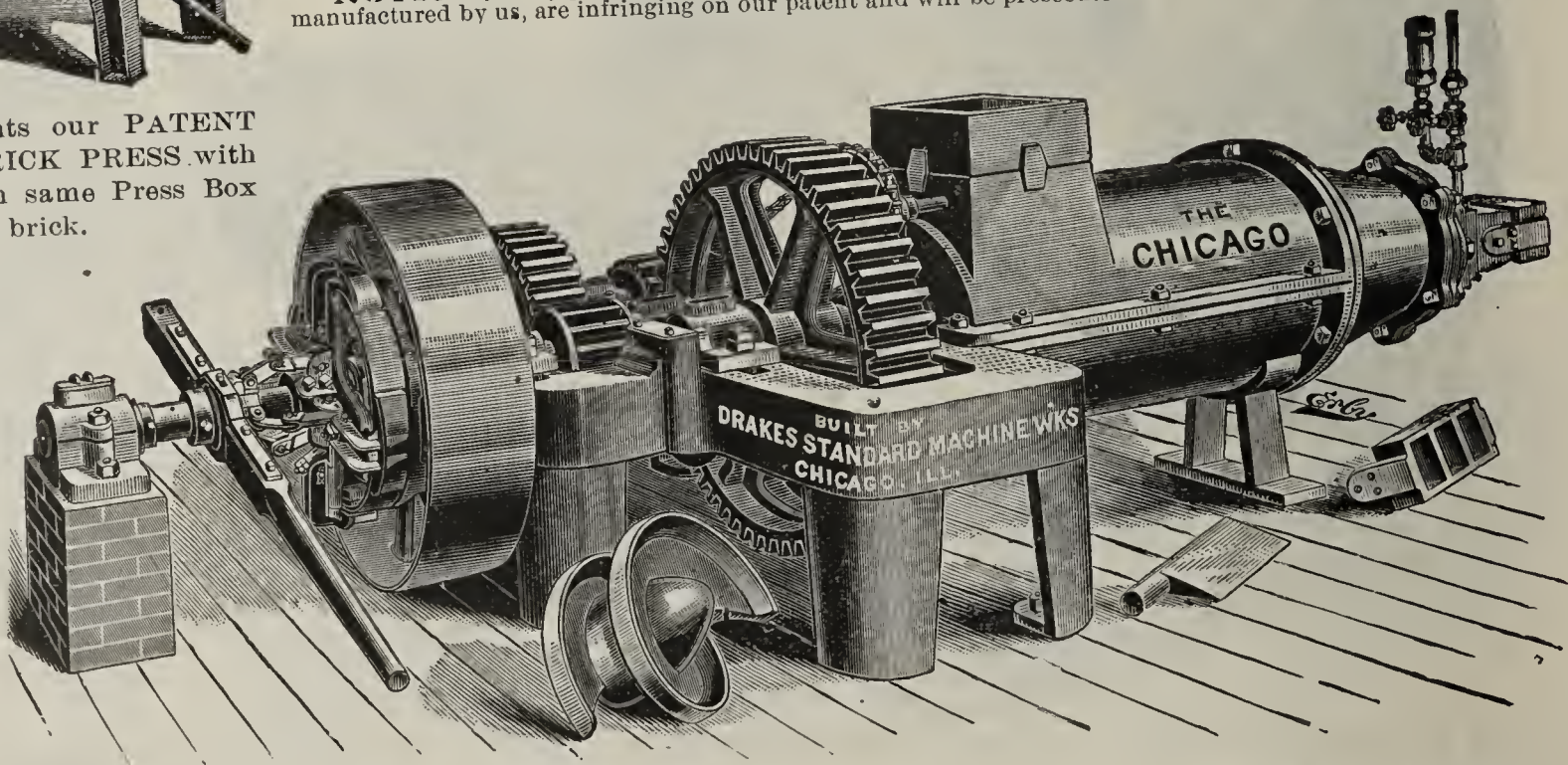
This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.



This cut represents our PATENT RED and FIRE BRICK PRESS with change of liners in same Press Box for different style of brick.

Alsip Brick Co. is running 6 Crushers; Hayt & Alsip Co. is running 4 Crushers; Purington, Kimbell Brick Co. is running 8 Crushers; May, Purington & Bonner B. Co. is running 4 Crushers; J. B. Legnard is running 4 Crushers; Weckler Brick Co. is running 1 Crusher; Adam J. Weckler is running 1 Crusher; Weckler Prussing Brick Co. is running 1 Crusher; Chicago Brick Co. is running 3 Crushers; Union Brick Co. is running 2 Crushers; M. Myers is running 2 Crushers; Wahl Bros. is running 2 Crushers; Pullman Brick Co. is running 2 Crushers; Fred Zapel is running 1 Crusher; Myers & Toll is running 2 Crushers; Harms & Schlake Brick Co. is running 1 Crusher; L. Wehrheim & Son is running 1 Crusher; Alexander Burke is running 1 Crusher; John Sexton is running 1 Crusher; John Busse, Jr., & Co. is running 1 Crusher; Star Brick Co. is running 1 Crusher; John Busse is running 1 Crusher.

**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 40,000 brick per day. Surpassed by none.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

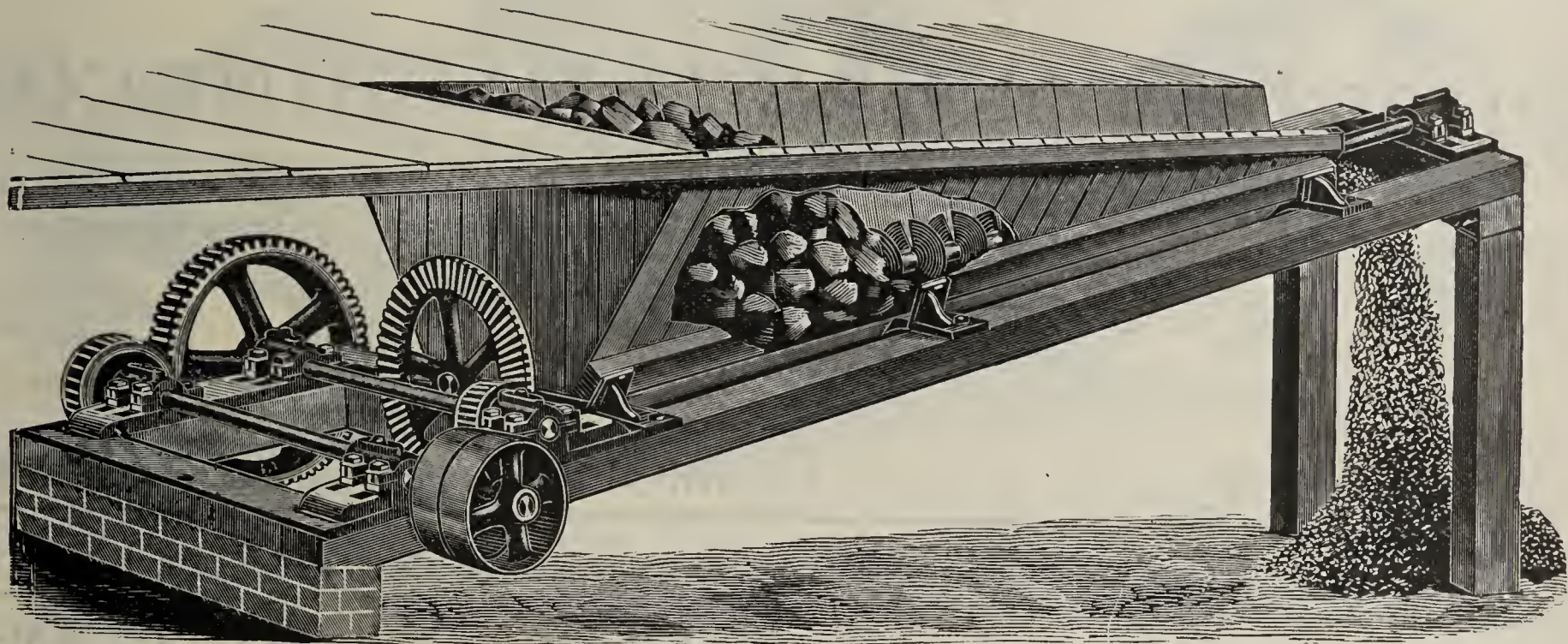
We also manufacture PUG MILLS, ELEVATORS, ETC., ETC.  
Send for circular of our GRANULATOR, it is the leader in Chicago, so says: Alsip Brick Co., Hayt & Alsip Co., May, Purington & Bonner Brick Co., Kimbell Brick Co., Purington-Kimbell Brick Co., and others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED.**



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

Mention Clay-Worker.

MUSKEGON, MICH.



✂ ED. H. CALLAWAY, ✂

CONSTRUCTING ENGINEER AND BRICK MANUFACTURING EXPERT,

— WITH —

PHŒNIX FOUNDRY & MACHINE CO.

Manufacturers of Brick Drying Cars, Transfer Cars, Turn Tables,

and full Dryer Equipments. Engines and Boilers and General Machinery.

SYRACUSE, NEW YORK.



General Agent for Sharer's Improved Brick Dryers and Calorific Kilns. Will construct Brick Manufacturing Plants Complete, furnishing all necessary Machinery. Plans and Estimates furnished. CLAYS TESTED. NO TROUBLE TO ANSWER INQUIRIES.

Ten years practical experience.

PAVING BRICK PLANTS A SPECIALTY.

We are wedded to no particular Brick Machine or system of manufacturing bricks, but will examine your clay, location and all conditions, and put in the machinery on system best adapted to your clay and locality. We will build the plant and turn it over to you and guarantee it to make first-class bricks, as economically as they can be produced in that particular section.

WE TAKE ALL THE RISK.

New beginners should not fail to consult us before erecting a plant.

And "old timers" might get some good points from us.

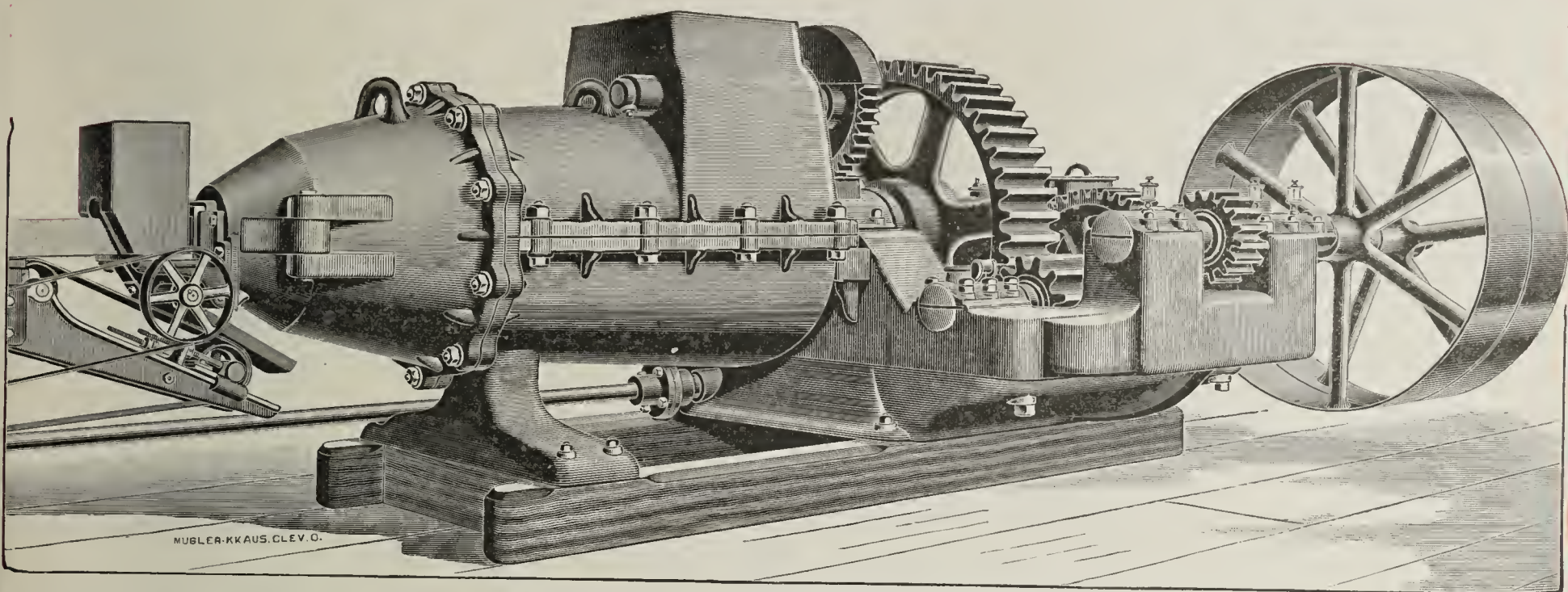
Correspondence solicited.

500 EAST WATER STREET,

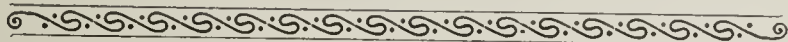
SYRACUSE, N. Y.



J.W. PENFIELD & SON  
CLAY WORKING MACHINERY  
WILLOUGHBY, O.



PENFIELD No. 15 AUGER BRICK MACHINE.



## The Balance Wheel.

Put a light or imperfectly balanced fly wheel on a high speed engine, and what is the result? If an unusual load is suddenly applied, the engine will probably stop; or, an imperfectly balanced wheel may cause a serious wreck.

## The Balance Wheel of Business.

What the balance wheel is to your engine, your brick machine is to your business; if imperfect, inefficient or irregular it may cause business stoppage or financial wreck; if completely suited to your requirements, the general impetus it will give your affairs may tide you irresistibly over any events tending to business disaster, and bring you out with flying colors.

Possession of a reliable, efficient outfit means far more than the additional investment required to secure it. It makes a difference whether your plant continually aids to success or is a constant drawback.

If you wish brick machinery that will impart regularity to your output, we would like to figure with you; we can tell you how to get what you want.

**BE SURE THE BALANCE WHEEL,  
ITSELF, IS WELL BALANCED.**

**J. W. PENFIELD & SON,**

Brick and Sewer Pipe Machinery Makers,  
WILLOUGHBY, OHIO, U. S. A.

J.W. PENFIELD & SON  
CLAY WORKING MACHINERY  
WILLOUGHBY, O.



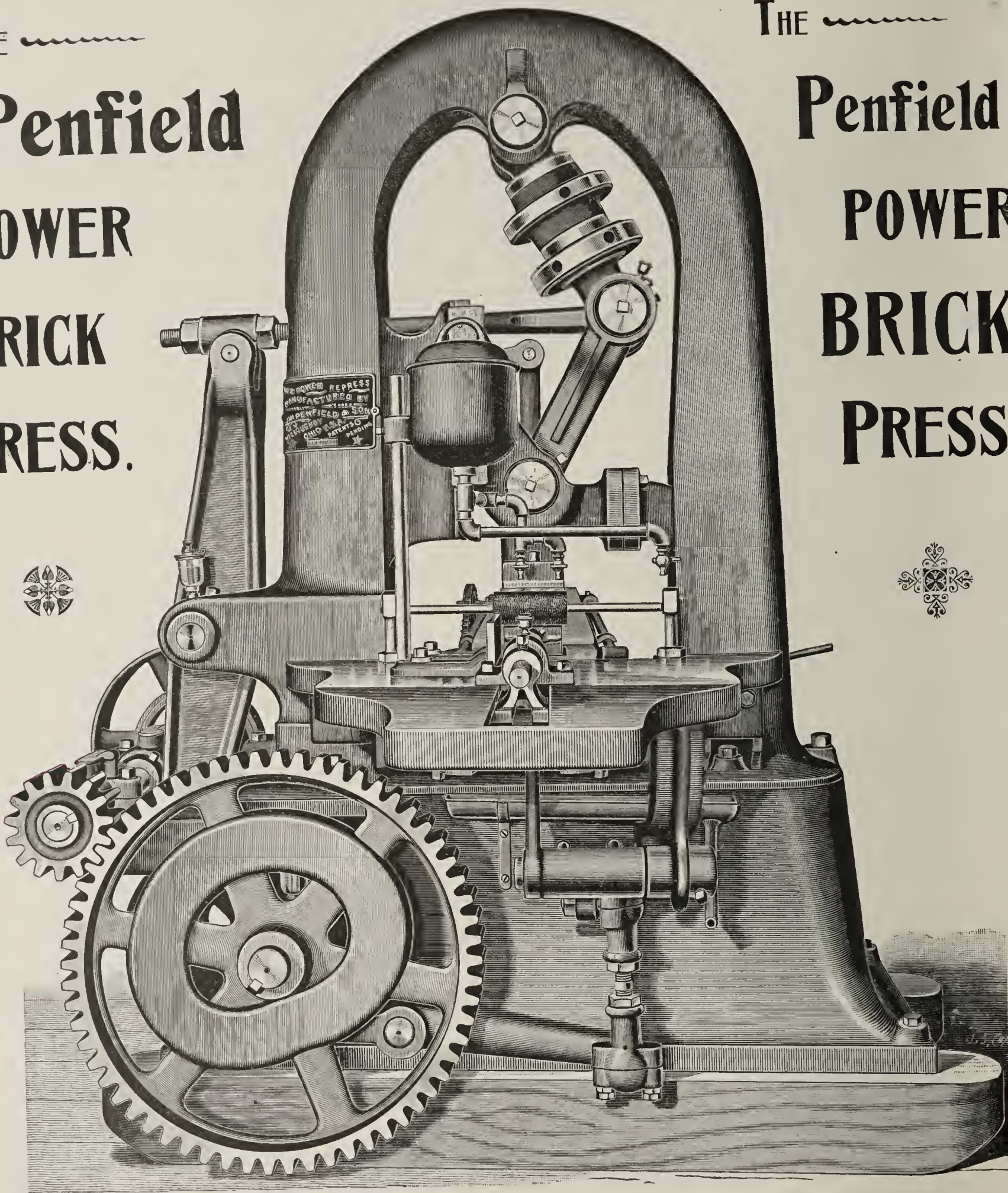
J.W. PENFIELD & SON  
CLAY WORKING  
MACHINERY  
WILLOUGHBY, O.

440

THE CLAY-WORKER.

THE  
**Penfield**  
**POWER**  
**BRICK**  
**PRESS.**

THE  
**Penfield**  
**POWER**  
**BRICK**  
**PRESS.**



**The Penfield Power Brick Press,** with pressing toggles out of the grit and dirt, with pressure rigid and uniform on each brick, with counter-balance spring securing steady, jarless operation, and with lifting of entire die and die table obviated, combines speedy and automatic operation with simplicity and greatest freedom from wear. It is the most powerful repress made. Send for details.

**J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.**

J.W. PENFIELD & SON  
CLAY WORKING  
MACHINERY  
WILLOUGHBY, O.



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,  
PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

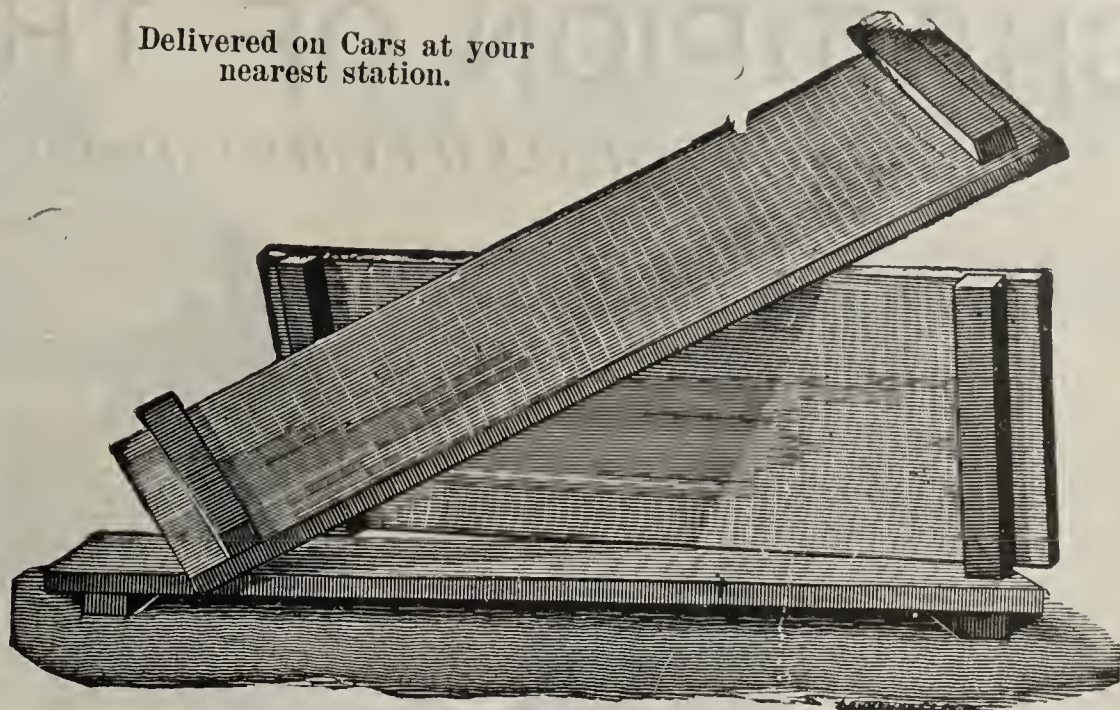
W. B. MERSHON & CO.,

East Saginaw, Mich.

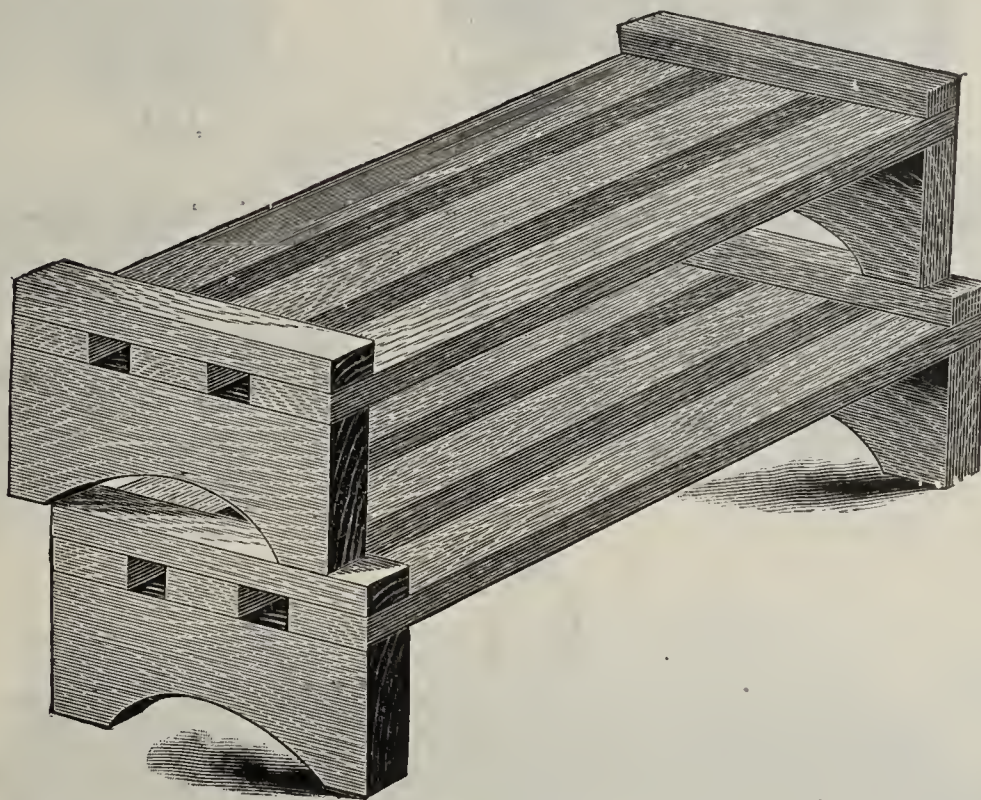
THE CLAY-WORKER.

441

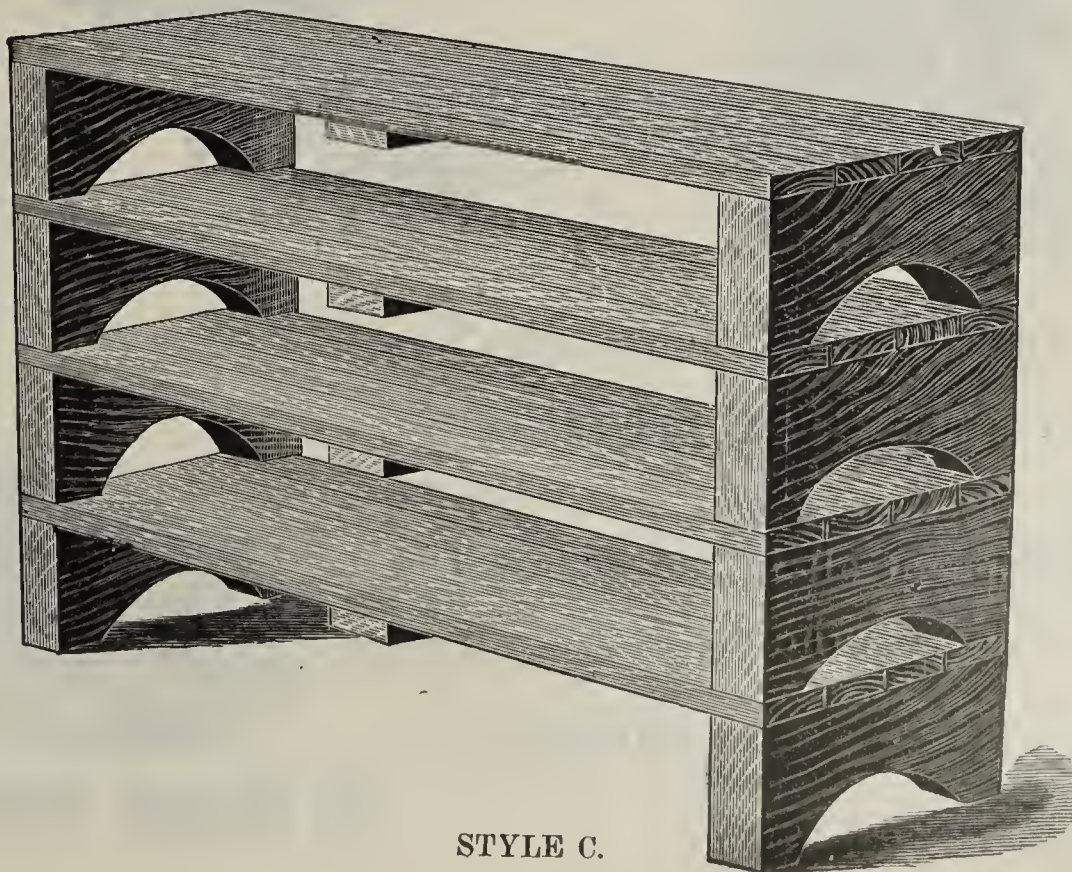
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.

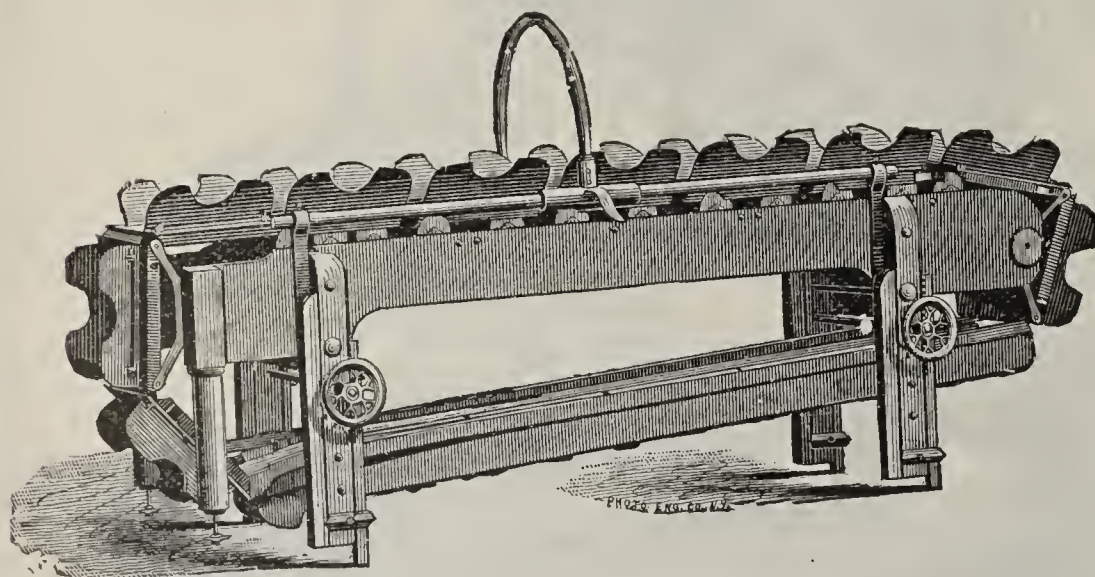
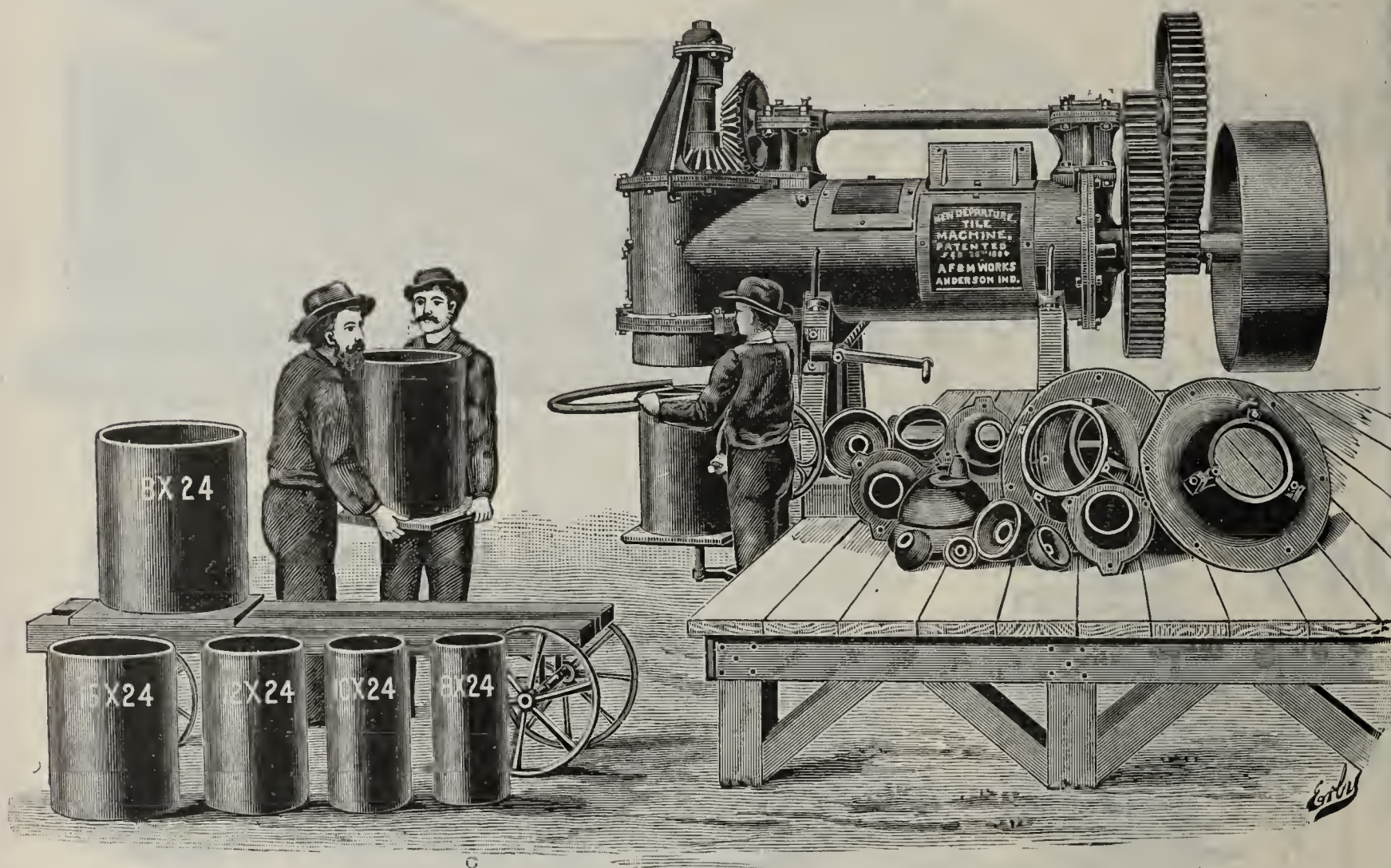


STYLE C.



# CHAMPION OF THE WORLD.

The "NEW DEPARTURE" Brick and Tile Machine.



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 20 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.



THE

## New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry &amp; Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



DUBUQUE, IOWA, Oct. 29, 1892.

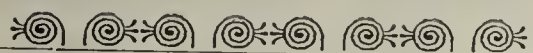
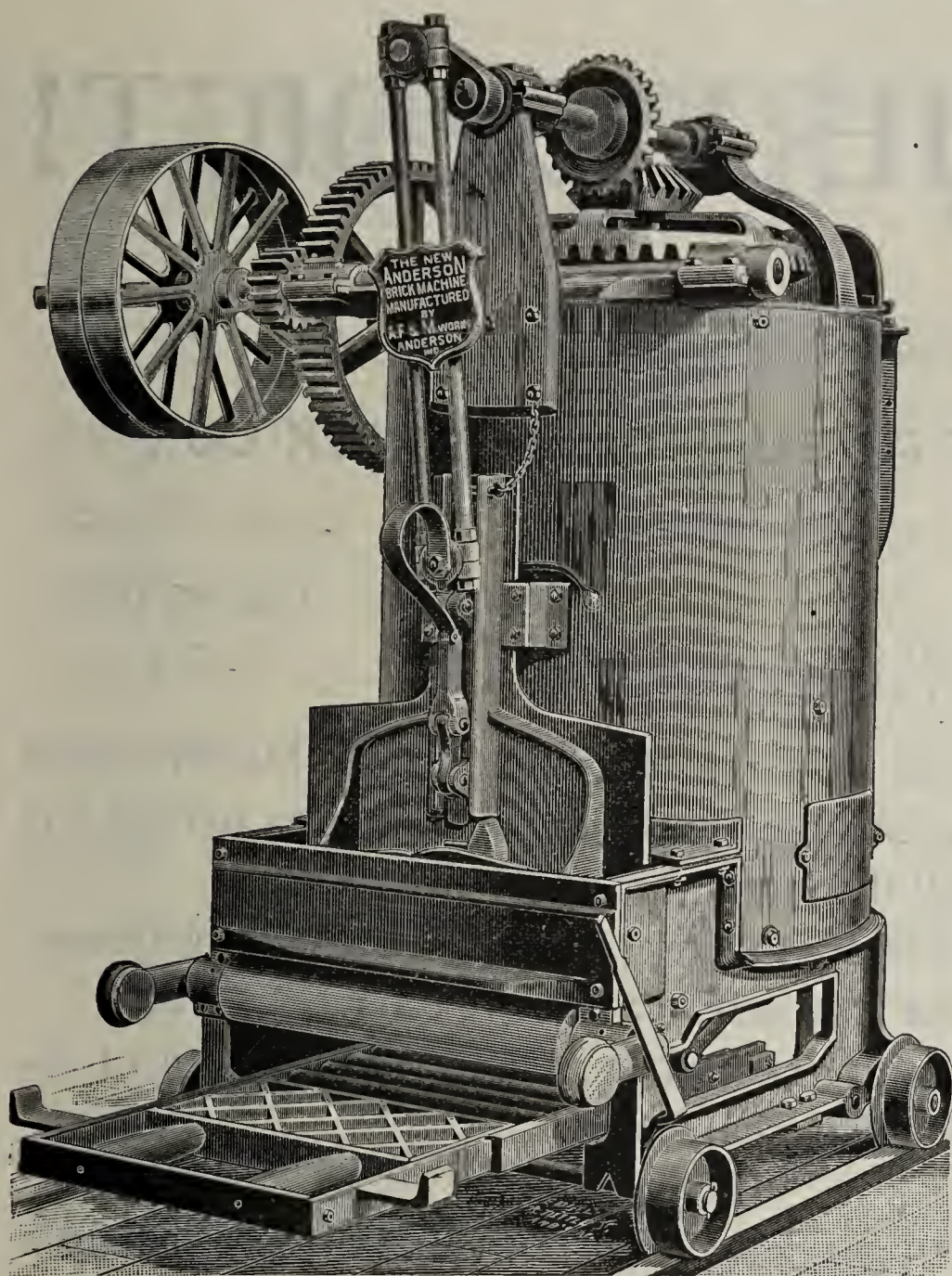
A. F. &amp; M. WORKS.

GENTLEMEN:—I have worked with the New Anderson Brick Machine and I have turned out 3,000,000 of good, square-edged brick. Before I had this Machine I was troubled right along. I have tried nearly all the machines now in operation and none were a success until I got a New Anderson, now I can depend on 30,000 good brick per day, and if any of you brother brickmakers want a machine, I would recommend the New Anderson Machine,

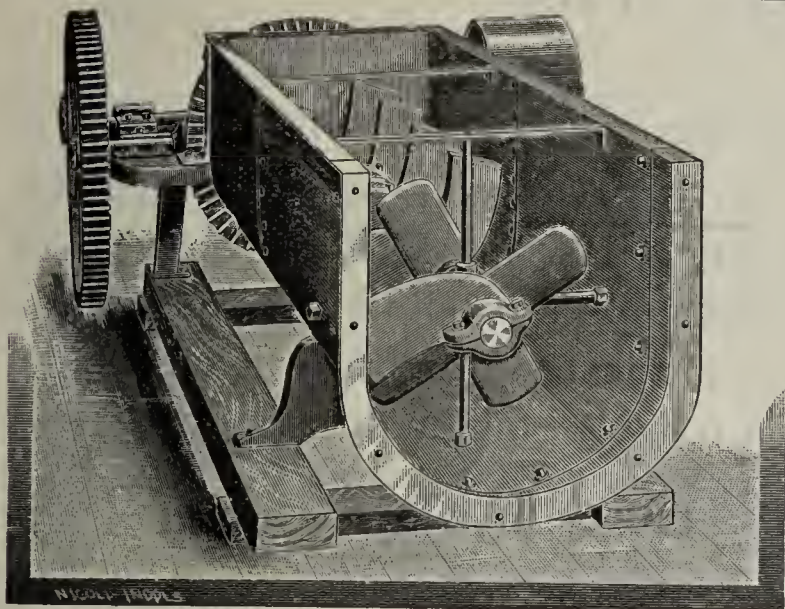
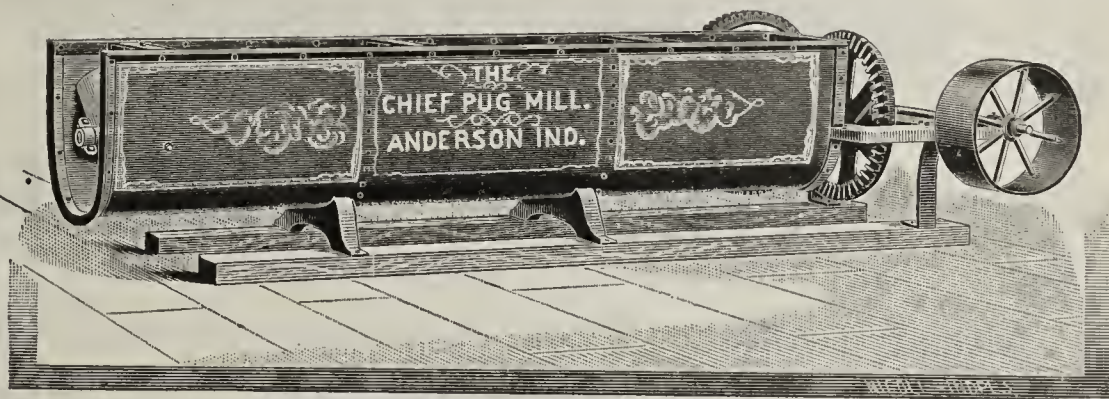
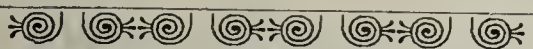
Yours truly,

A. HEIM, Proprietor.

JOHN HEIM, Gen'l M'gr.



We also manufacture the  
NEW IMPROVED CHIEF BRICK MACHINE.



End View of Pug Mill.

PUG MILLS, . . .  
DISINTEGRATORS,  
. . . TRUCKS, . .  
. . . BARROWS,  
AND ALL BRICKYARD SUPPLIES.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED



# HERE'S THE VERDICT!

Watch this page next month. Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y. January, from Utica, N. Y. February from Pittsburg, Pa.

Office of **THE AUBURNDALE BRICK CO.,**

TOLEDO, Ohio, Aug. 25, 1892.

THE WELLINGTON MACHINE Co.,  
Wellington, Ohio.

GENTLEMEN:—We have used the "Monarch" Brick Machine since last April. Our foreman, Mr. Bell, says that we cannot say too much in its favor. **It possesses all the merit you claim for it.**

We make on the machine 25,000 brick per day of eight hours with ease. The machine works with an economical use of power.

Our business relations with your company have always been of the most agreeable and satisfactory character,

Respectfully,

A. E. MACOMBER.

## HERE'S THE RESULT.

Already two other Brick Manufacturers of Toledo, who watched this machine all last season, have placed their orders with us for "MONARCHS."

**YOU CAN**

See the "Monarch" Machine, in operation this month at the winter yards of Simon Kline at Reading, Pa., and McGraw Bros., 34th and Liberty Sts., Pittsburgh, Pa. If not located near enough to reach these winter yards write for the nearest one to you and go and examine it, and inspect the brick it has made, and talk with the man who ran it, and you can form a reliable opinion of its merits.

**The Wellington Machine Co.,**

Wellington, Ohio.

[Mention CLAY-WORKER.]



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3½-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.

[Mention the Clay-Worker.]

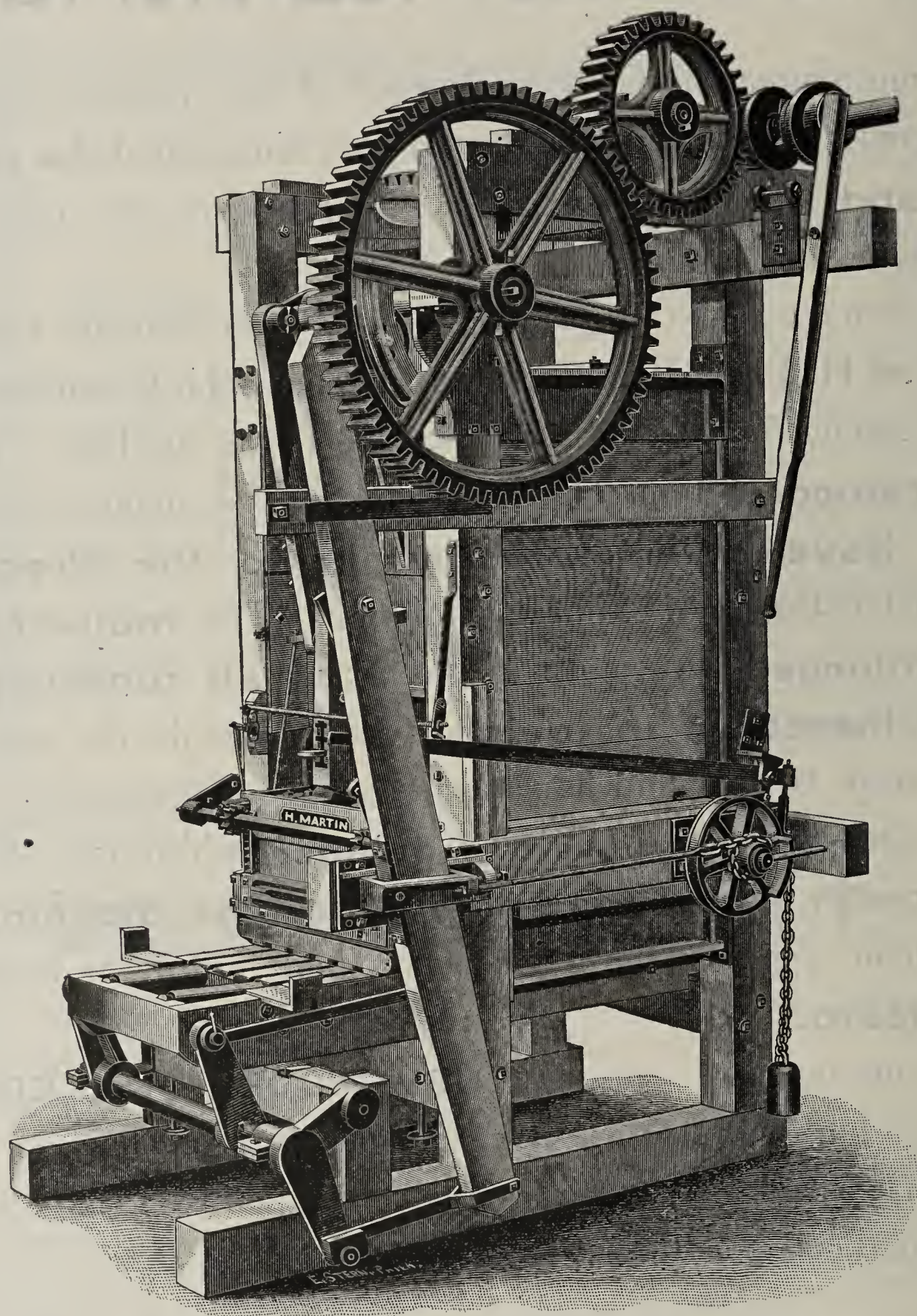


# "MARTIN" BRICK MACHINERY.

DIFFERENT STYLES. DIFFERENT SIZES.....  
BUILT FOR STRENGTH AND DURABILITY.



Plans  
and  
Specifica-  
tions  
of  
Complete  
Plants  
Furnished  
Upon  
Application.



Clay  
Tested  
and  
Reports  
Furnished.

Machines  
in

Practical  
Operation  
at  
Our  
Works.



The Henry Martin Brick Machine Manufacturing Co. are so well commended to the  
brick interests of the United States that they are well and favorably known.....

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

LANCASTER, PA., U. S. A.

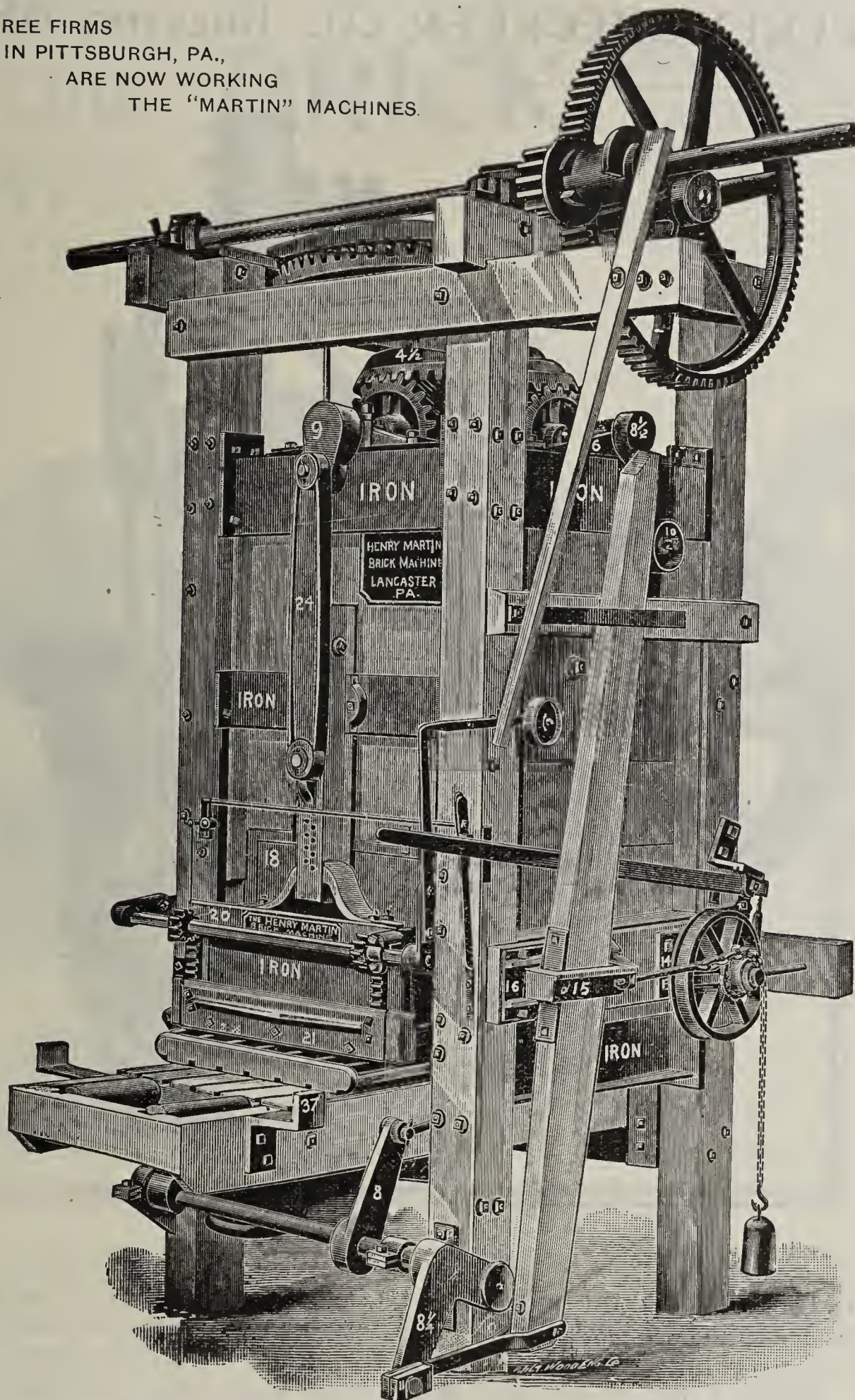
SEND FOR CATALOGUE.  
SOLE MANUFACTURERS OF "MARTIN" PATENTS.



THE  
OLD.....  
RELIABLE

# Martin Brick Machines.

FIFTY-THREE FIRMS  
IN PITTSBURGH, PA.,  
ARE NOW WORKING  
THE "MARTIN" MACHINES.



Each  
and  
Every  
Machine  
is  
Built  
Under  
the  
Personal  
Supervision  
of  
its  
Inventor.

We  
Manufacture  
all  
the  
Latest  
and  
Best  
Improved  
Brick  
Machinery  
and  
Supplies.

## ...The Henry Martin Brick Machine Mfg. Co...

ESTABLISHED  
1857.

LANCASTER, PA., U. S. A.

INCORPORATED  
1887.

WRITE US  
FOR ANY INFORMATION DESIRED.

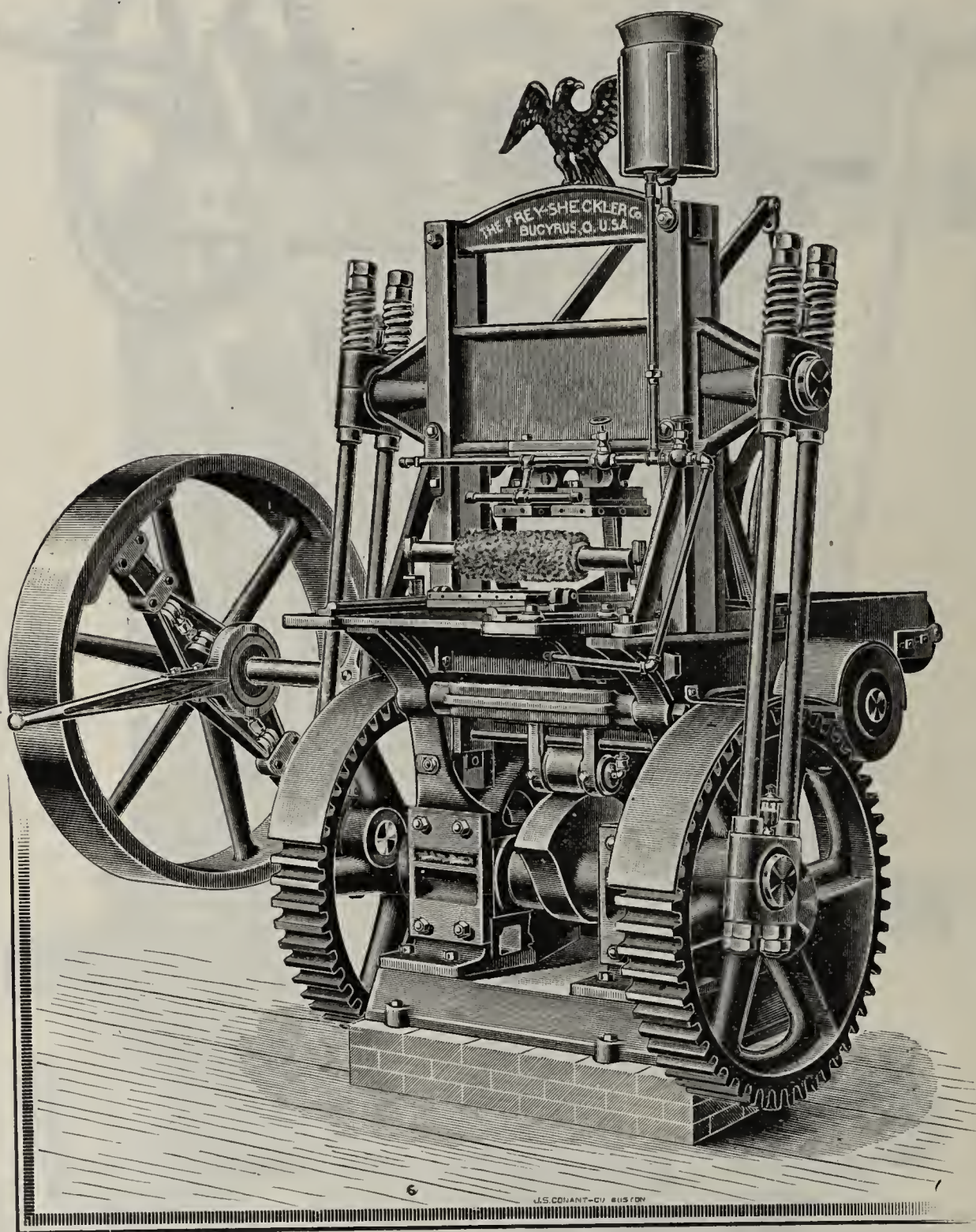


# 100 Per Cent.

Of all the Good Represses are made  
by the 

The FREY-SHECKLER CO., Bucyrus, Ohio.

Will Repress as many as you want, and has no Toggle Joints to wear—no Knuckles to break.



We are daily replacing represses of other manufacture, with ours. You may ask why? Because it is strong, rapid in its work, and so very simple in Construction.

OUR orders for all we could build last year, are proof that it perfectly meets the wants of brickmakers. We have more steam power Represses now at work producing a larger daily output, than any three other establishments in the United States. Of the rapid Represses, doing over 20,000 daily, we have four times as many in daily use as any other manufacturer in the world. When searching for a good first class repress, do not forget to lay your hand on ours.

## The Frey-Sheckler Co.,

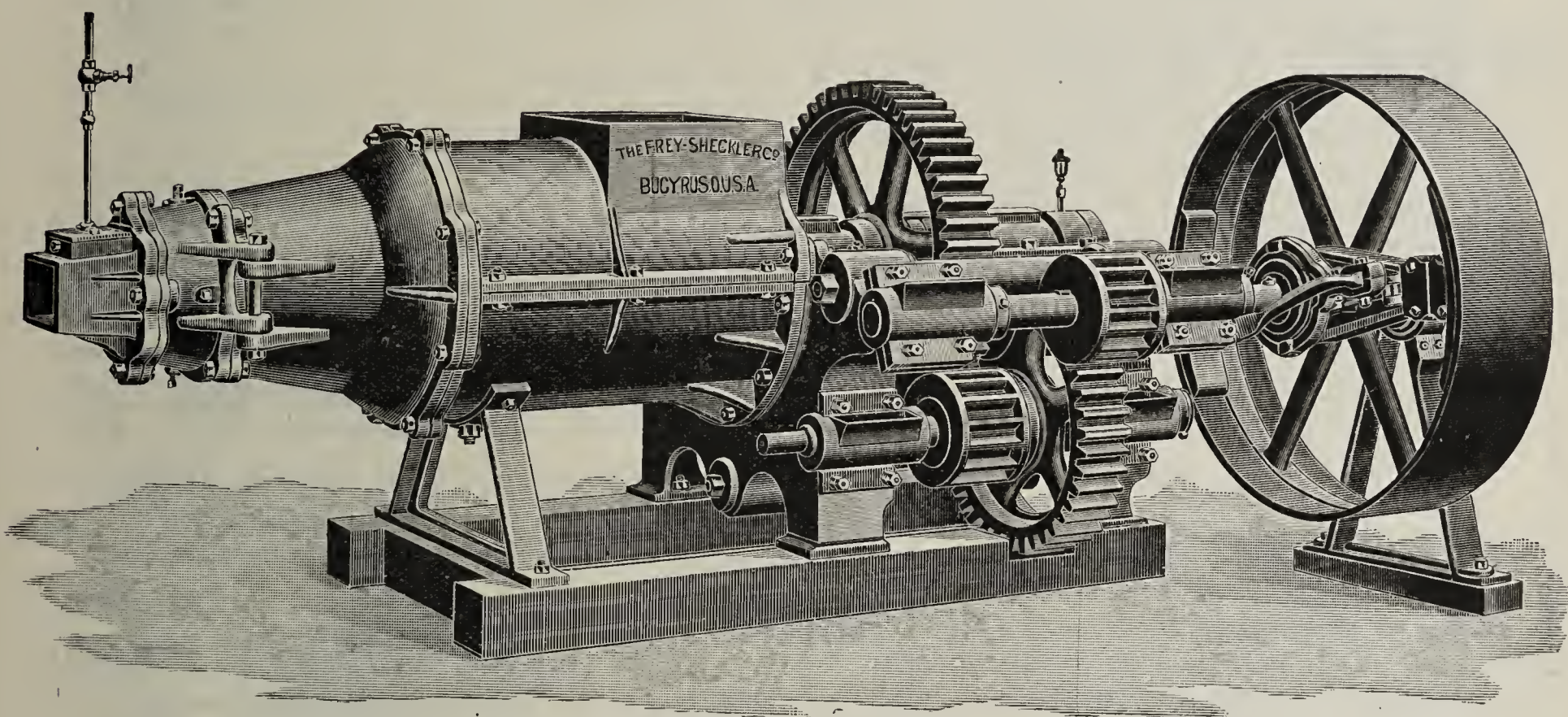
 Bucyrus, Ohio, U. S. A.

Mention CLAY-WORKER.



THE FREY-  
SHECKLER  
COMPANY'S

# BRICK MAKING MACHINERY.



No. 2. BUCYRUS GIANT BRICK MACHINE.

Our machines have proven over and over again their superiority over all others. Absolutely the best on the Market. Better material, better workmanship and better performers in every day work. Why experiment with inferior machines when ours assures success from the first turn of the wheels?

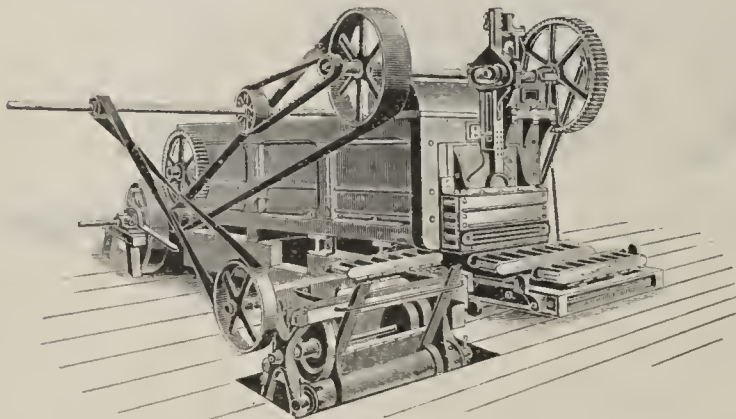
## The Frey-Sheckler Co.,

Mention CLAY-WORKER.

Bueyrus, Ohio, U. S. A.



## THE POTTS HORIZONTAL STOCK BRICK MACHINE.



The Horizontal Machine and Mold Sander.

### The Verdict.

It does all you claim for it.  
The brick made give our customers  
entire satisfaction.  
We are satisfied.

Is better than the Vertical machine. Always ready for work,  
and makes a full day's work every day.

THE POTTS HORIZONTAL STOCK BRICK MACHINE will work any clay direct from the bank without the use of an extra pug mill. The brick made by this machine have no equal for CLEAN, SHARP CORNERS, and SMOOTH SURFACES. It is simple in construction, having few wearing parts, all of which are out from under the machine and clay. It is beyond a doubt the best constructed and most durable machine on the market. It will do more and better work with less labor and power than can be done by the Vertical machine and extra Pug Mill.

JNO. A. MYERS, Pres. E. M. GRANT, Secy. and Treas. T. B. WILLIAMS, Supr.

#### MORGANTOWN BRICK CO.

MANUFACTURERS OF

Building, Front and Paving Brick.

Morgantown, W. Va. 12/31/1891  
Messrs. C. & A. Potts & Co.  
Indianapolis, Ind. Gent  
The plant you put  
in last March has given  
the best of satisfaction, having  
been in operation for 9 months  
almost every day, rain or shine.  
We are satisfied, and so  
are our customers.  
Yours Truly

MORGANTOWN BRICK CO.  
PER [Signature] SECY & TREAS.

Please send us a new  
striking knife.

You must have machinery that will make a brick which  
will give your customers satisfaction.



We are prepared to erect complete plants of any desired capacity. We manufacture everything used on the brick yard, therefore can make you low prices, as we have only one profit to make. All machinery being manufactured in our own works insures the best that can be made.

It will pay you to write us for prices.

....

### Builders Exchange of Indianapolis

OFFICERS:  
GEORGE W. STANLEY, President,  
M. M. COOPER, Vice President,  
CHARLES KRAUSE, Secretary,  
ALAN M. KAHN, Treasurer.

NO 31 SOUTH PENNSYLVANIA STREET,  
Scottish Rite Building

Indianapolis, Ind. Feb 6<sup>th</sup> 1893

Messrs. C. & A. Potts & Co.  
Indianapolis, Ind.  
Gentlemen, The two Horizontal Brick machines we  
have of yours have proven highly satisfactory to us - we  
firmly believe there is no other Brick machine made  
that could handle our clay in a more satisfactory manner.  
Very Truly Yours  
Asst. Pres. Secy  
Sheridan Brick Works  
Sheridan, Ind.

The Sheridan Brick Works now have two machines in use making  
35,000 each per day.

#### H. & C. H. CROWELL,

PROPRIETORS OF

#### GOSHEN STEAM BRICK WORKS,

AND CONTRACTORS OF BRICK WORK

Residence, 203 Middlebury St.

Yards, North Seventh St.

Goshen, Ind., January 9, 1892

Messrs. C. & A. Potts & Co.

Sirs--We received your letter inquiring  
as to how we liked the machinery purchased of  
you last spring. In the first place, it is the  
only correct principle of making soft mud  
brick--at least we think so, as we used the  
vertical machine before we purchased the out-  
fit from you, which we think is a fair test.  
We could not make brick without the Disin-  
egrator, as our clay is so stony, throwing out  
nearly half a cart load in one day's run. It  
does all you claim for it and more. The el-  
evator works nice, the sander is a great  
machine, never needing any repairs, in fact,  
it is perfect. The machine works well, making  
as many brick as we can handle.

Wishing you the best of success, we  
remain,

Respectfully,

H. C. Crowell

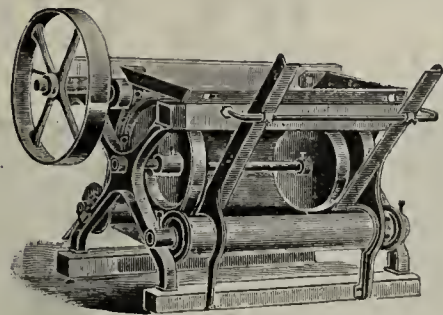
Mr. Crowell is surely competent to give a verdict as he  
has used both the Vertical and Horizontal.

## C. & A. POTTS & CO., Indianapolis, Ind.



# THE POTTS MOULD SANDER.

**Simple in Construction.  
Strong and Durable.**



It has no light, complicated parts to wear or break. There is no place for the moulds to catch and cause delays.

It sands the moulds better than can be done by hand.

It does not waste or spill the sand.

It will work with any size mould. Requires no adjusting.

It will save from 75 cents to \$1.00 per day.

It never gets drunk or strikes for higher wages.

W. J. EGGE & CO.,  
BRICK MANUFACTURERS,  
OFFICE, 317 NORTH NINTH ST.,  
YARD, COR. TENTH AND ALLEN STS.

Allentown, Pa. January 12, 1892

Messrs C. & A. Potts & Co.:

Gentlemen- The Mould Sander we got from you, and used last season, gives entire satisfaction. We could not do without it, for before we had the Sander, we paid two dollars a day and often found it difficult even at those wages to keep a hand at it during the season. Now, with the sander, we pay a boy seventy-five cents a day.

Yours,

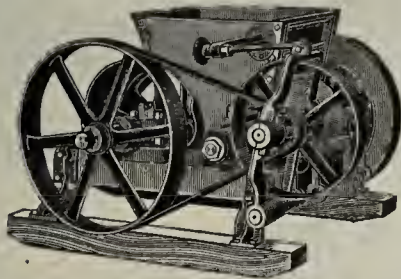
*W. J. Egge & Co.*

## The Potts Disintegrators

ARE THE STANDARD.

All others on the market  
are poor imitations.

**Chilled  
Rolls.**



THIS Machine will take any clay direct from the bank. It will not choke or clog from wet or dry clay.

It is strong and durable.

If your rolls are giving you trouble try a Disintegrator. It will do the work.

CHAS. H. CHUGLASS President  
JOHN T. BLOOM, Jr. Vice President  
FRANK NIEWIARSKI  
Treasurer and Secretary  
COLUMBIA OFFICE OF  
The South Carolina Mining and Manufacturing Company,  
MANUFACTURERS OF  
All Descriptions and Qualities of Fire Brick,  
For Rolling Mills, Blast Furnaces, Bessemer, Open Hearth & Crucible Steel Works.  
The Plant will and should deliver 200,000 Bricks per day, and is capable of  
Coke Ovens and Ties, Fine First and Second Quality Bricks of Any Desired Color of Fire Proof Material  
Ground and Screened Clay for Laying Bricks and Cupolas  
Works at Killeen S. C. on C. & A. R. R. Capacity of Works, 15,000,000 per year.  
Columbia, S. C. January 5, 1892

Messrs C. & A. Potts,

Indianapolis Ind.

Gentlemen--Yours of the 29th ult. showing how we are pleased with your Disintegrator No. 4, is at hand. In reply thereto, we will state it affords us great pleasure to bear testimony to the high excellence of your Disintegrators. The one we have has been in use constantly for six or eight months, and has given us entire satisfaction in every particular. You can use this as you like.

Very truly yours,

*S. C. H. Chuglass*  
Chas. H. Chuglass  
President  
January 27 1892

We manufacture a full line of Clayworking Machinery and Yard Supplies, Auger Brick Machines, 4 Styles of Pug Mills, Brick Moulds, Trucks and Barrows, Clay Cars, Winding Drums, Kiln Castings, Pulleys, Belting and Shafting. The best Elevators.

If you will drop a postal telling your wants or troubles, we may be able to help you out and save you money. It is no trouble to answer letters.

**C. & A. POTTS & CO.,**

INDIANAPOLIS, IND.

[Mention the Clayworker.]

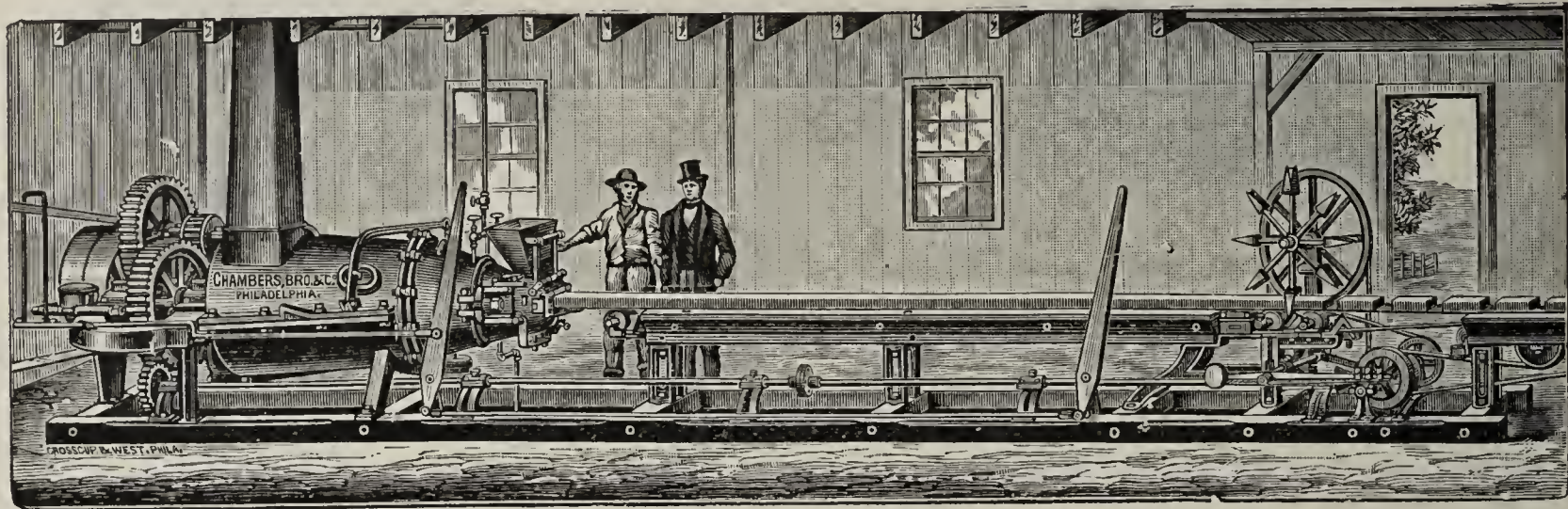


# CHAMBERS BROTHERS Co.,

FIFTY-SECOND ST., BELOW LANCASTER AVE.,

PHILADELPHIA, PA.

## IMPROVED BRICKMAKING MACHINERY.



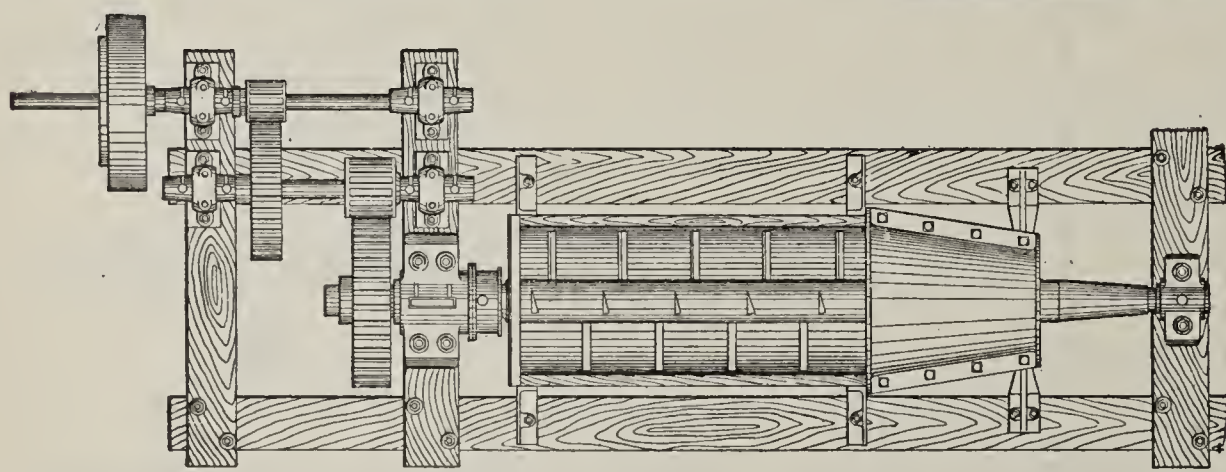
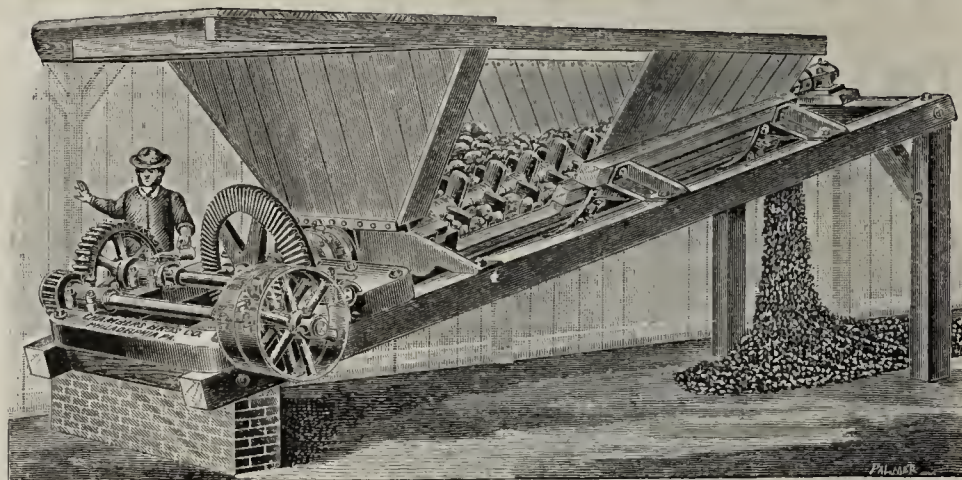
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS,  
CRUSHING ROLLERS,  
CLAY ELEVATORS.

Kiln Castings of All Descriptions.

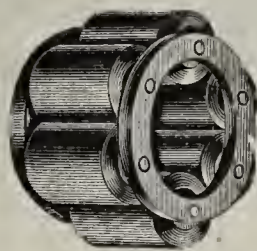
See ad. on first cover page

[Mention the Clay-Worker.]

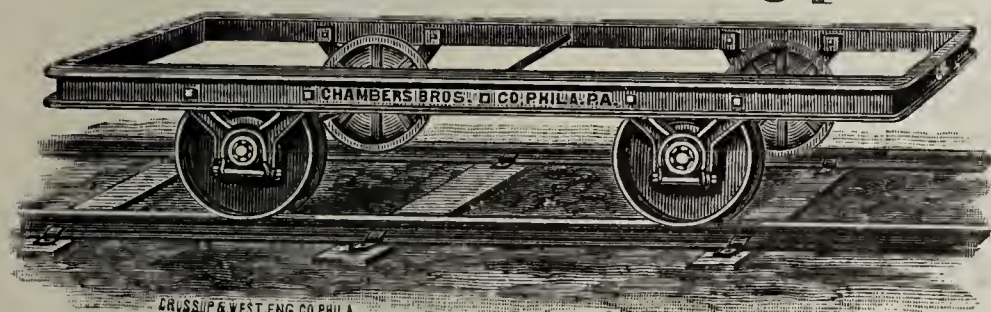


# CHAMBERS BROTHERS Co.,

FIFTY-SECOND ST., BELOW LANCASTER AVE.,  
**PHILADELPHIA, PA.**  
**Improved Tunnel Dryers For Common Brick**  
**Cars and Complete Equipment for Artificial Dryers of all Kinds.**  
**STEEL PALLETS.**



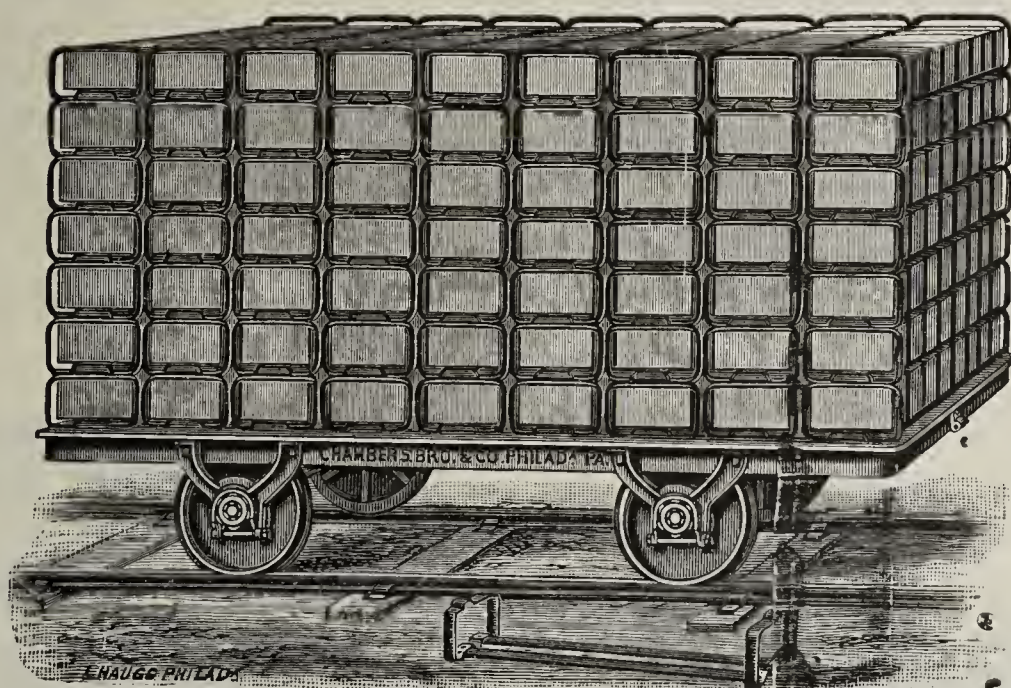
The Anti-friction Cage Roller Bearing used on our Cars.



(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)



Car loaded with 63 pallets and 504 Chambers' Machine Brick.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

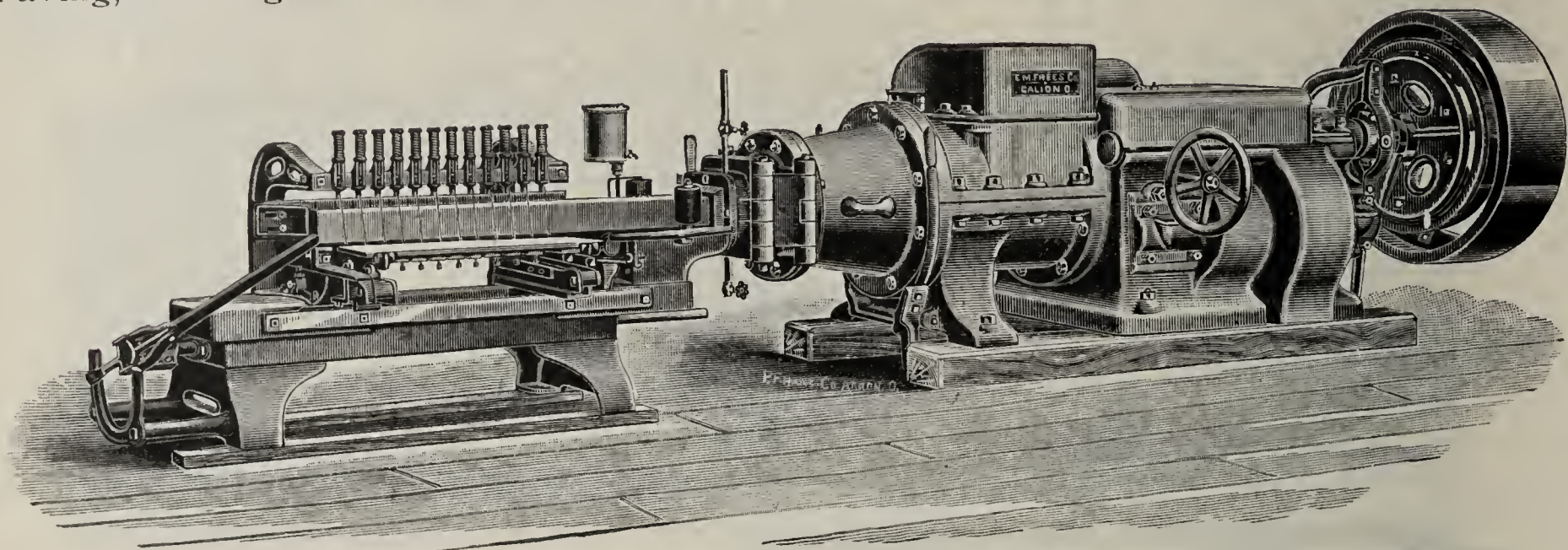
See ad. on front cover page.

Mention the Clay Worker



## ✧ THE COST REDUCED! ✧

By the use of our Improved Machinery, the cost of producing the best quality of Paving, Building and Fire Brick is greatly reduced.



### The "Mammoth Junior."

NEWEST PATTERN. LATEST DESIGN.

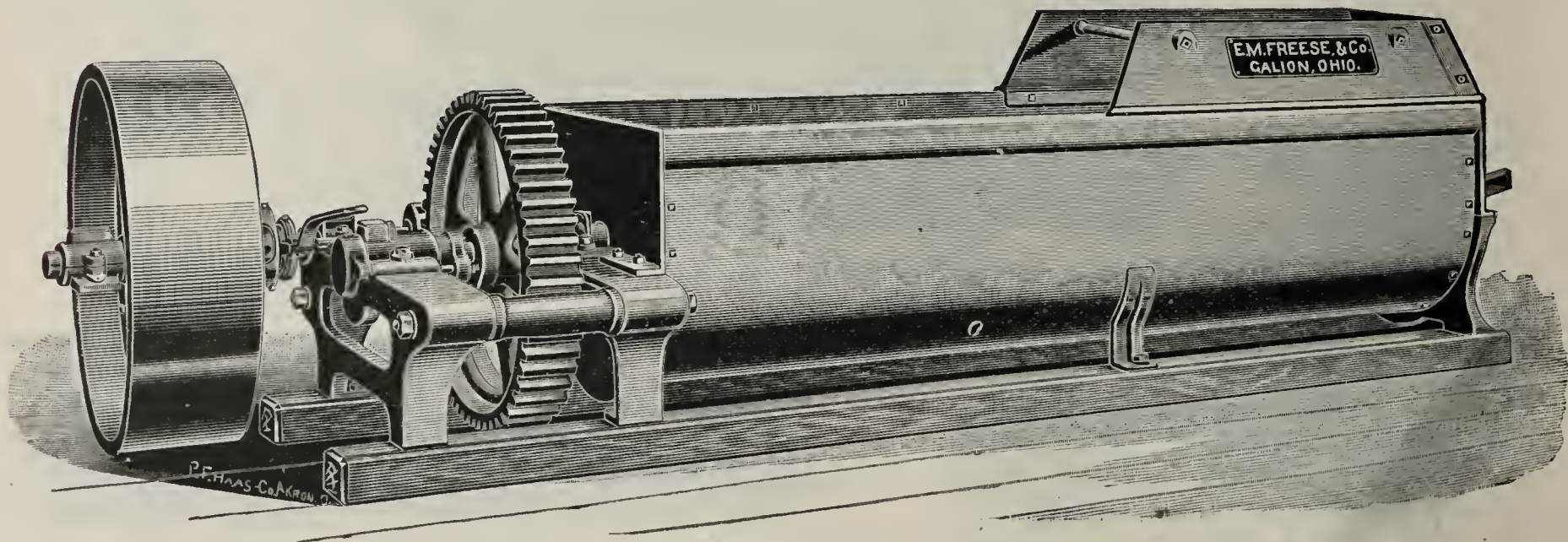
MONEY SAVING. . . MONEY EARNING.

✧ Brick as fast as you want them, and in form and texture to suit you. ✧

We would like to tell you all about the innumerable special points in which this Machine has the advantage, and will do so if you are sufficiently interested to write us.

Our address is,

**E. M. FREESE & CO., GALION, OHIO.**



### No. 1 Pug Mill.

We build a variety of sizes and styles of Pug Mills to meet your requirements.





**E. M. FREESE AND CO. GALION, O.**

CLINTON, Mo., May 28, 1892.  
MESSRS. E. M. FREESE & Co.,  
Galion, Ohio.

GENTS:—Yours of the 25th to hand, and in reply would say am now using the Brick Machine purchased from you, and our contractors and builders pronounce the brick made from it, the best in the market. Its capacity is equal to the machine does its work entirely satisfactory. The capacity is equal to the amount of clay the men are able to handle, 15,000 to 40,000 per day.  
Yours very respectfully,  
E. L. FOOTE,  
Prop. Clinton Brick Works.

IRONTON, Ohio, }  
May 26, 1892. }  
MESSRS. E. M. FREESE & Co.,  
Galion, Ohio.

GENTLEMEN:—We think we have given your "Ohio" Brick Machine a very thorough test, and are glad to say it does all you claimed for it. We are well pleased.  
Yours truly,  
IRONTON FIRE BRICK CO.

NEW STRATTSVILLE, O., }  
August 26, 1892. }  
E. M. FREESE & Co.,  
Galion, Ohio.

DEAR SIRS:—In reference to the "Ohio" Machine purchased of you, we have to say it was certainly a God send, as we have had a minimum of breakage and have been turning out first class material, and lots of it, ever since we started. We are entirely satisfied.  
Yours truly,  
THE STANDARD BRICK & TERRA COTTA CO.  
Hazleton.

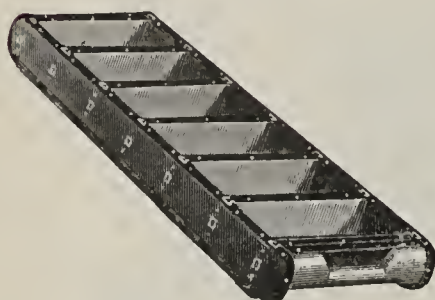


FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

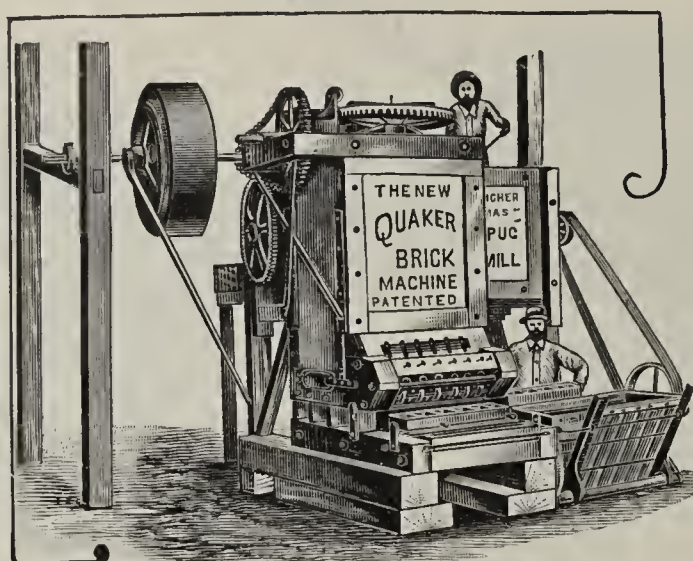
MANUFACTURERS AND DEALERS IN

**Brick Machinery and Brickmakers' Supplies.**

Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

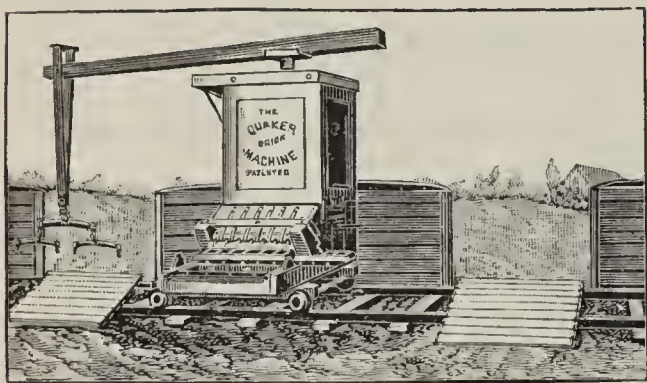


Hand Molds.



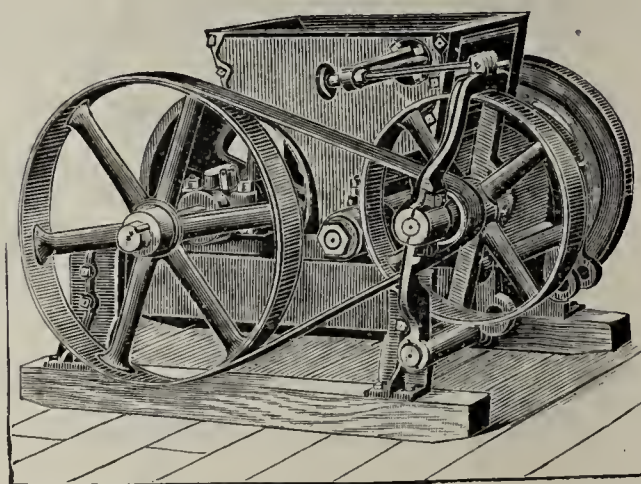
Made of Best Cherry.  
Three Brick Molds.  
Four " "  
Six " "

**THE EXTRA HEAVY QUAKER BRICK MACHINE,** FLETCHER & THOMAS SPIRAL PUG MILL and MOLD SANDER Combined, makes the most complete plant in use.  
Capacity limited only by the ability to provide clay and take care of the product.

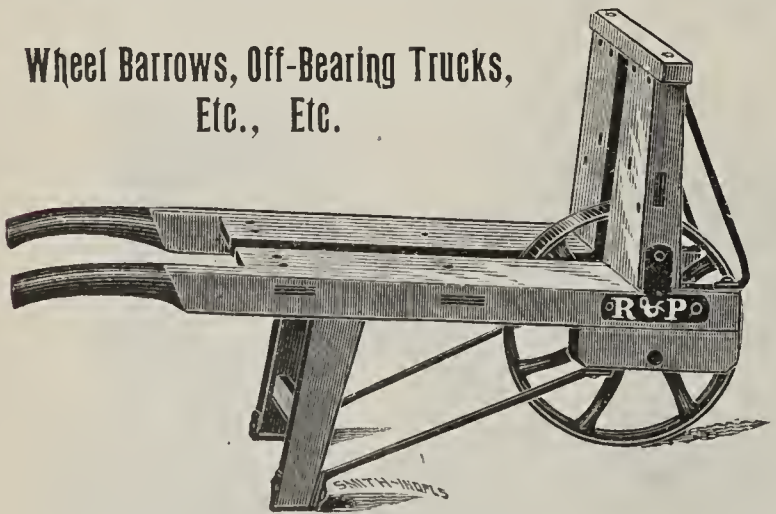
**THE NEW QUAKER**

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



Wheel Barrows, Off-Bearing Trucks, Etc., Etc.

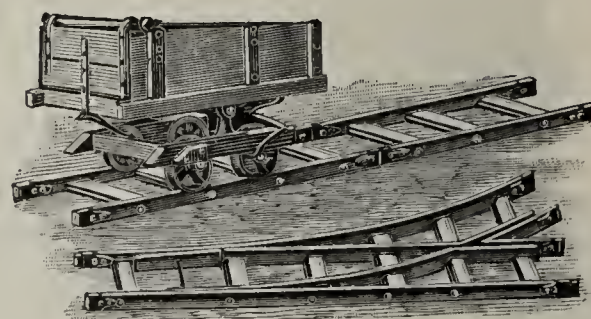


Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.

**DISINTEGRATORS.**

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

**FLETCHER & THOMAS, Indianapolis, Ind.**



THE **HARRINGTON & KING** **PERFORATING CO.**

Manufacturers of

**PERFORATED METALS**

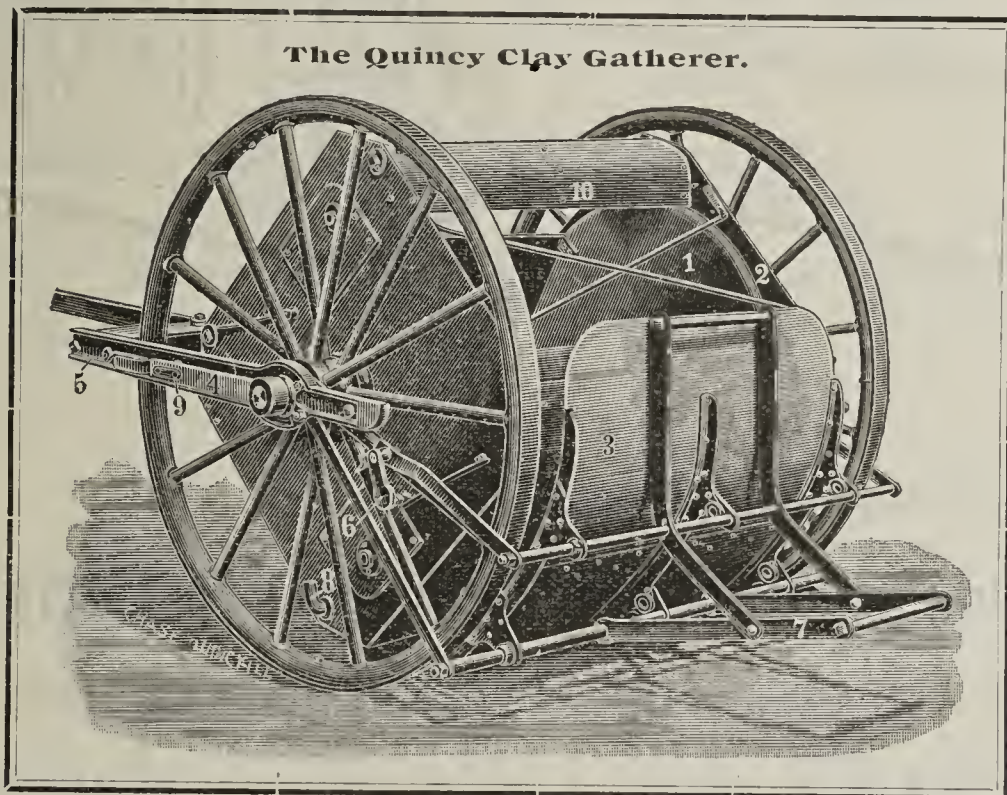
OF ALL KINDS FOR  
**Clayworking Machinery**  
And all Other Purposes.

Chicago, Illinois,  
U. S. A.

BRASS  
PERFORATED  
IRON

The  
**PERFECTION  
HYDRAULIC  
BRICK PRESS**  
and....  
**ANDRUS IMPROVED  
DOUBLE PRESSURE  
BRICK PRESS**

Are the best Presses in  
the market.



The  
**GRATH DOUBLE  
DOWN DRAFT KILN,  
PERFECTION CLAY  
DISINTEGRATOR**  
....and  
**QUINCY CLAY  
GATHERER.**

Write for Circulars and  
Prices.

ALL of the above appliances are in use at the yards of the American Hydraulic Press Brick Co., Collinsville, Ill., who are producing the finest quality Press Brick in the country, free from granulation.

We solicit an inspection of our works.

**ILLINOIS SUPPLY & CONSTRUCTION CO.,**

Odd Fellows' Building,

**ST. LOUIS, MO.**

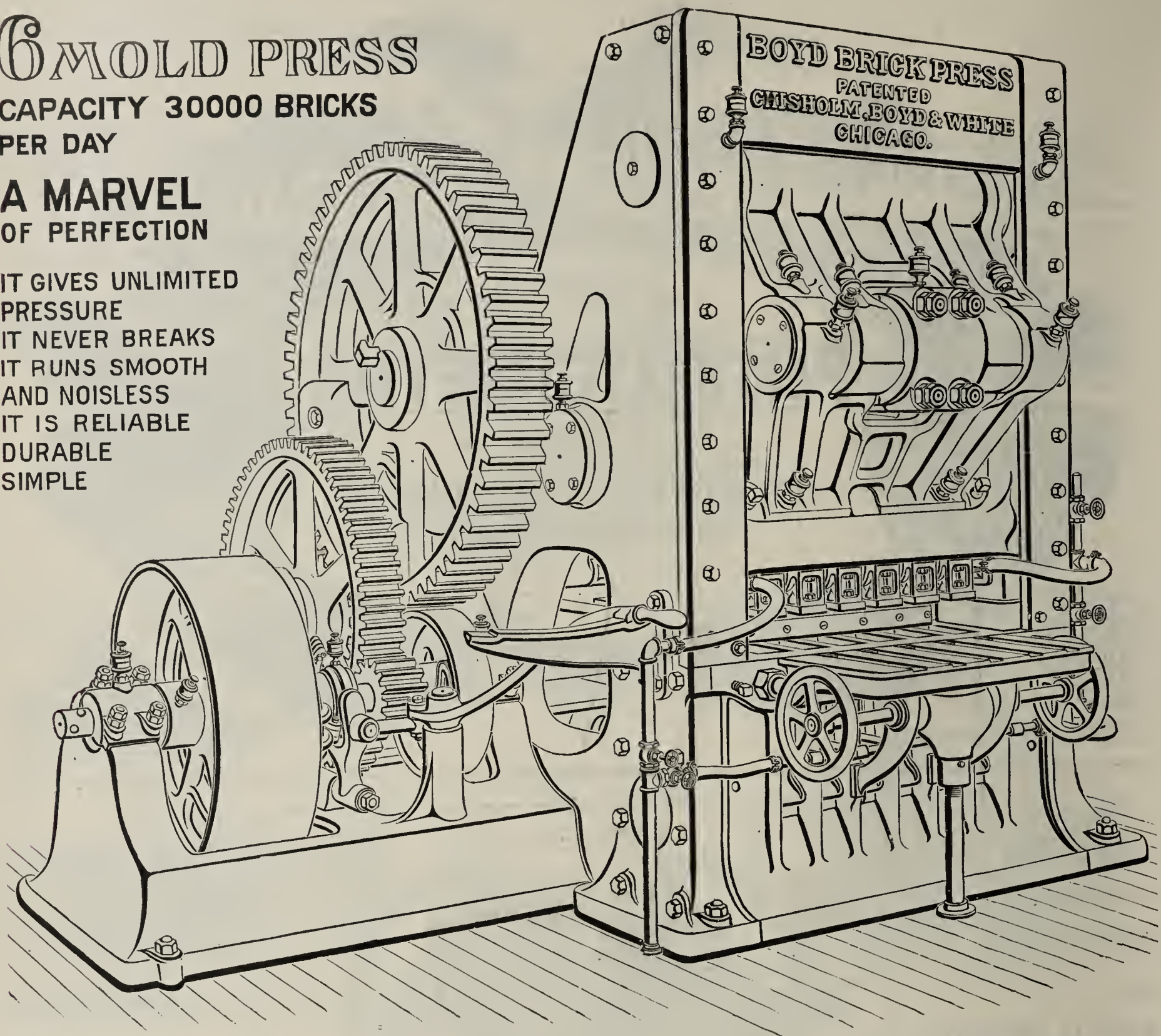


# SIX MOLD PRESS

CAPACITY 30000 BRICKS  
PER DAY

## A MARVEL OF PERFECTION

IT GIVES UNLIMITED  
PRESSURE  
IT NEVER BREAKS  
IT RUNS SMOOTH  
AND NOISLESS  
IT IS RELIABLE  
DURABLE  
SIMPLE



MILLIONS of Beautiful Pressed Brick

are being made **DAILY** on **BOYD BRICK PRESSES**,  
at lowest cost, and bringing the highest price per M.

**THE ONLY PRESS** which can be quickly changed to make  
POMPEIAN BRICK, STANDARD BRICK, FIRE BRICK,  
PAVING BRICK, ORNAMENTAL BRICK.

**CHISHOLM, BOYD & WHITE,**

MONON BLOCK,  
324 DEARBORN STREET.

CHICAGO.



### A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing the Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be our own in case of failure. Why experiment when you can have a sure thing.

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

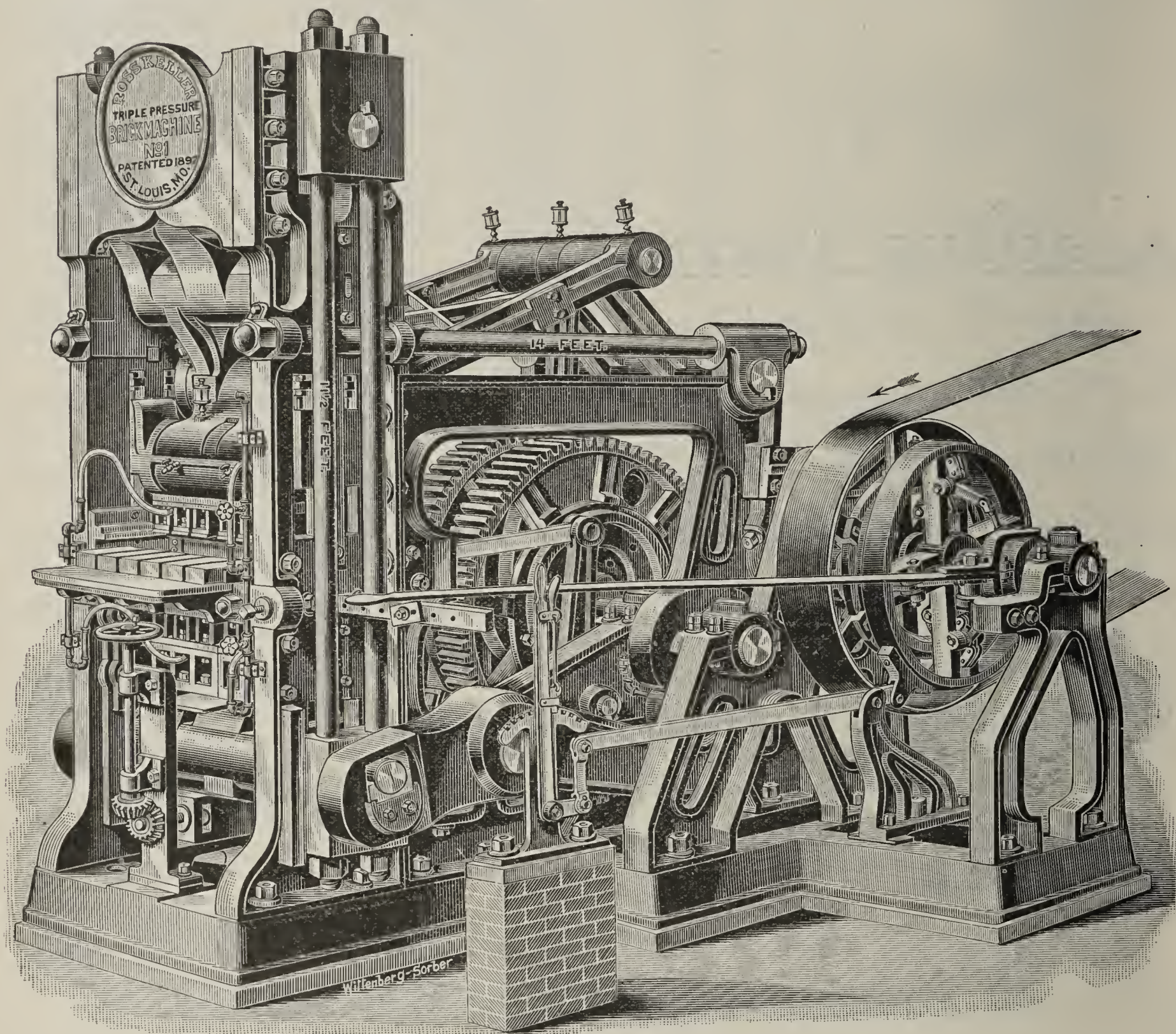
CHICAGO.



# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 68,000 pounds, Capacity 35,000 pressed brick per day.*

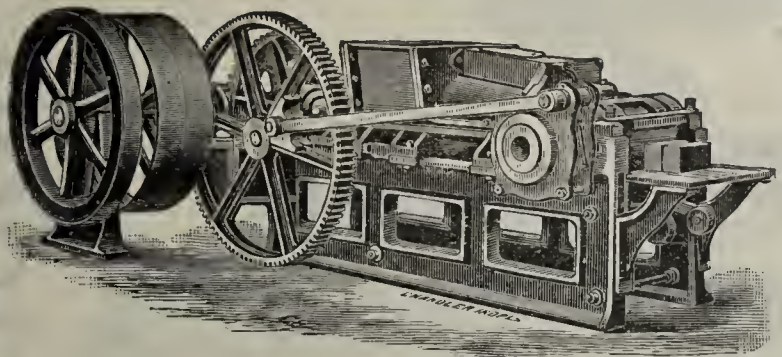


**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

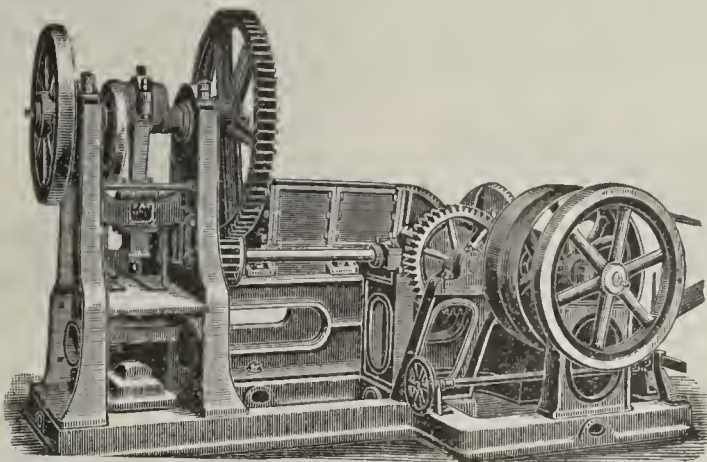
For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**  
*Room 207 Laclede Building, ST. Louis, MO., U. S. A.*

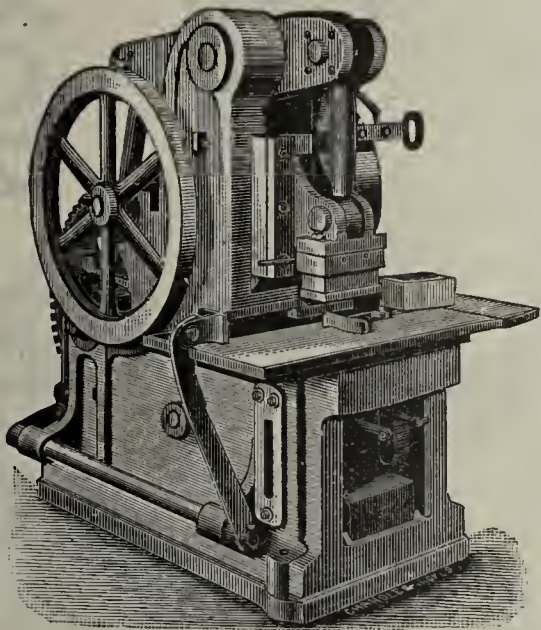




IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK & TILE PRESSING MACHINE

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building **BRICK**

and the best and most economical  
kiln in which to burn them.

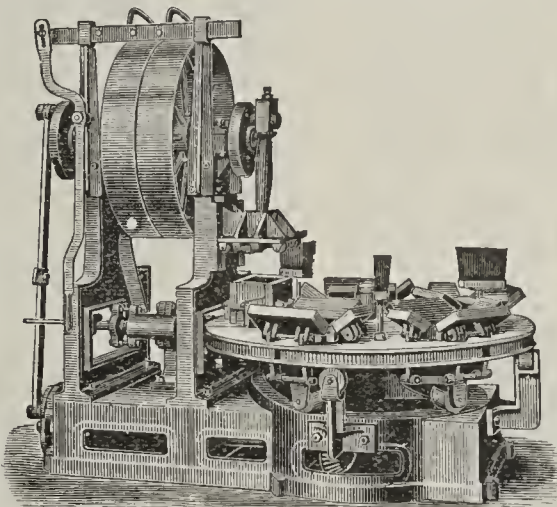
We are prepared to furnish com-  
plete equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

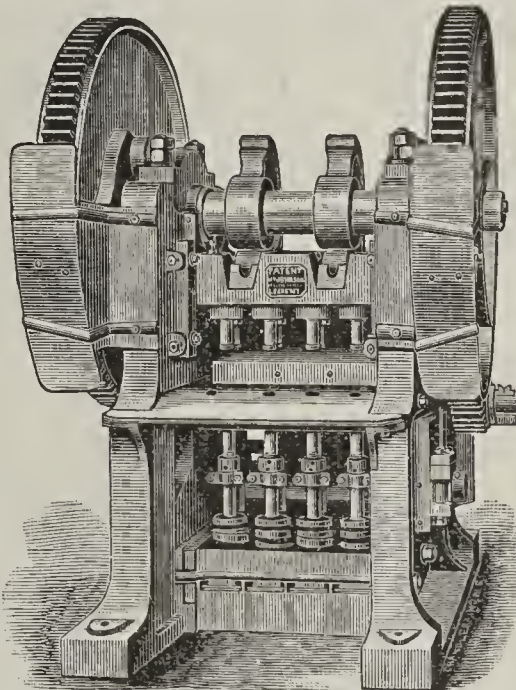
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

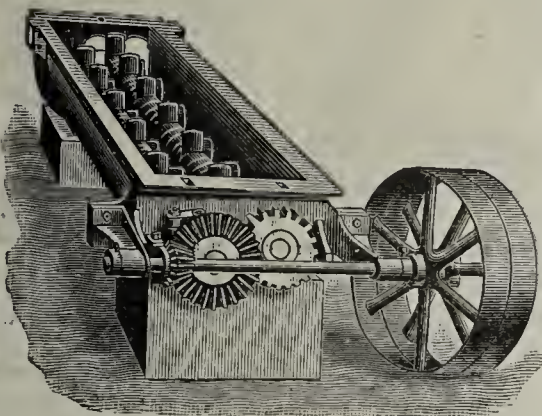
BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



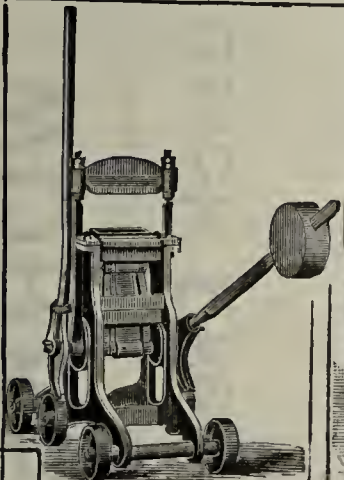
PAT. STEAM SAND-FACED PRESSING MACHINE



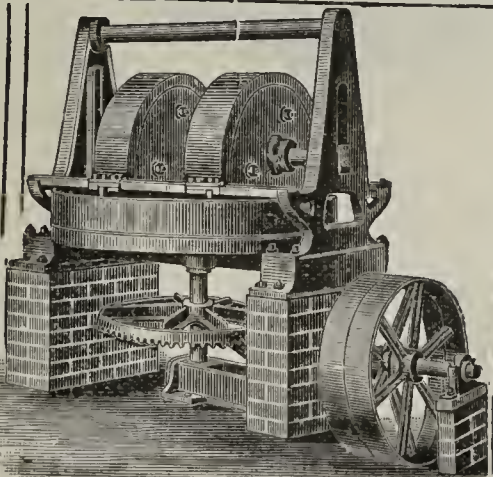
THE UNIVERSAL BRICK MACHINE



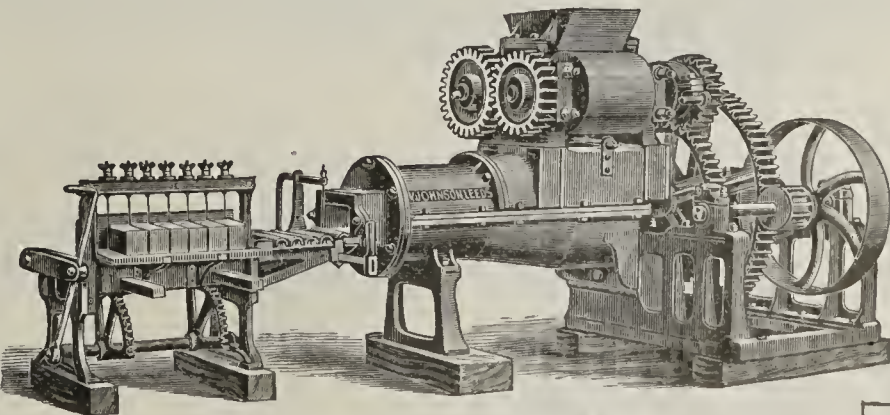
DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER



HAND LEVER BRICK PRESS



PERFORATED EDGE RUNNER CLAY GRINDER



COMBINATION PUG MILL BRICK & TILE MACHINE



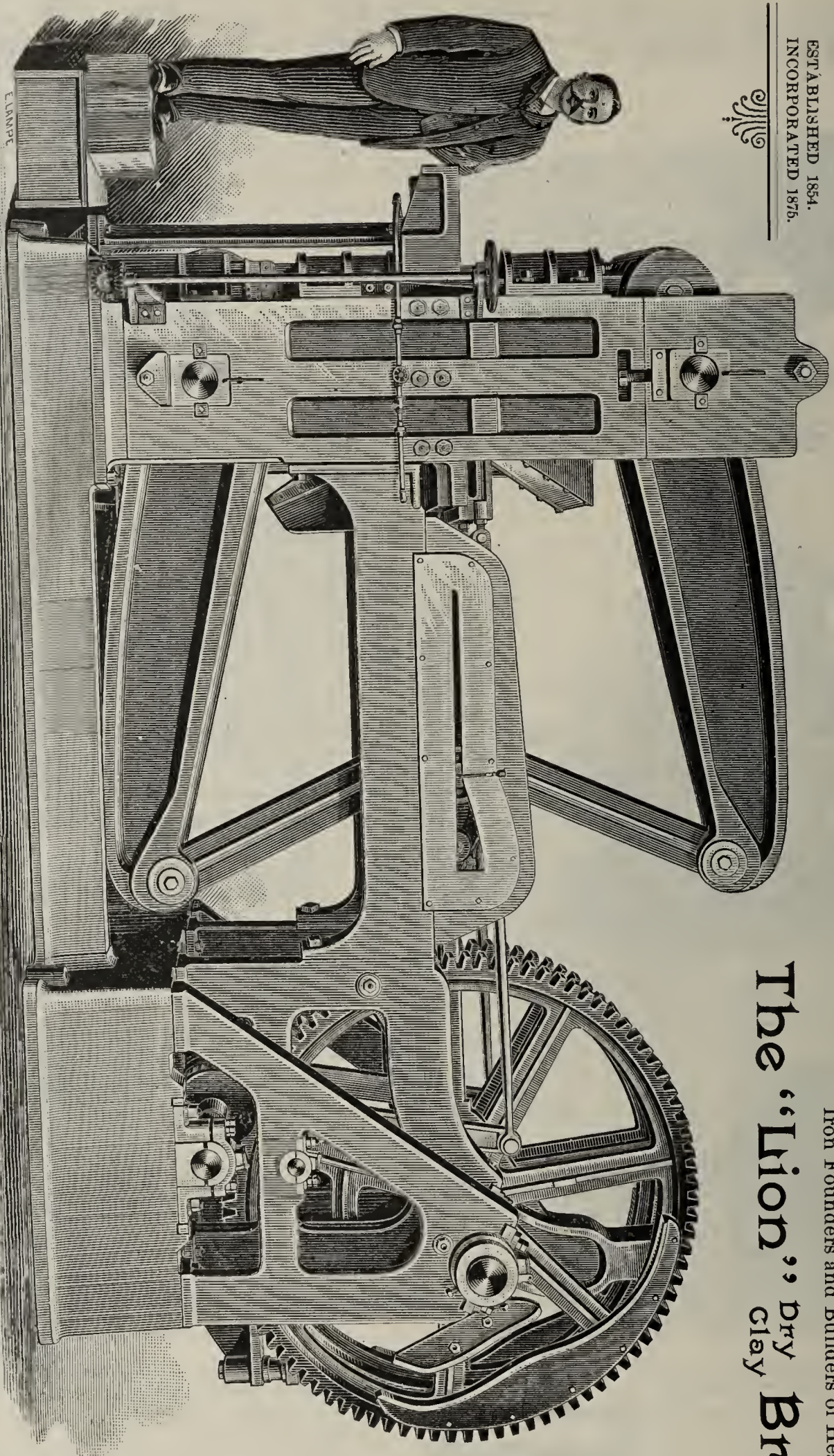
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1854.  
INCORPORATED 1876.



The "Lion" Dry Clay Brick Press.

Iron Founders and Builders of Heavy Machinery.



Weight, 44,000 pounds.

Capacity, 25,000 to  
30,000 pressed  
bricks per 10 hours

Pressure, 200 Tons on Five  
Bricks.



THE CLAY-WORKER.

## WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain.
2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum.
3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do.
4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

ST. LOUIS IRON & MACHINE WORKS, Main Street and Chouteau Ave., St. Louis, Mo.

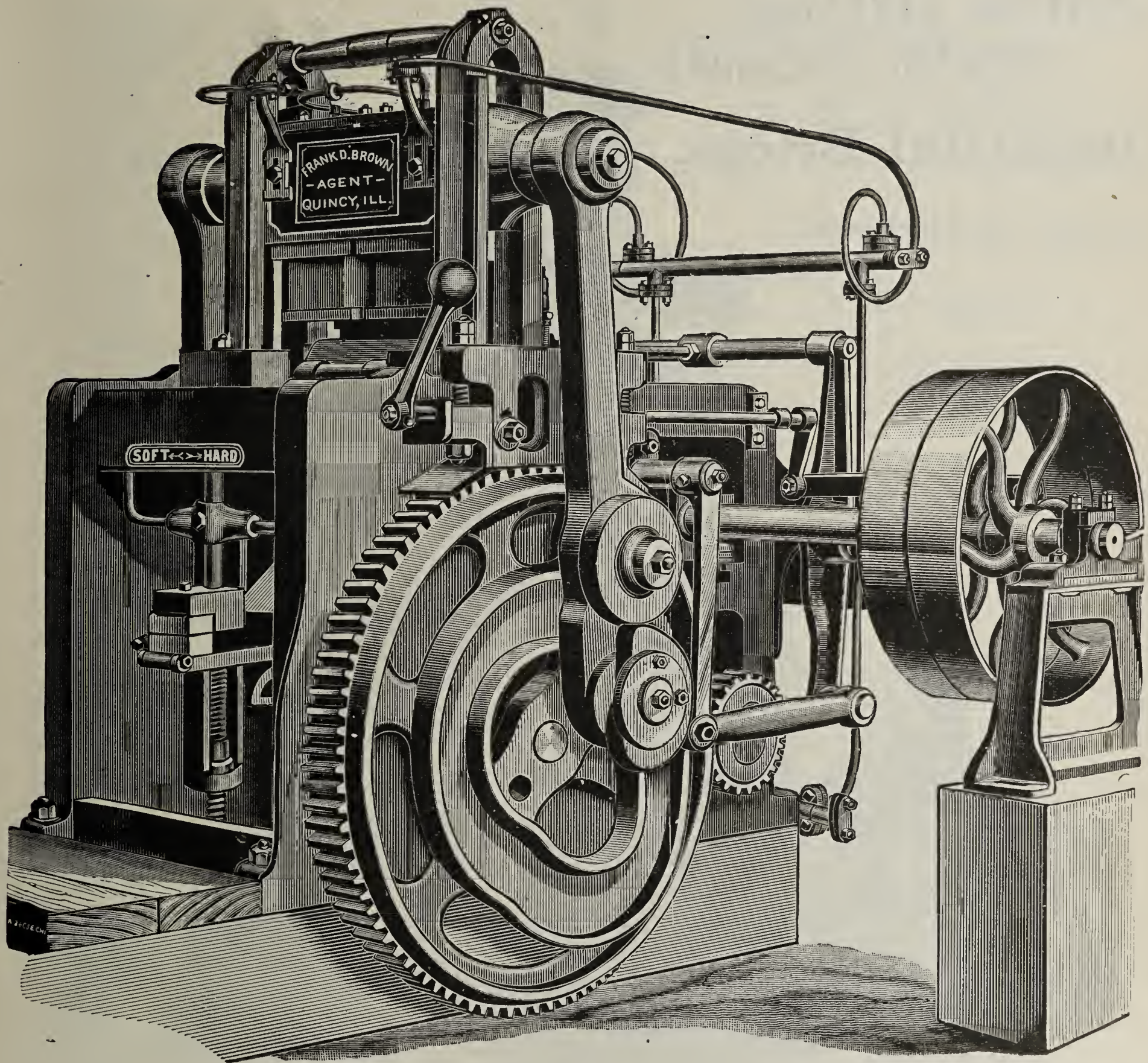


# Whittaker Press Brick Machine

Works Clay Semi-plastic, Semi-dry or Dry.

SPECIALLY DESIGNED FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.

TERMS LIBERAL.



Clay sent freight prepaid will be pulverized, pressed and burned free of charge.

**FRANK D. BROWN, Sole Owner and Agent,**

For Territory East of Mississippi River,  
Except Minnesota and Wisconsin.



**QUINCY, ILL.**



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

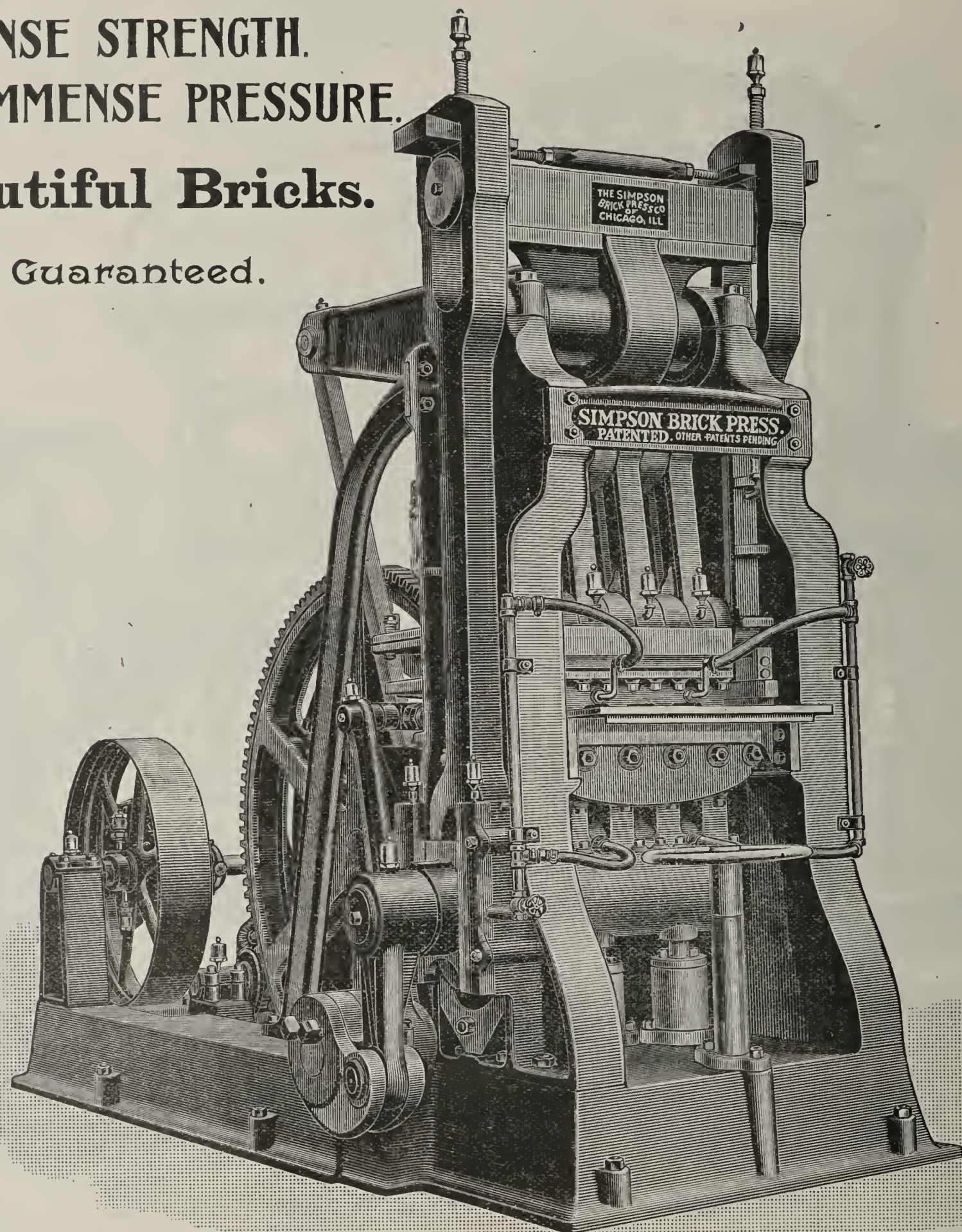
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

Beautiful Bricks.

Fully Guaranteed.



APPLY TO  
**THE SIMPSON BRICK PRESS CO.,**  
 Room 210, 87 89 and Wash, St., Chicago, Ill.

Agent for the South, **D. B. DRUMMOND,**  
 313 Commercial Bld'g, St. Louis, Mo.  
 Agents for Canada, **WATEROUS ENGINE WORKS CO.,**  
 Brantford, Canada.





# See the SIMPSON PRESS.

READ WHAT A USER THINKS OF IT.

O. W. McFARLAND, President.  
CHAS. BRANAHL, SR., Vice-President  
R. F. KILGEN, Sec'y and Treas., 112 N. 6th Street.  
M. J. REILLY, Superintendent.

TELEPHONE 2934.

COTE BRILLIANT PRESSED BRICK CO.

OFFICE, 5216 ST. LOUIS AVENUE

St. Louis, Mo. Sept 3<sup>rd</sup> 1892

Messrs Simpson Brick Press Co  
Chicago

Gentlemen

After using your Dry Press Brick machine for about 16 months we are thoroughly convinced that it is the very best machine in market to-day. And we would not exchange for any other machine known. We average 20,000 brick per day of 10 hours when making common brick - And when making stock brick we average 17 to 18,000. Our Repair bills have been a little less than \$14<sup>00</sup> per month. And we have not lost 3 consecutive hours at any one time since we started, on account of the machines.

We began with one machine in April 1891. So well did we like it that we put in another in July 1891. And our confidence was so great and satisfaction so complete, we put in another in April 1892. And if we are ever in need of more machines. The "Simpson" is our choice. We would not buy any other.

Sincerely, Yours

Cote Brilliant Pressed Brick Co M J Reilly



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

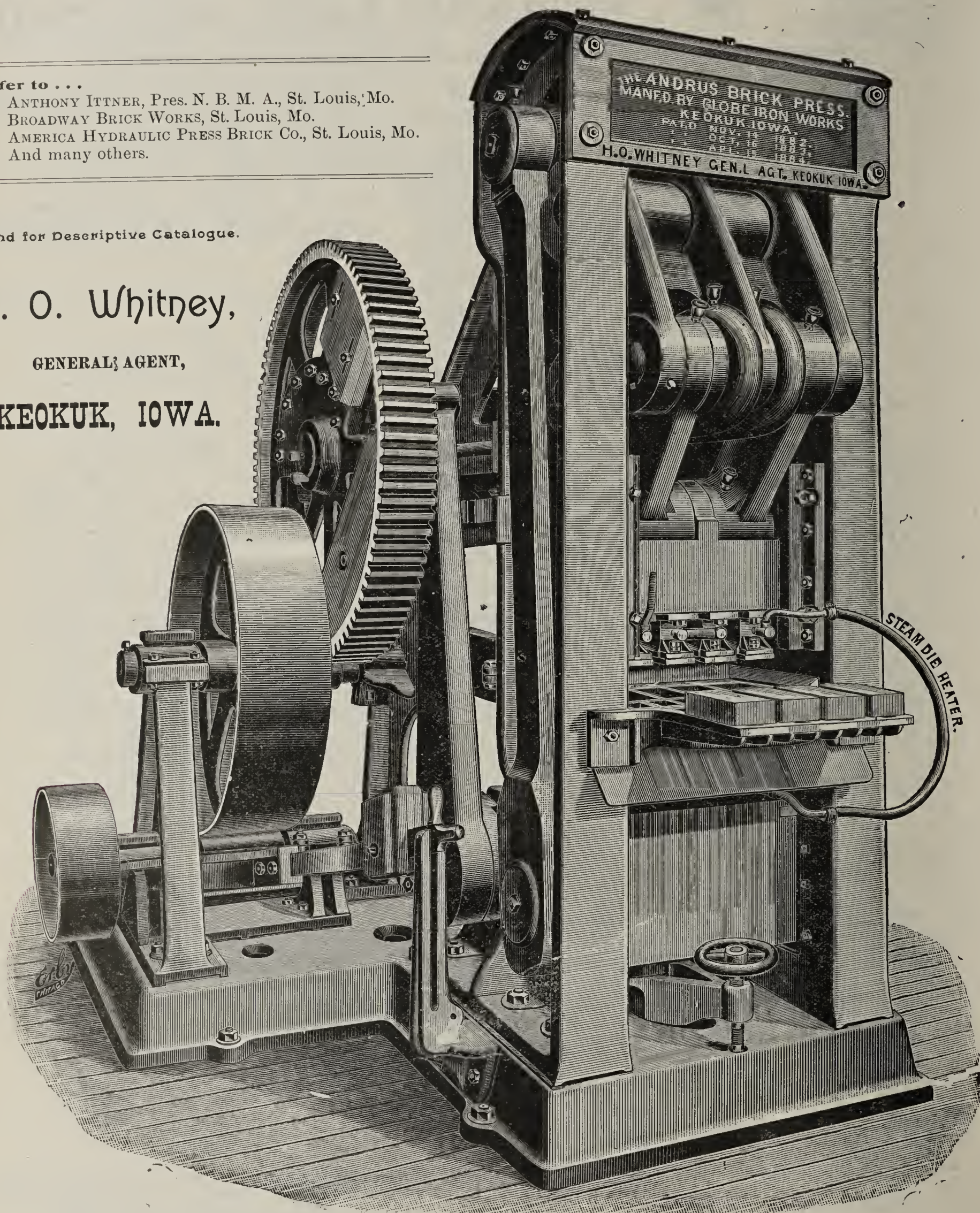
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





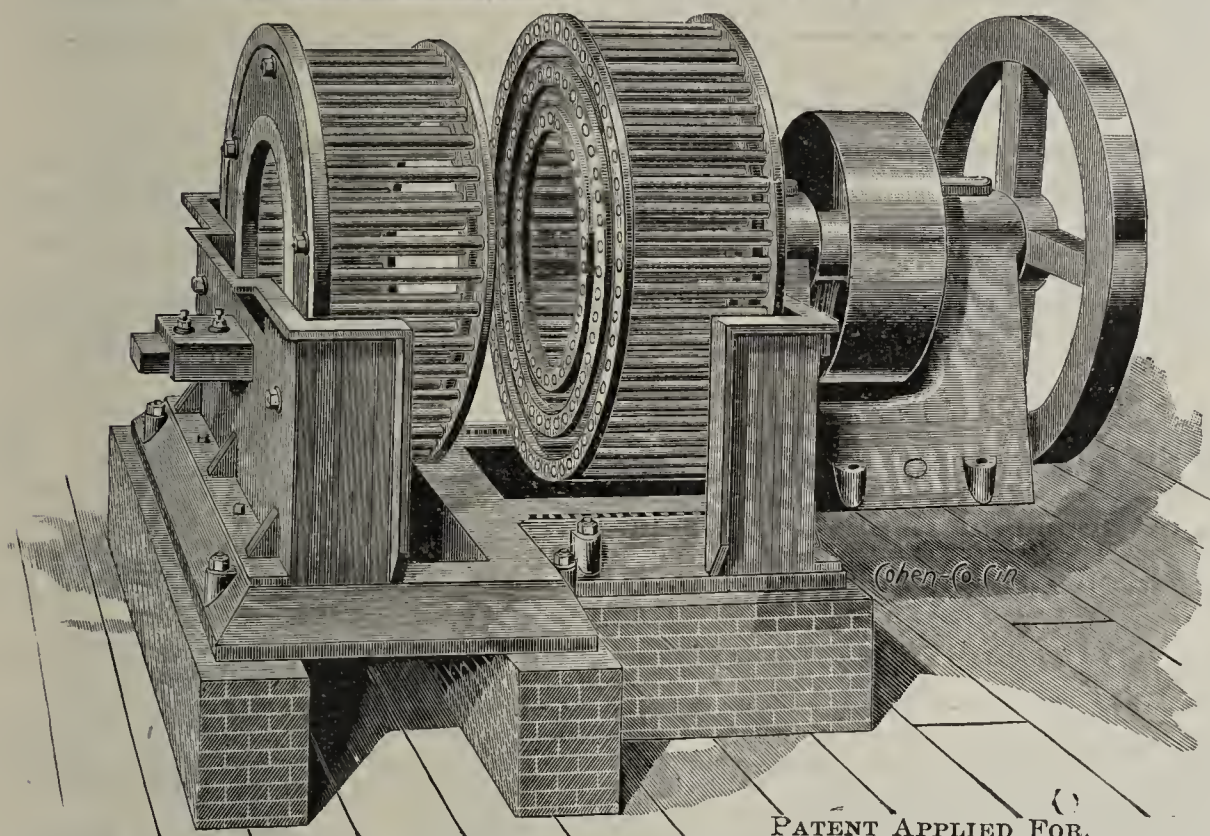
## Description.



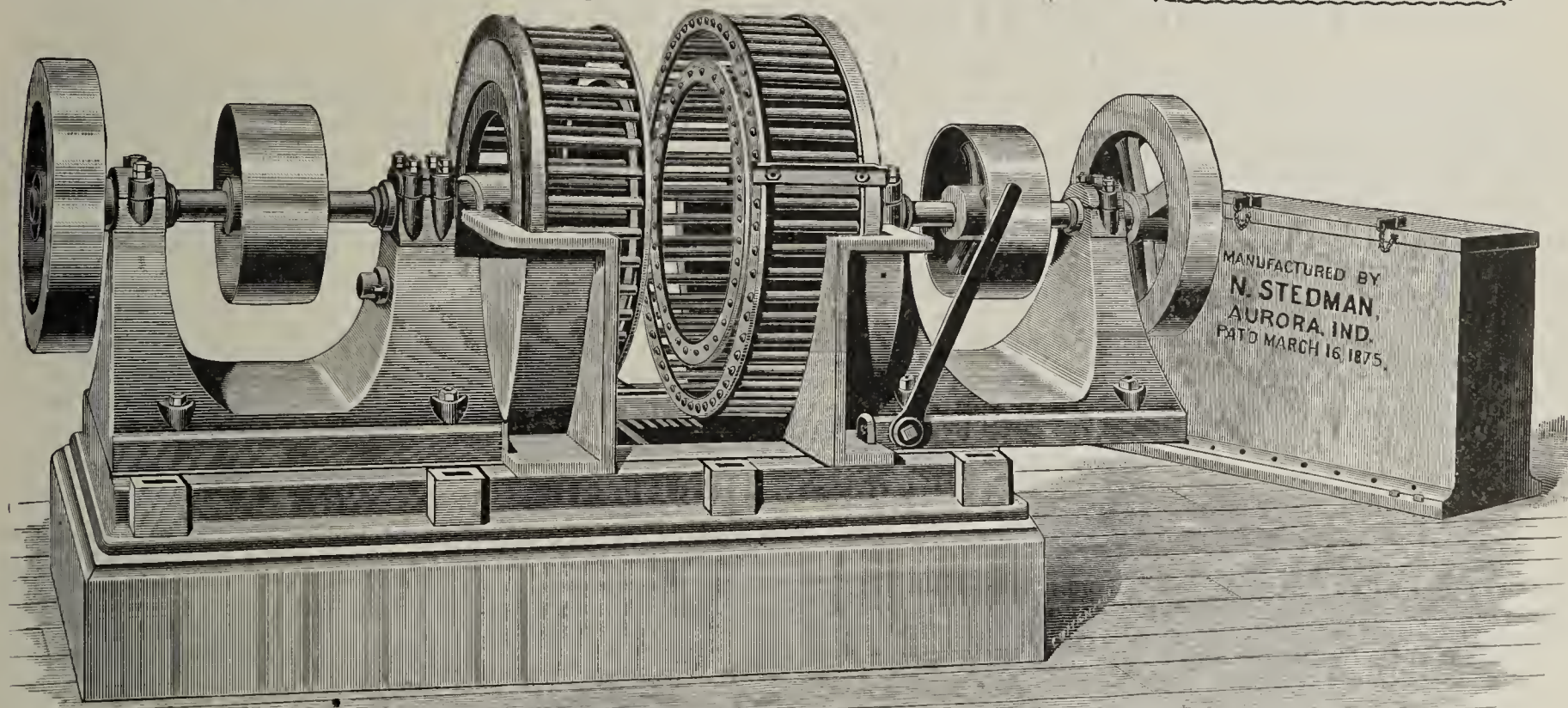
This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loomy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins, which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



• THE • KILN • OF • THE • PERIOD. •

# THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire. It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers. Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of Unbought English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.  
Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

### GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Ostrander Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,  
General Manager J. M. Blair Brick Co.

### AN EVIDENCE OF FAITH.

WM. SERCOMBE, Fords, N. J.

FULTON, Mo., January 25, 1893.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Ostrander, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,  
Fulton Fire Brick and Mining Co.

References can be given to over Forty first-class firms already. For further particulars please apply to

## SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER



W. H. KELSO, President.

MAX A. TH. BOEHNCKE, Gen'l Manager,

PAUL BOEHNCKE, Sec'y and Treas.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

## BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

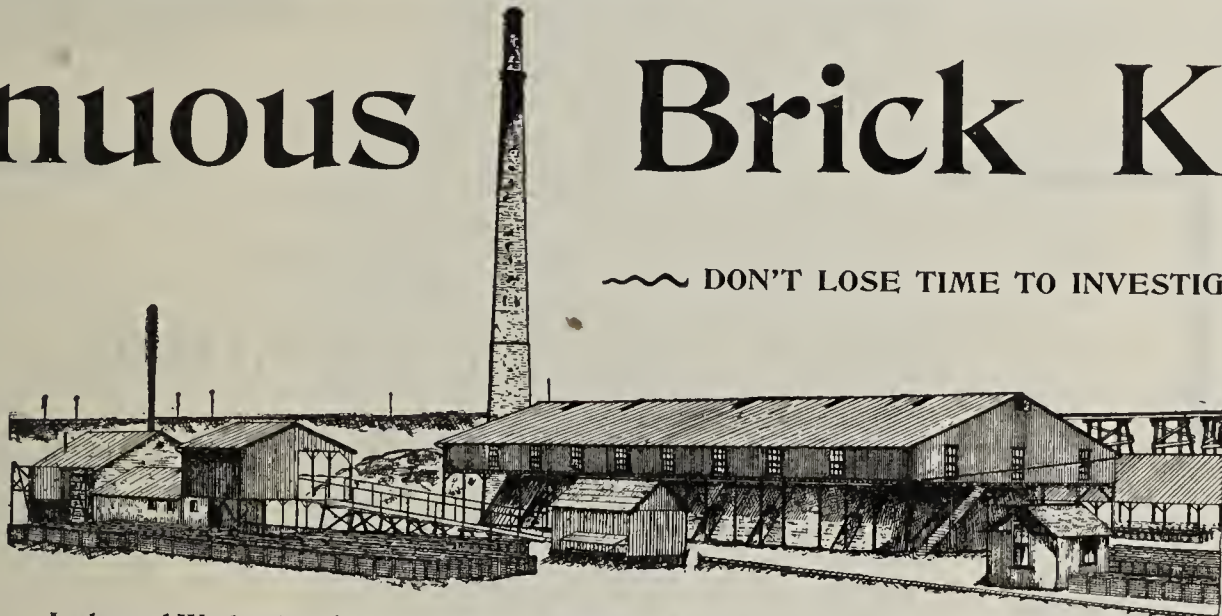
### UP AND DOWN DRAFT

# Continuous Brick Kiln.

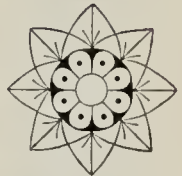
12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.

~ DON'T LOSE TIME TO INVESTIGATE. ~



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.



## ADVANTAGES OF THE KILN.

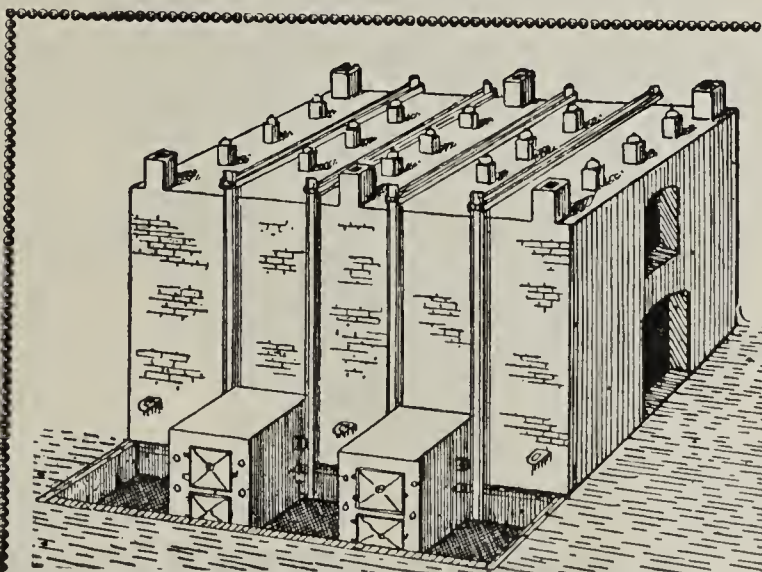
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of  
Soft and Stiff Mud Brick,  
Dry Press Brick,  
Shape and Face Brick,  
Sewer and Paving Brick,  
Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,

Box 35,

Centinela, Cal.



COMMON SENSE KILN. Patent No. 475,433.

FOR very small yards,  
and where only lim-  
ited demand for finer  
ware is in the market, we  
recommend along side of  
our Continuous Kiln

.....THE USE OF.....

Our "Common Sense" Kiln

Up and Down Draft,

which is very cheap in  
construction and success-  
ful in operation.



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



## Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



## Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

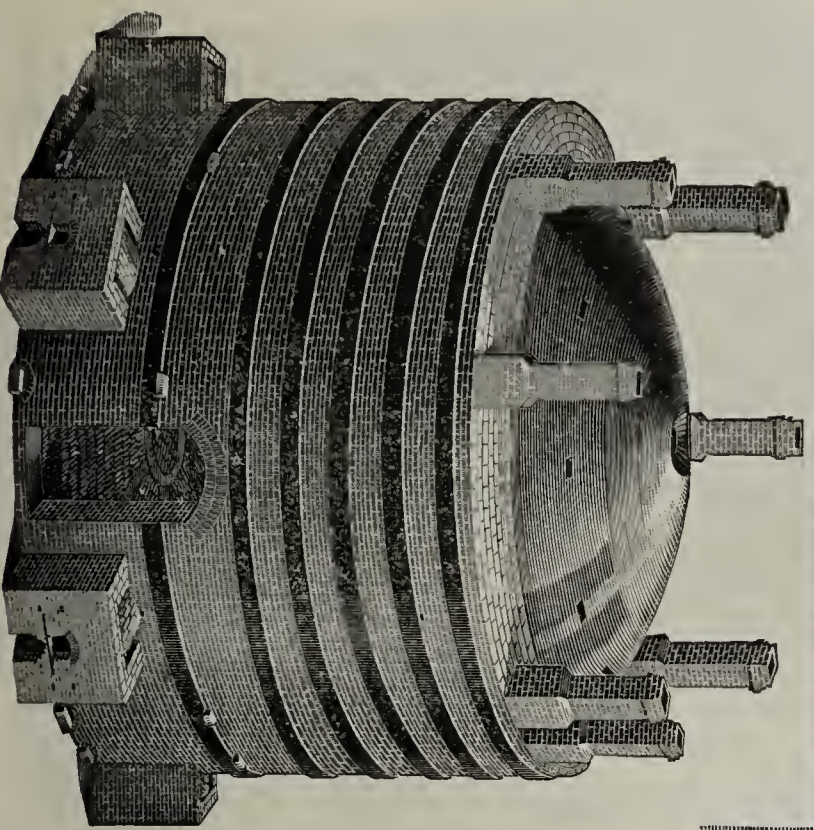
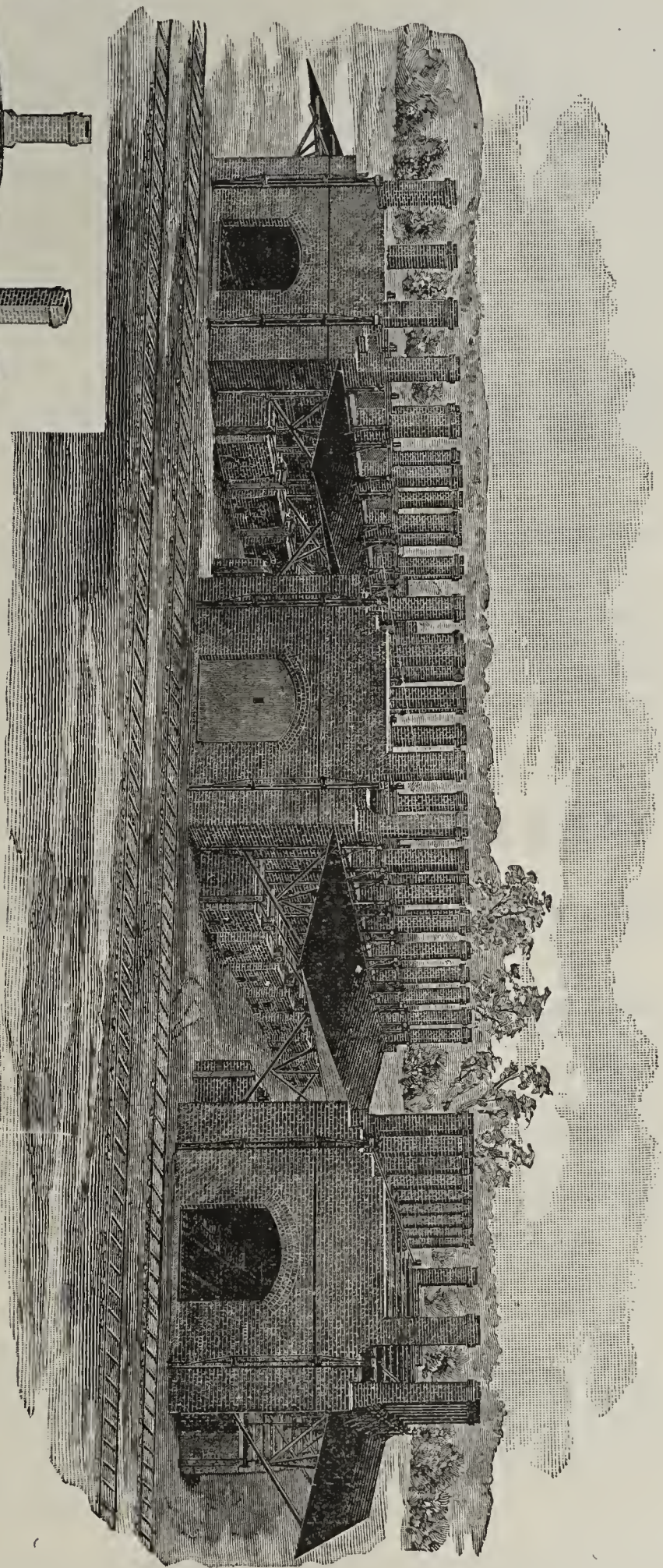
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



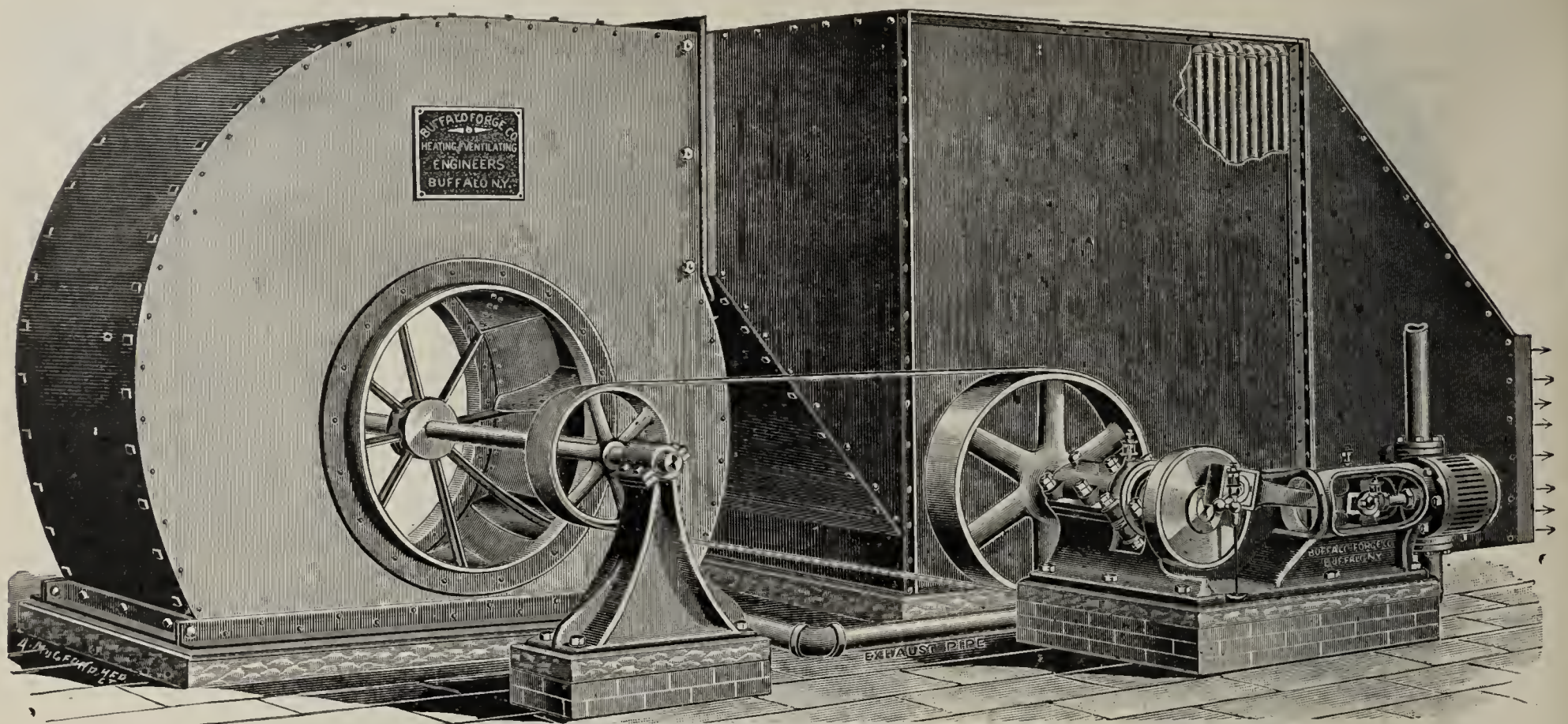
# The Eudaly Improved Down-Draft Kiln.



**A** VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of **large capacity** on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of **small capacity**, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
**Cincinnati, Ohio.**





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To **CLAIM** that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is **ONE** thing; to **PROVE** it is **QUITE ANOTHER**.

The proof that **Buffalo Progressive Brick Dryers** embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO., Buffalo, N. Y.**

## **S. G. PHILLIPS, Agent and Patentee,** WOODBRIDGE, N. J.,

DEALER IN

**"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.**

**"Air Dried" Bricks All the Year Round.**

A new plan of reducing old, approved methods to a System. This frame enclosure needs no iron pallets.

### **THE INSIDE FAN STEAM DRYER.**

A cross, spiral current from fan to fan. Bricks are safely dried in five hours. No "checking" or discoloration.

### **NO CHIMNEYS OR BRICK STRUCTURE!**

And only half the doors are required. A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

### **MORE FANS! LESS PIPES!**

The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live," as now in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

### **"Seeing is Believing,"**

Therefore, "at home," this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

### **"Better Than Drying in the Sun."—"Exhaust Steam."**

OTTUMWA, IOWA, July 7, 1892.

S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Though I have had your Dryer in operation but a short time, it gives me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTDICK.

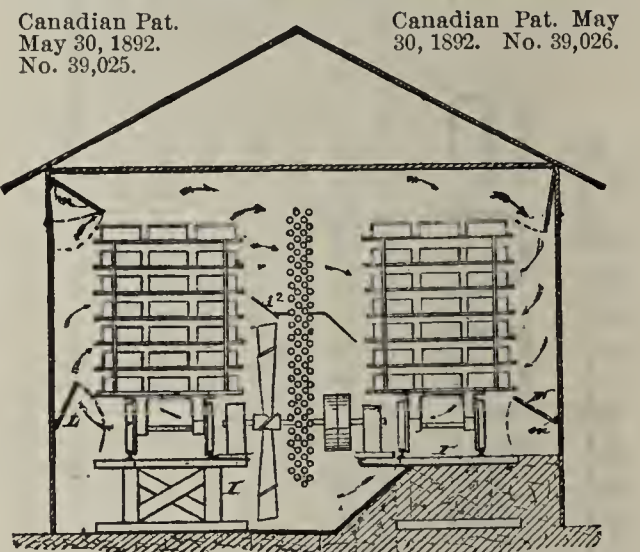
### **"And Met the Requirements in Every Case."**

MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,

CHAMBERS BROTHERS Co., J. H. Chambers, Gen'l Mngr.



Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.

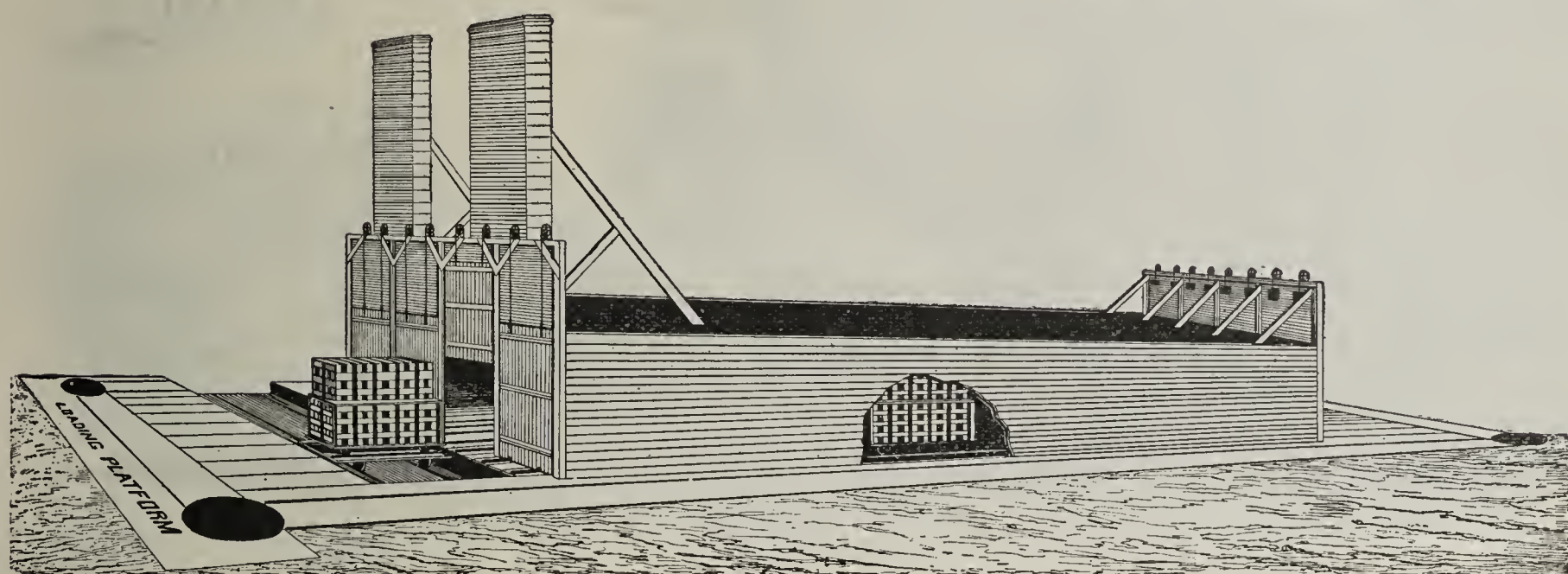
U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

## **THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.**

**"I think you have the Dryer the brick people are looking for."**—JNO. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently; **"Not over 12 hours to make them VERY DRY—the best by great odds of any in the market—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance."**



# THE AMERICAN BRICK — DRIER.



## WHY PAY EXORBITANT

Prices for antiquated patents, now public property, when you can buy a Drier guaranteed to produce results equal to any



NATURAL DRAFT DRIER ON  
THE MARKET FOR .. ..

ONE ~ HALF ~ THE ~ PRICE

Asked for other Driers of this kind? For particulars address 

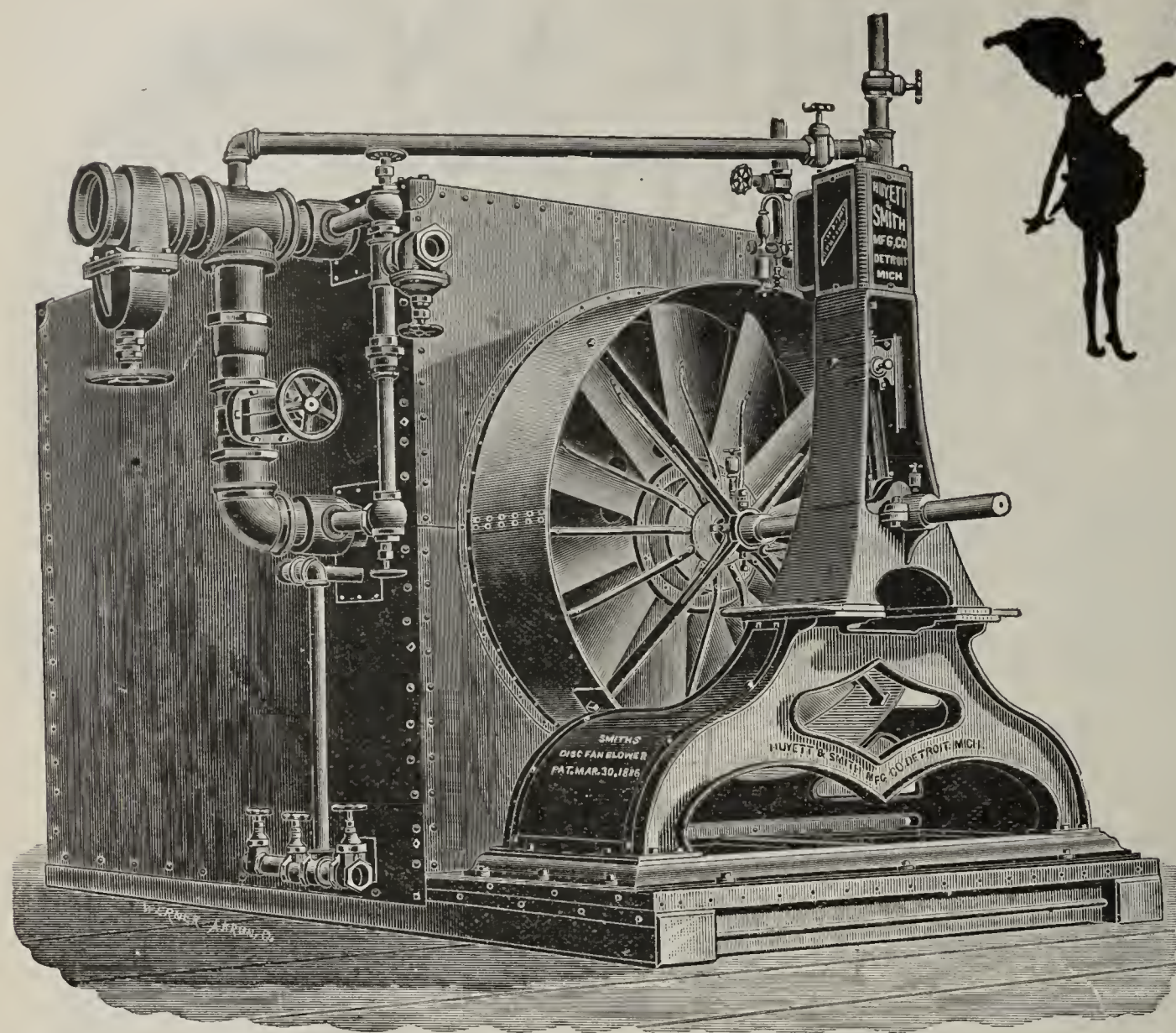
American Drier Company,

LOUISVILLE,



KENTUCKY.





THE  
HUYETT &  
SMITH  
MANUFACTURING  
COMPANY.

Main Office  
and Works.

DETROIT,  
MICHIGAN.

Are as busy as bees building Brick Dryers. Orders coming in daily. Some of the largest in the World booked last month.

Perhaps you had better take the matter up promptly so as to be sure to avoid delay. Full set of plans furnished with each order.

Send for estimates.

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The Huyett & Smith Mfg. Co.,

NEW YORK.  
CHICAGO.  
BOSTON.



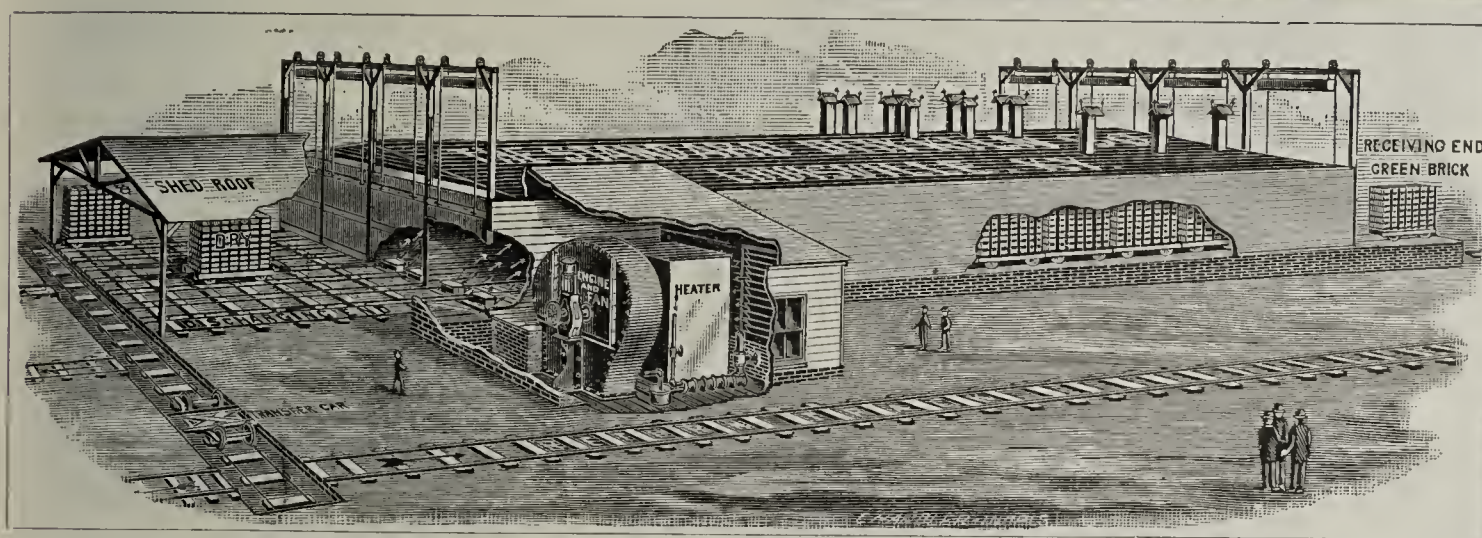
MAIN OFFICE AND WORKS: DETROIT, MICH.



# The Standard Patent

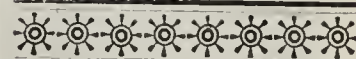
## Forced Draft

## Brick Drier,



IS

"THE  
BEST."



MORRISON & CO.,  
BRICK MANUFACTURERS.

OFFICE: Builder's Exchange.

WASHINGTON, D. C., March 27, 1893.

THE STANDARD DRY KILN Co., Louisville, Ky.

GENTLEMEN:—In reply to your request I take pleasure in stating the following facts. I purchased one of your six-track Patent Forced Draft Driers, last September on an absolute guarantee that you would dry me every 24 hours 30,000 bricks free from all checking, etc. My clay is a rich, strong, plastic nature, and I assure you I had my doubts as to your ability to fill your agreement in full, owing to the unfortunate experience of other manufacturers in our city, with all their Driers. But the liberality of your guarantee made me safe. I have your system in operation, and have given it a thorough, practical test, and can now say you have more than filled your guarantee.

My brick comes from the Drier perfectly dry, and free from all checks. Your apparatus, your system, and the results obtained are perfect. In my judgment you have the best Drier in the market. You may refer any parties to me. I am,  
Yours, etc.,

WM. C. MORRISON.

Here's the



Evidence!

Read It.

OUR guarantee is explicit and the purchaser takes no risk whatever. The above is only one of many **recent testimonials received**; we can establish beyond dispute the perfection of our apparatus and system, and show results unequalled by any other Drier. For this proof address

**THE STANDARD DRY KILN CO.,**

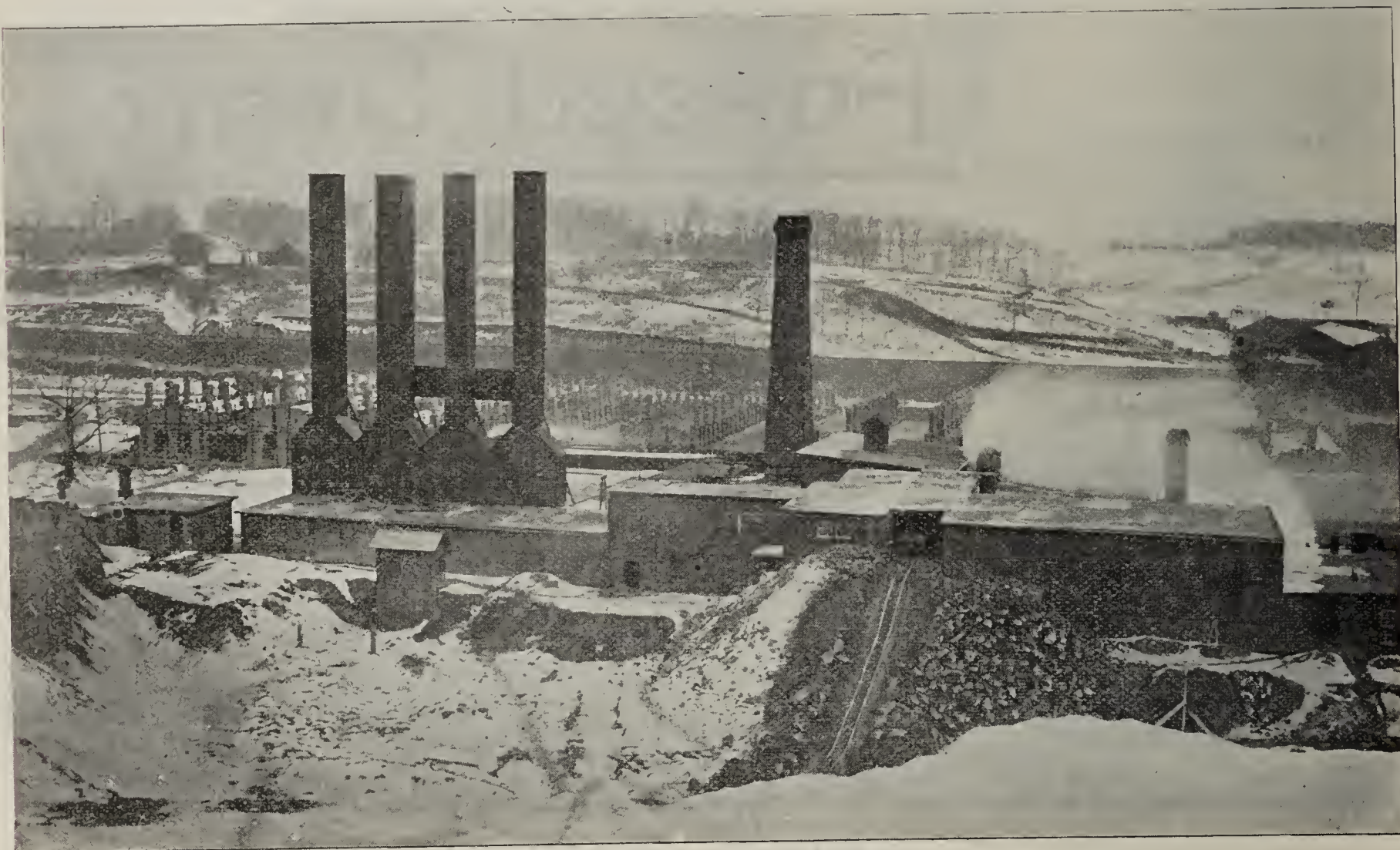
General Office and Salesroom, 923 and 925 W. Main Street,

LOUISVILLE, KY.

EASTERN OFFICE: 81 Main Street, NORFOLK, VA.



# The Best ALL AROUND Brick Dryer



DRYERS OF THE PURINGTON PAVING BRICK COMPANY, GALESBURG, ILL., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

D. V. PURINGTON, PRESIDENT.  
C. H. CHAMBERLAIN, SEC'Y.

W. S. PURINGTON, VICE PRES. AND GEN'L MGR.  
A. A. MATTESON, TREAS.

## PURINGTON PAVING BRICK COMPANY.

*Galesburg, Ill.,* Feb. 23, 1893.

IRON CLAD DRYER CO.,  
CHICAGO, ILL.

GENTLEMEN:—This Company has had one of your Dryers in constant use since October 1st, 1891. During the first year we experienced a good deal of trouble in the pipes filling with condensed water, but since you overhauled it last summer and put in a pump instead of a steam trap and made some other radical changes in its construction I am more than satisfied with the manner it performs its work. In the four compartments we can dry 75,000 brick in 24 hours, and all through this cold weather we can rely on its doing everything we desire. Our brick when made are  $9 \times 2\frac{3}{4} \times 4\frac{1}{4}$  which is quite a difference from the Chicago brick which are  $8\frac{1}{4} \times 2\frac{3}{8} \times 3\frac{7}{8}$ . Paving bricks contain a great deal more water than those made in Chicago.

As regards the quality of the work of your Dryer, I desire to say that no system I have ever seen can compare with yours. We rarely have a cracked or broken brick come out of the Dryer. Yours Truly,  
PURINGTON PAVING BRICK CO., W. S. PURINGTON, Vice Pres. & Gen'l Mgr.





# THE CLAYWORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., APRIL, 1893.

No 4.

Written for the Clay-Worker.

## EXAMPLES OF EUROPEAN BRICK WORK.

GOOD brick work in good company shows far better than the same kind of construction with indifferent surroundings.

Here is a little facade made up largely of brick, yet combined with a certain amount of terra cotta, decorative iron work, tiling and a little well designed wood work. Taken as a whole, it looks exceedingly well. If the same brick work had indifferent surroundings, it would lose much of its character. The impression of this structure is that it is brick; we will speak of it as such. The stone and iron work, tile and terra cotta are all well designed and well put together, and we have an agreeable structure, each particular material reflecting credit to the other. It presents to us an originality of design. We have nothing exactly like it in America, yet the constructive principles are exactly the same as we have always before us; it is simply the col-

umn, the wall and the lintel. The difference in appearance and character is in the details.

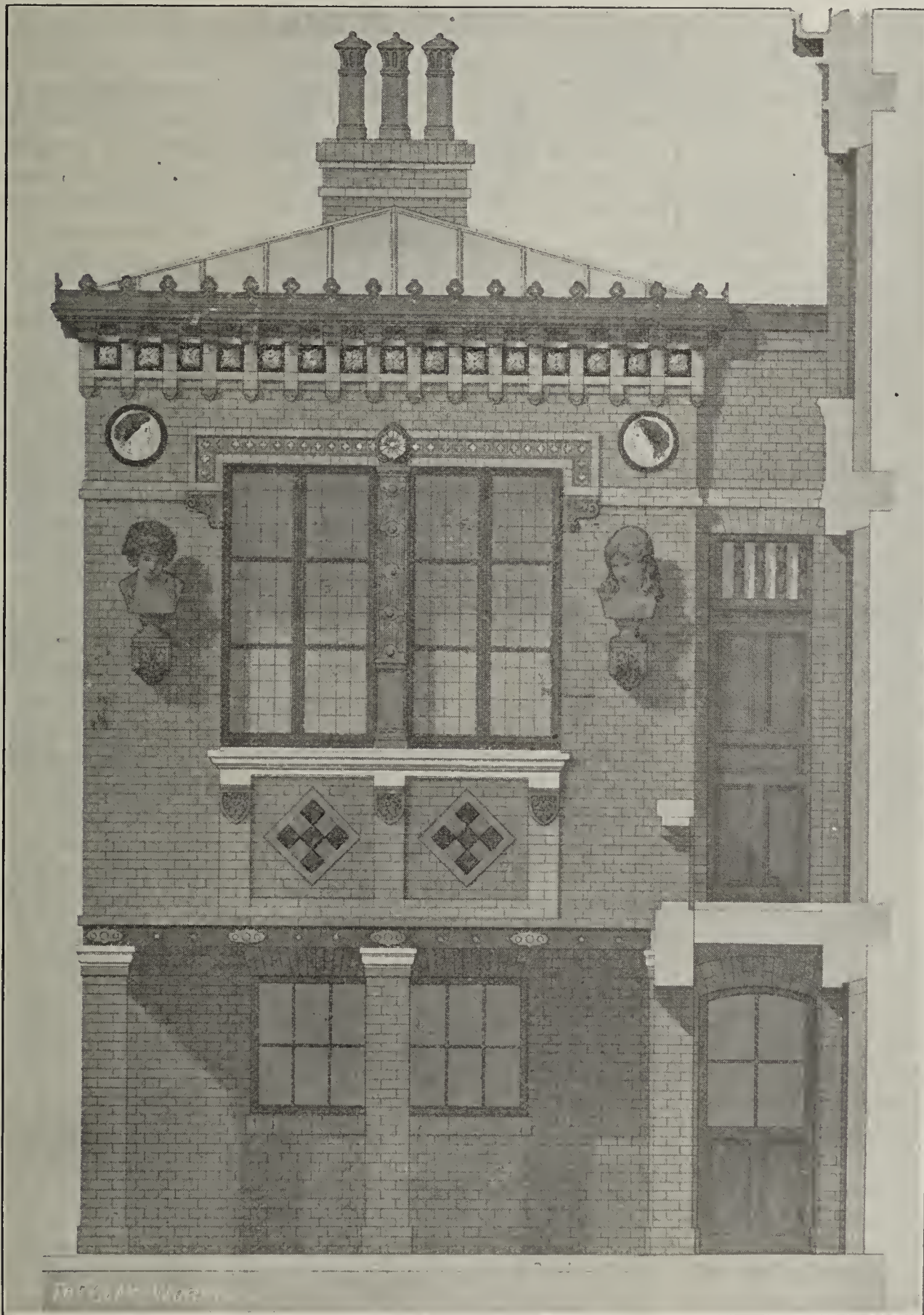
In the different towns and cities of America there is a general similarity in

the character of design and workmanship.

The architectural magazines and the general trade literature present designs to the people which emanate from

certain influential sources. This has effected the character of our dwelling house architecture, our business structures, and to some extent, those which are distinctively public buildings. As a result, there is a tendency to monotony; through constant repetition all appearance of originality which our structures might have had has been lost.

The illustration in connection with this article is given to illustrate how a spirit of originality may be shown with very simple methods. There is a departure from methods which are common to us in design for buildings of this character; buildings which are relatively simple and inexpensive. The entire character is changed by a few decorative details, none of which are expensive or extravagant. A little building like this



A COURT INTERIOR IN PARIS.



would attract attention anywhere, because it is unique and in good taste. It violates none of the principles of good construction.

While the general province of this journal is to consider the manufacture of clay products from a commercial and business standpoint, it must yet be known that the greatest advances which have been made commercially in the manufacture of these products, have been along artistic lines. If we undertake to remove all that which has to do with the appearance of the building, and the labor and material which goes into it, we may see just what advances have been made in this direction. If it were merely a question of making a material for structural use without regard to appearance, we can see what the influence would be upon the commercial character of the business of the clay-worker.

A design like this one—one which is simple, one made of brick, having a character of its own, a certain spark of originality, and yet one which can be built at a moderate cost, will reflect to the commercial advantage of all clay-workers. It elevates public taste, brings the people into a condition where they are disposed to put more money into their buildings.

People do not build rental structures and make them interesting, merely as a matter of sentiment. They build them that way because they rent better; hence, anything which can be done to set the pace a little faster and a little higher, reflects directly to the commercial advantage of all people in the clay-working business.

Written for the Clay-Worker.

#### HINTS ON BRICKMAKING.

No. 74.

BY R. BRICK.

#### KILNS TO BURN THEM IN.

IN our discussion of "How to build a brick works with limited capital,"

we have come to the consideration of the kind of kilns to be used. We have, in former articles, discussed temporary kilns for use first season, to supply customers with bricks and accumulate material for building permanent kilns. What are the essential requirements of a permanent kiln? First, it must be a success; that is, it must burn bricks well. It must burn them practically without loss. It must burn them

all, or nearly all, hard bricks. It must burn with the least possible labor, and with cheap fuel and minimum quantity. Next, it must be durable; it should stand at least ten years without rebuilding, and twenty years would be better. It should be simple to operate. It must meet the requirements without costing a sum beyond the limit of our small capital. However, it will be proper to consider the various classes of kilns, even though they are beyond our means, as we may in a few years save up enough money to build a plant, regardless of cost. Right here it would be proper enough to remark, that the sum saved should be very large, indeed.

The first kiln we will mention is the continuous kiln. This is beyond doubt the best class of kilns in use to-day, so far as economy of fuel is concerned, and burning the bricks all hard. This is accomplished by utilizing heat from a burning kiln to heat another kiln and watersmoke still another. There have appeared in recent numbers of the CLAY-WORKER, articles from men well posted on continuous kilns, and better qualified than the writer to describe these kilns. The reader is referred to the above mentioned articles for details.

However, we can consider the matter in a general way. They are expensive to build, and, when built, should be so put up that they will last twenty-five years. Some who claim to have many improvements on the Hoffmann kiln, the original continuous kiln, say that it is not necessary to line their kilns with fire brick. I will just say, no man could put in a continuous kiln for me who tells me common bricks are good enough for lining the kiln. Unless these kilns stand many years, the saving of fuel by their use will never pay cost of constructing them. These are self-evident truths. While the saving in fuel is great, and the burning of all hard bricks another valuable feature, they, like all other things, have some disadvantages. It costs more to get bricks into a compartment kiln than into a large open kiln, and costs more to get them out. It necessitates continuous burning. This requires continuous production, whether you can sell your bricks or not. True, they may be made, dried and stored away, and burned later, but here comes expense of storing them. The same is true after they are burned, they must be removed from kilns and piled up, if there is no immediate demand; while with open kilns you can run perhaps

two months without shipping or moving bricks from kilns. Again, it is hardly practicable to burn face bricks where fuel is in direct contact with bricks, it will discolor them to some extent although it is claimed by some that they have overcome this difficulty. So we see, while in some respects the continuous process of burning is beyond comparison the best, yet all the advantages are not with these kilns. Let us hope that we may make enough money sometime, somewhere, to build these excellent kilns.

Next, we will consider the closed down-draft kilns. Many of these burn nearly, if not quite all, the bricks hard. Where street pavers are the exclusive product, these kilns are best, and for fire brick or sewer pipe they are unequaled. The greatest point in a down-draft kiln, and one rarely mentioned, is, the bricks subjected to greatest heat have greatest weight upon them, hence can be burned to vitrification without warping, where in an up-draft, the bricks subjected to greatest heat have greatest weight on them. This is the great point, and, perhaps, the only real advantage they have over an up-draft kiln. They have no advantage over an up-draft kiln so far as saving of fuel is concerned, so it depends largely upon the class of ware to be burned, which is best to use, down-draft or up-draft kilns.

Where building bricks are to be burned and a large per cent. are common bricks, or all common bricks, then the up-draft kilns are best, and most economical to use. In these kilns 25 per cent. repressed or ornamental brick can be burned with the common brick, with just as good results as may be obtained from the most expensive kiln that may be constructed. The up-draft kiln can be built with permanent walls, with grates in the walls and extending into the arches. This is the Dutch kiln or Philadelphia kiln. In the latter city, a large per cent. of fine pressed brick are burned in each kiln with common brick and no finer face are burned anywhere. There is another class of these kilns known as furnace kilns. These have furnaces built outside the walls, with heat chambers between the furnace and the kiln. In these furnaces, the heat is generated and the gases are superheated as they pass through these heat chambers to the kiln. By this arrangement cold air does not come in contact with the arch bricks. Nothing but a high degree of heat enters the kiln after the



bricks once become red hot. The flow of heat into the kiln is steady and continuous, and the degree uniform, hence the arch bricks are not broken or damaged, the grate surface in the furnace being ten to twelve square feet. Coal slack gives all the heat required to burn building bricks. One furnace supplies three eyes with heat, hence the labor of firing is greatly reduced as compared with firing into each separate eye or arch. The cost of building the Philadelphia kiln described is about equal to the cost of a furnace kiln,—the cost of either being less than half the cost of a down-draft kiln of equal capacity.

In the next article will be discussed the proper manner of firing and managing a kiln of burning bricks.

Written for the Clay-Worker.

### GROTESQUE FINIALS.

#### Second Paper.

FROM the grotesque or distorted forms which were created by imperfect Art knowledge, or due to the compulsion incident to the available materials, there has grown a school of grotesque designing. The Artizans of later days have evolved a style of designing which gives a defined and correct purpose to grotesque productions.

Grotesques are no longer the accidental result of difficulties and lack of knowl-



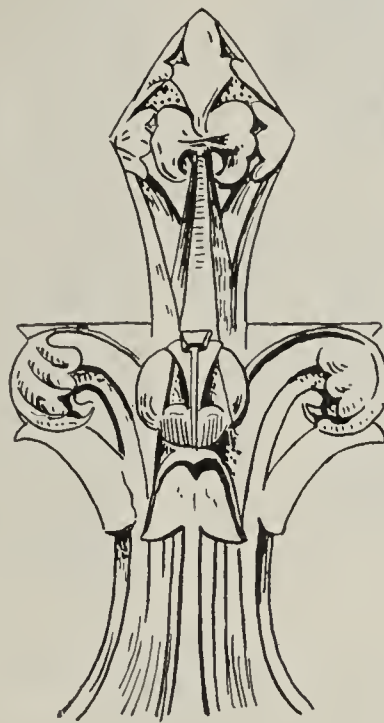
edge, or of an inability to thoroughly observe the functions and forms of living objects. They are now the studied inventions of carefully trained and observant artists.

Starting with some well known and

recognizable form, they develop such fantastic contortions as will give or produce a graceful and suggestive outline.

These outlines and forms are at once useful as terminal points, as well as agreeable to the eye, being free from the faults and errors which the uneducated mechanic too often produced.

Very often they are executed in metal, a material which gives, or enables



the artist to give free scope to his fancy; such work does not, however, come within the range of clay work, but belongs to the metal worker's art.

There is another style of architecture in which the use of Finials is very frequently introduced—but they very seldom appear as grotesques.

Gothic architecture more than any other, delights in natural forms, which are intelligently conventionalized in order to adopt them to the material employed.

Gothic ornament had its origin also in Western Europe, and came from the same source of local observation of home surroundings, as did the Flemish which gave us the grotesque.

It has been said that gothic architecture was introduced by the captive Goths who were taken prisoners to Rome in the early centuries of the christian era.

These captives having been taught the art of working in wood and stone, by their conquerors who wished to employ them in building the palaces and temples of Rome, naturally followed the forms with which they were familiar. They recollected the huts of their fatherland which were formed of poles and branches covered with skins of animals and trailing vines, under the shadows of forrest trees, and thus foliage and ani-

mal forms were impressed in all their art development.

With the advancement of christianity, a great change came over the prevailing character of the architecture of Western Europe.

The five classic orders gave way to the pointed windows, the high pitched roof, and the lofty spire.

Clustered columns banded like bundles of poles took the place of the simple tuscan or the rich corinthian column.

Running vines succeeded to the egg and dart, the dentil, the scrol and the Greek key fret. Sprouting roof poles suggested the crockets on the spire, and the finial naturally came with it to crown the apex. An orderly outgrowth from local observations.

With the study of gothic architecture came a spirit of careful observation and

correct orders of development. The grotesque passed aside, and true form became the ideal. Gothic ornament is rich in symbolism. Thus finials were made to represent not only the plant form, but also to designate some other idea or thought.

The clover finials illustrated below are much alike in general form. Yet one is the open leaf which represents the morning, while the other is the folded leaf, which indicates the evening.

This putting of ideals into our work is what lifts us above drudgery. It



makes the dry bones live. It brings in poetry and drives out sordid toil.

Men can work for bread alone, but they are apt to be placid and idle like the owl sitting on the eastern gable, overcome by the sunlight of a busy day. But the man who can project some of his own



thought into his work will have a vigor and helpfulness that will reflect itself in all he does, and he will be found



wide awake like the owl spreading its wings upon the western gable, ready and able to improve his opportunities.  
JAMES TAYLOR.

Written for the Clay-Worker.

#### CONTINUOUS KILNS.

No. 2.

I FOLLOWED sometime ago the advertisements of continuous kilns in some papers. As soon as the one mentioned some new advantages of his kiln—in the next number one of the others would claim the same thing, only pictured with a little brighter colors. It reminded me of the two fellow school-boys. The one was a very intelligent and dilligent boy. The other, his friend, a pretty bright fellow, but very lazy. The latter copied the latin translations from the first regularly; he wrote a better hand, and sometimes happened to substitute a more suitable word in the copy than the original writer. Every body thought the copyist was the most learned boy, but when it come to the closing examination, the first one went through all right, and the copyist proved to be a failure.

But now, if we agree all the above to be correct, how shall we find out, which kiln to adopt, and who will be our man to trust?

The only way would be, before coming to any decision, which under unfavorable circumstances would result in the loss of considerable capital, if a serious mistake should be made—to go and see kilns in operation, notwithstanding it would involve considerable traveling expenses. Better to do this than to meet with a failure. There will be a time after a few years, when the continuous

kiln more generally will be introduced, in which case such personal investigations will not be necessary; the fittest certainly will survive.

Furthermore, the most simple kiln, with the least complications will always be, as it is with all machinery, the best and safest to adapt, provided it leads the heat to the coolest places, which are outside, bottom, and top. Especially the interior of the kiln, (kiln-tunnel or kiln proper) should have the least possible obstructions, so as to allow the fire a full and undisturbed motion through the whole width of the kiln, and from one compartment to the other. No permanent division walls between compartments, no corners or places so that the direct draft from the main fire could not touch the same on straight or parallel lines. Furthermore, all flues should be constructed so that the expansion and contraction of the arches during heating up and cooling do not move said flues, which would result in cracked and leaking flues, and it is a main condition for good success, that a continuous kiln must not leak at any point. No side holes in the feed-openings should be allowed, because the same cannot be controlled. I have seen kilns with a net work of small flues on top of the arches in connection with feed-holes, which by every motion of the arch must crack, and consequently cool the whole kiln and make it a very questionable success. Everything, every damper and opening must be well controllable during the operation of the kiln, especially the feed-hole caps must be well fitting and heavy enough to not allow any heat or smoke to escape or any cold air to go in. A kiln which is built expecting the fire to advance more than 20 feet within 24 hours will surely not fill the bill.

It is also very necessary that all the main walls and arches are provided with arrangements to allow for expansion and contraction of each part separate, so as to prohibit any and all cracking.

Finally the stack must be built in a manner that it will be well isolated against all influences of the changes in temperature occuring in the atmosphere, because the results of combustion ascending through the stack in a *good built kiln* should consist mainly of watersmoke only, just warm enough not to condense before leaving the chimney-top. If the chimney-flue is not well isolated, a continuous flow of condensed

watersmoke will run down on t'he inside' destroying the chimney-walls, filling flues and passages with moisture and prohibiting a good draft. Therefore an iron stack will never do.

I have seen some continuous kilns built in this country where the communication from one compartment to the other is performed by means of a few holes in a solid dividing partition only. We must consider that the natural motion of the heat and draft is upwards. The continuous kiln forces the draft to go in a horizontal, unnatural direction forward, and the least obstruction in this unnatural direction must consequently partly spoil the success of the operation, resulting in waste of fuel and in unevenness of the product.

Again, I have seen in continuous kilns certain combustion chambers provided so as to avoid the contact between fuel and brick. Those combustion chambers do away with most of the advantages of a continuous kiln.

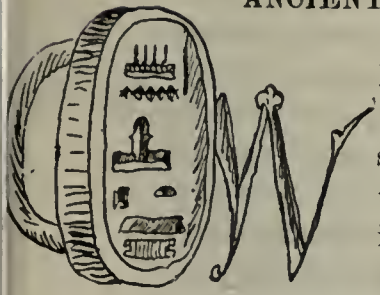
There is not much saving of fuel and a very inconvenient setting and emptying of the kiln, and the greatest part of the control of the fire is lost. The latest last year's edition of the best German paper on "Clay Industry," treats this latter point especially, and confirms the experience of the writer that the newest method of setting brick in continuous kilns does away entirely with the inconvenience of the coming in contact of fuel and ware to be burnt in the kiln. This question relates only to the burning of finer ware, and in such case the so-called fire-row has to be set of common green brick in the shape of a combustion chamber on a small scale, with perforated walls and step grates, Now this sounds very complicated, but I use this way of setting for all kinds of brick, and it is quicker and easier done than the old method of setting in continuous kilns. But, on the other hand, the main objection to continuous kilns is that the smoke from the fire passes through green ware, not entirely free from physically or chemically bound water and has been avoided through the newest improvements, which dry the green ware by means of perfectly dry hot air before same is admitted to the general run of the kiln; although this latter point has tempted several so-called inventors to spoil the whole kiln by networks of flues and numerous dampers, in place of having direct and easily applied connections.

AN OLD BRICKMAKER.



Written for the Clay-Worker.

## ANCIENT CLAYWORKERS.



WHEN we consider the art of working in clay, we should think of it from a two-fold standpoint. First in a manner purely technical, considering the details of materials, manipulations and processes. This is the business point of view. Then secondly, we should consider the history of the art itself, its changes, improvements and perhaps its faults and failings; but even more than this, it is an interesting thing to study clay as a monument of the events of the past. In other words, clay is as filled with lore and historical records as the vedas or even of that more ancient tradition.

When the invention of working in clay was made is unknown. It was such an easy thing to mould clay, that probably the first maker, with the easy egotism of the human race thought that the



clay was made for no other purpose than to mould, and was quite unconscious that his name deserved a place upon the scroll of fame beside that of the future Edison and Watt and Yost. It has been sagely decided by the wise men of the age, that the baking was certainly the great stride in the clay-working art, and that it must certainly have been discovered by accident. The accident was however a fortunate one for curious moderns, as otherwise much of our knowledge of the past would have crumbled into dust or mud, just as the weather bureau might have decided. As it is, Egypt, Assyria and Babylonia are only ancient countries leaving a vestige of sun-dried clays. This was due to their remarkably dry climates.

The making of brick was the step that followed the plastering of dwellings with mud. It was brought about by the inherent taste in the human breast for symmetry. The brick begins with the history of the Semitic race, and has descended to us with but little modification. The most ancient canon of bricks is rectangularly, and it has been care-

fully preserved. It has been left for the iconoclastic modern architect to run tangent to the laws of the honorable brickmaking fraternity. In Egypt, the placing of inscriptions made bricks into books. Some of these books are very good testimony to the truth of the Jewish Bible.

Speaking of Egypt reminds us that the Nile empire is the country offering to the historian the earliest evidences of civilization. It was a nation when Chaldea was yet young, at least some people think so. At any rate the potters art was even older than civilized Egypt, for that ingenious and acute people ascribed to the gods all they were ignorant of. Thus pottery became a divine attribute, and the god Num exercised his prerogative in very artistic production, that of man, whom he turned upon his wheel. He had already produced the heavens, the earth, the air, hills and streams, and had hung up the sun and moon. But the triumph of his potters art was the production of a



man. This piece of virtu was made of the black Nile mud.

The first bricks of the Egyptians are of the rectangular plinth form. In this land there are few curves used in design. The largest part of these bricks are of the unbaked variety, for here there is rain but three or four times a year, and the unbaked bricks lasted very well. They are used in a number of the notable constructions. For example—the pyramids of Dashour, of Aboo Roash, of Dra Aboo Nagger,—the walls of Sais,—the fortress of Samneh Centra Pselais, of Hieraconpolis, of Abydos and of El Haybet,—the Memnonium of Thebes,—the wall on the East side of Egypt from Pelusium to Heliopolis, a distance of 1,500 stadia; the wall of Sesostriis, and a chapel at Chemnis. These are sufficient to show the popularity of the unburnt brick in construction.

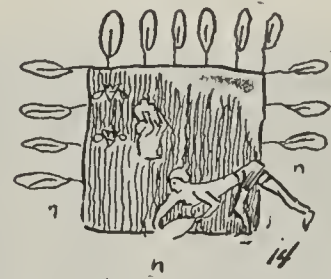
The Fayoom and the Delta in that time of wonderful industry, presented a remarkable sight of busy workmen. It was in this neighborhood that many of the brick used in the empire were

made out of the black mud or clay of the river. This mud was peculiarly adapted for the use. Nearly half of it was an argillaceous earth. An analysis in the description de l' Egypte, folio Paris 1812, t. 11 406, is very much as follows:

|                        |     |
|------------------------|-----|
| Alumina.....           | 48. |
| Carbonate of Lime..... | 18. |
| Carb. of Magnes.....   | 4.  |
| Silica.....            | 4.  |
| Oxide of Iron.....     | 6.  |
| Carbon.....            | 9.  |
| Water.....             | 11. |

Total ..... 100.

The bricks that were used in the tombs of the early kings are all paralleliped and made from the dark Nile mud. This mud was dark and loamy, and it required the agency of chopped straw, of wheat or barley straw, or bits of old pottery, as a means of binding the brick. A square box or mould was used for forming them. As a rule, all of the bricks found in any one of the pyramids are of about the same size, but they vary



in different structures. Those found in the famous third pyramid of Dizah are 20 inches long, while those in the north pyramid of Dashour are only 16 inches. Usually the proportions observed in the forming the bricks was, twice as wide as thick and twice as long as wide.

About the first appearance of the stamped devices on bricks dates to the 18th dynasty, as it is called, one of the earliest of which is shown in the initial letter. The stamp or die was engraved and produced the marking in relief. The one referred to bears the name of



Amenophis III with his various titles. The object of such stamping was to ensure the delivery of the right bricks to the proper place. In the hieroglyph, a brick is called Tebi, which word is still



found in the Coptic Toobi or Toobe, and the Arabic Egyptian Tubi. They were laid in regular layers, and sometimes in arches, but rarely.

The scene illustrated is typical of the old Egypt, and represents the process of making bricks. One thinks of the Israelites and the bondage. The process itself is not so different from that of modern times, excepting for the pug-mill that accompanies the smallest factory. In the illustration, 9, 12, and 13 are laborers mixing clay, etc., with their hoes. Water is being brought from the tank, which is filled with lotus to retard evaporation, and is surrounded with a row of trees, by the workmen 14, 15. When there is sufficient clay kneaded, it is transferred by 10 and 11 to the makers 8, from whom the brick passes to the stamper 7. The bricks then lie in rows for the drying, and later they are transported by suspending from the ends of poles across the shoulders of men. It is evident from the prominence of sticks in the hands of the overseers that the job is not a very welcome one to the workmen.

#### BURNED CLAY FOR INTERIOR DECORATION.

THE accompanying illustrations show interior of office and salesroom of Messrs. Fiske, Homes & Co., of Boston.

The counter is built entirely of glazed terra cotta, or "Architectural Faience" as it is properly called, the tops being about 30 inches wide. The screen at the left is also of the same material, the whole being of a soft green color, except that part in the front of the counter which shows white in the photograph, which is of a lighter color; the contrast however being much emphasized in the picture. It will be seen that the same design can be used as a very unique fire place, by leaving out the part which shows white.

The other illustration is a photograph of shelves showing a variety of work both glazed and unglazed as produced by this firm.

A circular railing or fence in another part of the room, not shown here, is in two colors, an enamel and a glaze, and

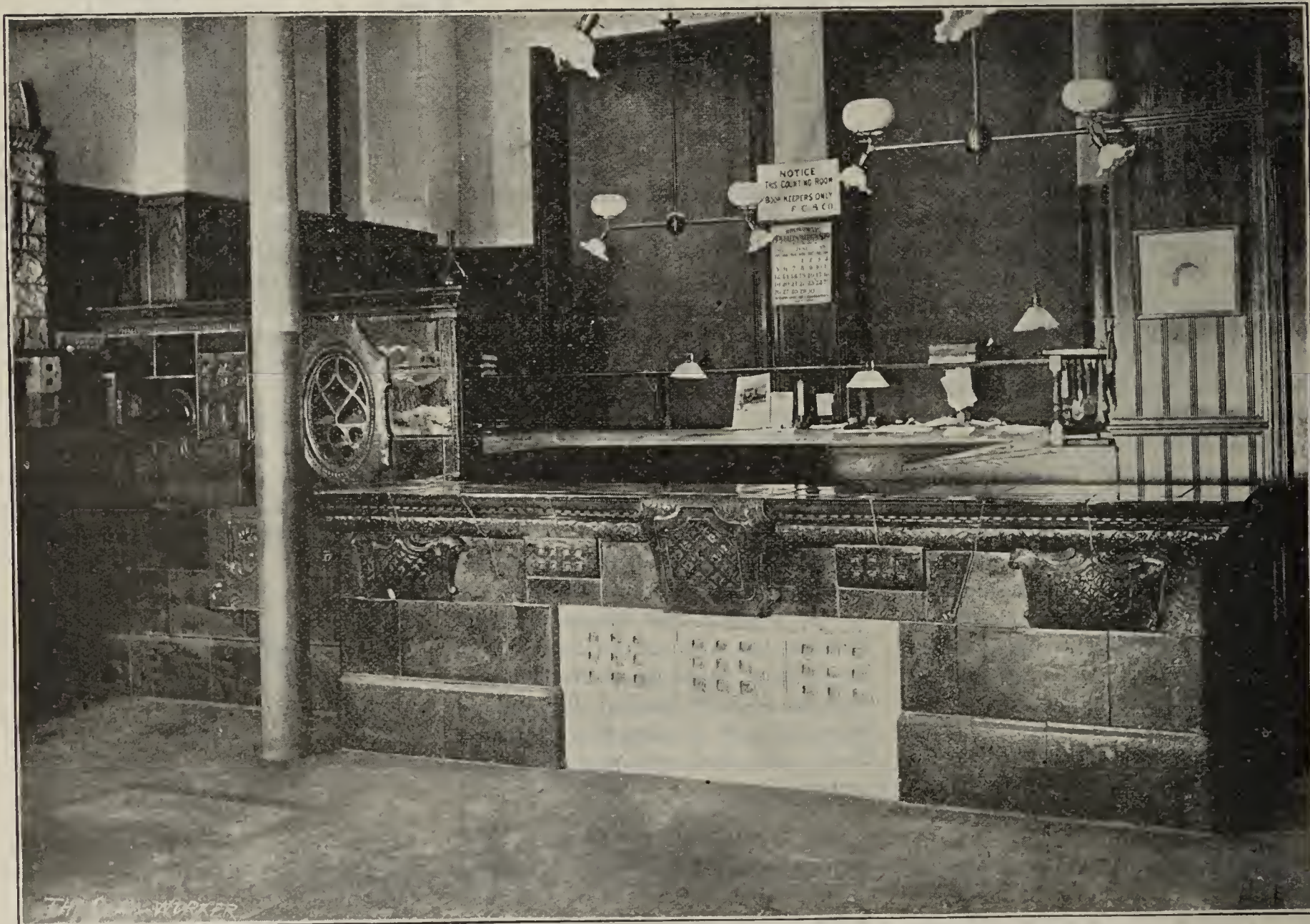
is a very effective piece of work.

Upon the other side of the room, also not shown in the photograph, is a fine display in the form of a carefully built wall—some thirty feet long and fifteen high—of Boston Brick Ashlar and a great variety of form and color of building brick as produced by this firm.

Messrs. Fiske, Homes & Co., are the pioneers in the production of Architectural Faience in this country, and have shown commendable enterprise and courage in launching out so boldly upon so difficult a field. It is generally known among clayworkers that enormous sums of money have been sunk in the effort to produce in this country an enameled brick which will compete in quality with the English article so largely imported.

But to produce architectural terra cotta in glazes and enamels of beautiful color and superior quality, as has been done by the Boston firm, is a task, which few, we imagine, would care to enter upon.

Of some interest in connection with this production is the fact that it is en-



GLAZED TERRA COTTA COUNTER AND SCREEN IN OFFICE OF FISKE, HOMES & CO., BOSTON, MASS.



tirely a "Yankee enterprise." No Englishman "who knows it all" has had anything to do with it. The firm are successful and well known manufacturers of architectural terra cotta, and associated with them in the production of Faience are Messrs. Atwood & Grueby, young Boston men, who have given long and careful study to the subject of glazes and enamels and to them is due the credit for the beautiful colors and fine quality of the enamels produced.

Among the notable pieces of work already executed are the corridors of "The Charlesgate" and of the Adams House, Boston; the Worcester Five Cent Savings Bank, Worcester, Mass.; the waiting room of the Philadelphia & Reading Terminal depot, Philadelphia; the subways of the Illinois Central depot, Chicago and vestibule to office of Walker & Son, Toronto, Ont.

He called her miss and she called him mister;  
They continued this till one night he kissed  
her.  
Then their bashfulness they perceived was  
folly;  
Now he calls her Bess and she calls him Cholly.  
—New York Press.

### MASTERING THE SITUATION.

\*BY J. A. KERR.

*Mr. Chairman, Ladies and Gentlemen:*

To say that I am over-joyed to be able to address the ladies on this occasion, does not express my sentiments. I feel were I to attempt to express my feelings fully along this line, my good wife might raise a question of propriety.

Well, to the ladies I must say, bless their bright eyes. I feel that our meeting in all its interests and ourselves also will be better because they are here.

Mr. Chairman, when I asked our worthy—I mean—when our worthy Secretary asked me to write a paper for this Convention, I very gladly answered that I would try to do so, at the same time urging him to devise some means to secure the attendance of some ladies at our meeting, intimating that with his youthful appearance and good looks generally, he ought to be able to succeed.

\*Read before the Iowa Tile, Brick and Drainage Association, Feb. 2nd, 1893.

Now, it is plain that he is master of the situation. Gentlemen, I am aware that I shall scarcely be able to touch this subject, because, as Lord Byron in his *Apostrophe to the Ocean* says: "It is a pathless woods with a lonely shore." But first let me ask what is the situation? We hear the report from all quarters, "A good trade," a good demand for both brick and tile. The season since the middle of June was all that could be desired, the closing months being wonderfully favorable to the open air process of making and drying brick and tile, and while for a good demand for products, favorable weather for manufacturing, I trust we are all truly thankful to the kind Providence. Yet some of us are not happy, and this is the cause. While most of us have made some money this year, some have not, and what is the reason? For a solution of this question let us look first, at the character of goods in greatest demand. The old sand brick with its imperfect corners, in "not in it" so much as formally; the end cut machine brick, although



SOME SAMPLES OF GLAZED AND ENAMELED WORK IN SALESROOM OF FISKE, HOMES & CO., BOSTON.



it has superceeded the sand brick, in my trade it is objected to as a building brick wherever headers are used, on account of its rough ends. Contractors are now wanting the very best brick and will have them if available. And the tile that my trade used to be satisfied with are now considered too soft. Not that they are less hard than formerly, but simply because our worthy President has a bank of shale not very far from my plant that will vitrify at a degree of heat that would scarcely change the color of my clay, containing as it does, some 76 per cent. silica, the consequence being that his tile when burned are a dark-leaden color, while mine are simply a cherry-red.

Now, although we are aware that there is a vast difference in clays and that very few of the clayworking machines are adapted to successfully work all kinds of clay, that to master the situation in this respect, we must first, *understand our clay thoroughly*, then use the kind of machinery best adapted to the working of that kind of clay. Second, whether we make brick or tile, strive to make the very best quality, and nothing but the best. Then, as Deacon Hardhack observed, strive to stop all leaks.

Between the machine and the kiln there is often serious loss. With many of us, natural air is the only process of drying, and after closing our sheds as tight as possible, there sometimes comes a high wind that checks and spoils many of the tile. Careless handling in moving the tile from shed to kiln is another means of serious loss in some kinds of clay.

The foregoing is also true of machine brick. I have seen machine brick after being dried too rapidly, break in two, just as if they had been made in two pieces and simply stuck together.

Now as to burning. In touching this part of the subject, I may quote the thoughts of more experienced men, and should this be the case, I trust I shall be able to give credit to whom credit is due, for I came to Des Moines to hear Dr. Talmage, and in the course of his lecture he mentioned some "would-be" eminent divine who was continually quoting some distinguished author without giving proper credit; when on one occasion he was addressing an audience in which there was a man who, although a great reader and thinker, was intoxicated on this occasion—(He was probably from Illinois,) and when the minis-

ter had quoted someone without giving credit, the intoxicated man said, "That is from Martin Luthur." The minister looked cross, but said nothing. Presently he again quoted someone, leaving the impression that the thought was original with him, when the intoxicated man yelled out, "That is from John Wesley." The speaker looked "daggers" at him and went on. Presently he again quoted some one as usual, and the inebriate roared, "That's from Spurgeon." At this the enraged speaker shouted, "Shut your mouth, you old fool." "That's from your own blessed self," said the intoxicated man.

But to return to my subject, "Burning." First of all know your clay. When I first began to burn tile, I asked every



J. B. MCHOSE, PRES. IOWA B., T. & D. ASS'N, BOONE, IOWA.

tile and brick burner I could find how to proceed, and was like the old man and his son, who were taking the donkey to market, who tried to please every body, pleased no body, and lost their beast in the bargain.

One party told me to take plenty of time to water-smoke. I did so and nearly ruined my first kiln with so-called white-wash. Then some one said I raised the heat too soon, that is before the water-smoke was off, and so got the heat "stuck in the crown," as we term it, but when I came to understand my clay I found I must first have my tile or ware fairly dry. Second, I must raise the heat from the start fast enough to drive off the water-smoke in from 36 to 48 hours, and then finish as soon as possible. In this way of burning I am

able to get a better burn in 3½ to 4½ days than by the slow process of water-smoking and burning in 6 to 7 days.

Now, this mode seems best for handling my clay. Perhaps in yours it would not do at all, and had I continued to follow the advice of those having different clay from mine, I fear I should never have had a good burn.

And here let me say, that as to burning tile, all that was ever told me of the "Modus Operandi" amounted to nothing compared with the experience of burning one kiln myself.

In thinking of my early experience in brick and tilemaking, I am reminded of the advice of some wagg, which appeared in a Clay Journal about a year ago, a part of which read like this, "Go to your hardware dealer and buy two or three garden barrows; they are cheap and light; your men will like them; can't haul much on them. Be sure to make your tile-rims very thick; they weigh more, will stand up better, got wider bottoms, see? Hire some boys to offbear, they are cheaper than men; they will probably have the tile standing, setting and laying in all shapes, but they will learn as they grow older. Run your engine yourself; you can save \$9 per week, and you want to save all you can. For a while you will try to do all the work yourself, but when you get so that you will have to stand twice to make a shadow, you will hire more men. Then by all means get a foreman so you can get away and do your cursing in a barn, after some condemned lunatic has shoveled the monkey-wrench into the mill."

Now a few words on drying and burning brick. On one of my yards we make the old sand brick by hand, and dry them in the sun. We set them in kilns 36 to 40 brick high. Benches 3 brick wide, and closing the arch on the 15th course, building a solid 8-inch wall across the center of the arch and daubing it tight. Before closing the arches we gather up all the heavy, crooked wood and even logs, pile them into the arches, filling them full. After closing the arch, we set the brick zig-zag or skintle quite open down next to the arches and more close at the top, with two courses of platting on top.

In casing this kiln we commence the casing wall 4 to 6 inches away from the kiln, not touching the kiln until above the top of the arch. By this means we have no soft brick next to the casing. This kiln is water-smoked with wood



and burned principally with coal. The burning is done in 48 hours after the water-smoke is off, requiring from 5 to 7 days in all, according to the condition of the brick when set. This is for temporary casing. At the other yard we make machine brick, burn in Clamp walls, set the old way, closing arches on the 10th course. These brick are longer than the sand brick, so we set them 3 over 3, as they are more handy to pitch out and on account of their size, can be set loose enough in this way to preserve a good draft, being careful to set them more loosely at the bottom than at the top. In this kiln also we endeavor to fill the arches with logs and heavy, crooked wood before closing them, and while an old brick burner of 40 year's experience looked on with horror, while we were doing this, we showed him as fine a kiln of brick as he could wish to look at. I found that although this rough wood will catch fire during the first 24 hours of water-smoking, yet it burns very slowly for two reasons, first, because it is rough and damp, second, because at this stage of the burning there is but little draft. I have found this to be an excellent way of utilizing rough and crooked wood that could not be used in the ordinary way.

As to difficulties, the greatest I encountered in burning brick in clamp walls is to burn out all the corners. For a long time I could not overcome this difficulty. I would invariably have one or more cold corners, which would defy all the means I could muster up. After digging down into the corners, building up chimneys, using powder and even the shot-gun, I found the means recommended by "Red Brick," in the CLAY-WORKER, the only effectual way of "Mastering this Situation." Here is the remedy: Use damp clay and cover the kiln, beginning with the first spot settled, and continue to cover it as fast as it is burned, until you have spread the clay over the entire kiln. In this way you can drive the heat to any part of the kiln. That is not all. You have read of annealed brick. Well right in this kiln is where you will find them—that is, if you do not open the kiln until you can pick up a brick off the top of the kiln with your bare hand—and this is not all. In this kiln you will not have to dig down three or four courses to find a red brick, but you will find them on the first course, right under the platting. And this is not all. You will pitch more whole

brick out of the kiln than any kiln that has not been so covered, because they are annealed, tough, elastic, so to speak.

Now gentlemen, you have noticed that I belong to the class of so-called "Little concerns." What I have said has no reference to stock companies, corporations or large plants, and to these I can only say, while we little fellows are traveling the same way you are, yet our appliances will not enable us to keep pace with your rapid strides, and honestly, we entertain some doubts as to whether all your "new-fangled" things are conducive to your happiness.

There was once an experience meeting, and people giving their religious experience, Deacon so and so arose and said, "My friends, I am on board the old ship 'Zion;' she is none of your slow coaches; she is a fast sailor; she is going at the rate of 10 knots an hour, and will soon land me in the haven of rest." Then the class leader, rising and clearing his throat said, "I, too, am on board the old ship 'Zion;' she is not a sailing vessel, but a steam ship; she is going at the rate of 20 knots an hour, and I shall very soon be landed safely in the 'Portals of Glory.'" Then arose an old lady, trembling in voice and limb, said: "Praise the Lord. I, too, thought I was aboard the old ship 'Zion.' I have been traveling this way for 40 years, but I have to go on foot, and sometimes when I think of you folks, with your 'New-fangled' steam ship, going so fast, I am afraid some of you'll—you'll 'bust your bilers.'"

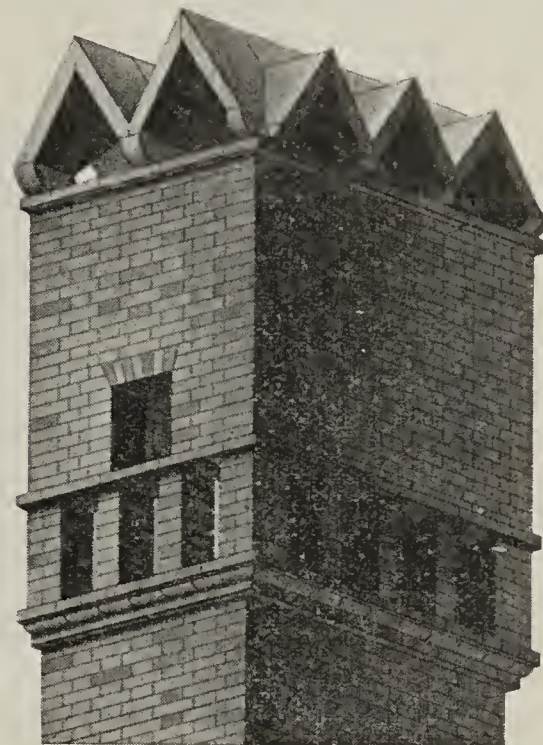
The Moral: And to the little concerns, like myself, let us not be discouraged because we cannot afford, as yet, all the improved appliances, but let us use well those we have, making the very best goods possible with the means in our reach, and thus "Master the Situation" in this respect. It does not follow because our weapons are not new that they are useless. For, "This I saw, or dreamed it in a dream: There spread a cloud of dust along the Plain and underneath the cloud or in it ranged a furious battle, and men yelled, and swords knocked upon sword and shield, a standard bearer wavered, then staggered backward, hemmed in by foes. A man stood watching on the battle edge and thought, 'Oh, had I a sword of keener steel or that blue blade that the King's son wears, but this 'blunt thing;' he snapped it, flung it from his hand and lowering, crept away and left the field. Then came the King's son, wounded,

sore beset and weaponless he saw the broken blade, ran and snatched it, and with battle shout, lifting it afresh he hewed his enemy down and saved a great cause that heroic day."

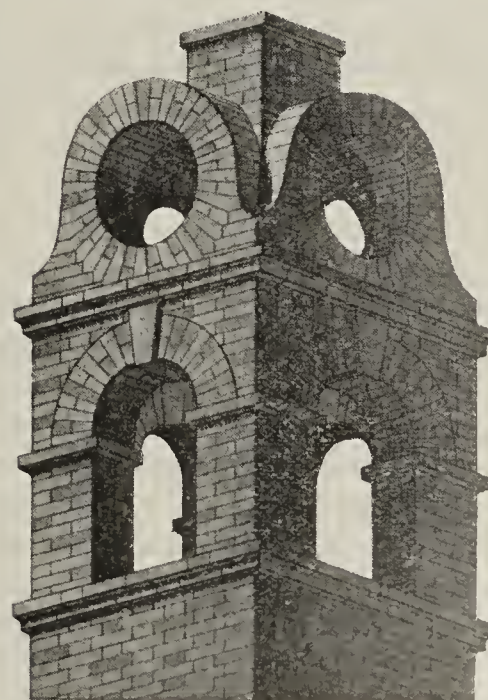
#### ORNAMENTAL CHIMNEYS.

IN MANY of the cities of the Old World the chimneys play an important part in the picturesqueness and the architectural interest which belongs to the streets and the general assemblage of buildings.

Edinburgh would lose a great deal of



interest but for its picturesque chimneys. It is a wonderfully picturesque city under any circumstances, but its chimneys add a great deal to its architectural effect. The chimneys partake of the general character that belongs to the



country around and about, irregular in outline, artistic in detail. Taken altogether, they add much to the beauty of the landscape. It, like many statements of a general character, is not universally



true. The buildings of Edinburgh particularly are an exception. The ground on which it is built would be beautiful and interesting without the city. Yet the city has added to the beauty of the landscape itself. The character of its chimneys, while they do not accomplish all of this, have a great deal to do with it.

If the chimneys of Edinburgh were to lose their character by any sort of action, and be made into simple, common, ordinary chimneys, the city would lose much of its interest.

Written for the Clay-Worker.

#### DRY PRESS HINTS.

##### No. 5.

I SAID in my last paper, that the watersmoking must be done slowly and carefully to insure success in our next operation. Especially is this true of dry pressed bricks. I have met with a few clays that could be hurried, that is the steam driven off rapidly, but the great majority of clays so treated are either totally spoiled, or their ultimate value lessened to a great extent. I have cautioned you to go slow, but don't go to the other extreme, and hold your bricks in a close humid atmosphere for a few hours and call that slow *drying*. It is an axiom, repeatedly aired in the CLAY-WORKER columns, that "heat alone will not dry bricks," there must be a circulation through the mass or body of bricks or there can be no drying. The process is on the continuous principle. The light fire rarefies the air in the furnace, causing a partial vacuum, or, to be more correct, it causes, by rarefaction, the air in the furnace to ascend, and, becoming less dense, to expand in volume. Its natural tendency is now upward, and as there is not—for the first few hours—any especial inducement to go up through the kiln, we find it making an exit through the furnace door (burners call this "drawing the wrong way, or back draft"). It is being crowded out by the colder air pushing in to fill the vacancy, which is in turn converted, and in turn crowded out. You say there is no draft, the kiln is cold, which is correct. Now if the kiln were empty, with the outlets open, it would not be long before we would have a good draft, because the air contained in its area would soon become warm, expand, and escape, to be reinforced from the furnace and the furnace from the outside. But our kiln is full of cold bricks, everyone

of which at present, represents an obstacle to draft. For the present we will suppose we are drying off our kiln by the down draft principle, which by the way, is radically wrong, but as it is done everyday (No, not by me; I will explain my method later on,) we will consider its operation. We have got our ash pit doors closed tight, and our grate bars covered, either with their iron plates or a bed of cinders. We now start a light wood fire in the furnaces, having the damper or dampers wide open. In accordance with the laws of expansion already noticed, the draft will soon be perceptible. The hot air will find a free passage for exit up along the bags or flash wall, and into the space between the kiln arch and the bricks, but as soon as that becomes full the programme changes, force being now required and exerted to make draft. The bricks as set, present less resistance to this force than the kiln arch, consequently relief is found by an escape downwards, until finally the stack or stacks are reached by the hot air and vapor, then resuming their natural course. If you have any doubts as to the expansive force of the heat under the kiln arch, raise the cover off one of the sight holes and test it, you will find it considerable, as air when heated expands one-third of its bulk. We spoke of the bricks impeding the draft in the first stages of watersmoking, let me verify that statement. Draft is the action of nature endeavoring to restore her equilibrium. It is stronger in proportion to the volume and height of the column of hot air escaping up the stack. It is consequently obvious, that before this can assume the proportions essential to circulation, the bricks must be warmer than the air outside. The hot air in passing downwards through the kiln diffuses its heat to the bricks, receiving in return water in the form of vapor. And so the process goes on, each brick *taking in* heat and *giving out* moisture (our draft meanwhile increasing) until we pronounce it dry.

Now the points I want to make prominent are these: *In watersmoking give ample space for the exit of the vapors generated, and control the circulation by the temperature of the air sent through the kiln.* At this stage I do not think it advisable to admit air through the ash pit, as it is more difficult to control, and causes a loss of heat, by forcing hot air out through the furnace door. If your kiln or stack is new, or been standing idle for any length of time, you will help

matters very materially by lighting a fire at an inlet to the bottom of the stack, as the partial vacuum formed by the expansion of the air in the stack, attracts the colder air from the kiln, which is in turn supplied from the furnace as previously described in this paper. In connection with the foregoing, let us, for a moment, glance at stacks, and in particular at the material used in their construction. A few years ago, a gentleman wrote to the writer, asking his opinion as to the durability of a wrought iron stack in connection (or otherwise) with brick kilns. He had one already up and working, but claimed that "it did not give him draft enough." Now the stack was plenty high enough and of sufficient area for the purpose, if it had been built of bricks, but I found this trouble with the iron. Its radiating properties caused the air inside to lose its heat (and consequently force) before reaching the top, and there being a battery of kilns connected to it, steam from watersmoking was almost always present, reducing the temperature of the air in the stack, and consequently the strength of the draft, and, furthermore, the vapors coming into contact with the cooler iron was condensed, and through increase of density it fell by gravitation, further impeding the draft. For the above reasons, I came to the conclusion that an iron stack was not advisable to use in connection with brick kilns.

I said earlier in this paper, that the principle of watersmoking by a down-draft was radically wrong and "the same I will rise to maintain" if necessary, but I think I have already made that point clear. Of course you cannot dry off up-draft from the furnaces, you must arrange for fire holes connecting with the flues under the kiln floor. The advantages I claim for this method, are easier, quicker and more uniform drying, no forcing, as it is following nature's law, and the flues and ground work of the kiln are heated up, thereby assisting instead of impeding when coal is started on the down-draft. In down-draft drying the water is driven out of the green bricks into the kiln floor, and flue walls, which, being already thoroughly dry from the last burn, absorb a considerable quantity. The main flue and stack being in the same dry condition, also absorb their quotum, all having to be redried, thus entailing a loss of heat and time. In drying off by the up-draft method, open *all* the holes in the kiln



arch, and it will be still better if you fix up a length of stove pipe on each hole along center of arch. In building any new kiln, I would advise you to make the provisions suggested. **PRESS.**

#### A BUSY BRICKMAKER.

**T**HE subject of this sketch, Mr. Jonathan P. Norton, was born in "Ye Ancient Towne of Yorke," Maine, fifty-five years ago. When nineteen years of age, he started for Lawrence, Mass., where he learned the mason's trade. In 1860, he went to Lewiston, Maine, as foreman for a large contractor. The next year he began business for himself and for twenty-five years he was one of the largest and most successful contractors in Maine, erecting a large portion of the brick buildings in the cities of Lewiston and Auburn, including city buildings, mills, churches, business blocks, shoe factories, school houses and residences.

He owned and operated two brick yards there, manufacturing from three to six millions of bricks annually, besides contracting and controlling the output of other yards in the vicinity. At one time he had three hundred men on his time books, including all trades from digging the clay from the bank, to putting up the most expensive finish.

In 1875 he contracted to build the Lockwood Mill in Waterville, Maine. It required five millions of brick. He built his brickyard put in a steam plant, two Martin machines with a capacity of 80,000 bricks per day and made his brick for the job. He run this yard about ten years, building in that time the famous Dexter Bank building, Damariscotta Town Hall, shoe factory, woollen mills and business blocks in Showhegan, Pittsfield Town Hall, Hancock County building and Jail at Ellsworth, from bricks made there.

He established a brick yard in Augusta, where he built two large pavilions of the Insane Hospital, Couy Academy, Hotel North, E. C. Allen's Publishing Houses, and a block of eleven stores besides many smaller job.

He built the Maine Central R. R. station in Hallowell and a large business block, as also the Town Hall in Brunswick, with brick furnished from Augusta

yard. In 1872 he began contracting in Boston, Mass., where he built several buildings, including a Dormitory for Tufts College, two churches in East Boston, large school house and engine house in Somerville. He bought a farm of about fifty acres of excellent clay in York, Maine, built a yard and made the brick for the Boston work.

In 1884 he moved to York, made large improvements and additions to his yard at an expenditure of over \$100,000.

He has been successful in all his undertakings, fulfilled all his contracts, satisfied his employers and paid always, 100 cents on a dollar.



J. P. NORTON, YORK, MAINE.

In 1876 he went into the ice business, on the Kennebec, shipping ice to New York, Philadelphia, Baltimore and Washington. In 1883 consolidated his ice plant of 70,000 tons capacity, with the Clark & Chaplin Ice Co.

He built two sections of the York Harbor and Beach R. R., and is now largely engaged in lumbering in York, where he has a saw mill in connection with his brick business. The present capacity of the brick yard is 80,000 per day.

What a great many people want is, less free silver and more loose change.—*Ex.*

Written for the Clay-Worker.

#### PRACTICAL POINTS ABOUT PAVING BRICK.

Twelfth Paper.

BY D. W. STOOKEY.

QUALITY OF BRICK.

**Q**UOTATIONS from specifications of different places are indicated under this heading by proper marks. "Nothing less than whole brick to be used in the top course except where necessary to break joints. \* \* \* Brick that are badly swelled and irregular will not be permitted in the top course. They must constitute a good quality of paving brick, maintaining uniformity and regularity in shape to such a degree as will be consistent with a first-class pavement and render satisfaction to the engineer in charge."

"The paving bricks to be used shall be such as shall be satisfactory and acceptable to the engineer, and shall conform strictly to the samples offered by the contractor and accepted by the engineer and the Council."

The matter of showing samples of brick is one that is very difficult to make satisfactory to all parties concerned. In the first place, there is the almost irresistible temptation to show a "sample" that is one of the good ones, and a little better than the average. Should the sample be as good and no better than the average made, at the manufactory from which it came, the engineer could reject the half that fell below the average, and thus only allow the better half of the output to be used, while the others that were rejected must be left

with the manufacturer, to be disposed of elsewhere as best he could. If the sample offered is one of the poorer half, it does not fairly represent the product of the plant and must tend to injure the sale of the brick made where it came from. If two or three samples are shown, showing the best, average and poorest, they have an influence in giving the impression that the output is very irregular in quality, and this is against the interests of the manufacturer. Another objection that may be urged against requiring bidding contractors to show samples, is the fact that they cannot always know beforehand where they



will be able to secure brick with which to fill future contracts. Manufacturers who are looking for purchasers cannot leave offers open to await the spasmodic and uncertain action of municipal boards. They have the goods for sale and want to sell to the first party who will buy. If they should give samples and prices to contractors, who were to make bids, but who had no contracts and consented to hold the offers open for a decision from the city officials, they might lose an opportunity to sell to parties who were fully ready to buy.

Specifications in all cases state that the pavement shall be laid subject to the approval and under the inspection of the engineer, and it is understood that he will not permit the use of unsuitable brick. It seems that this provision precludes the necessity of submitting samples and makes this entirely superfluous. Parties who received the contracts after submitting samples, could use them in defence against unfair and arbitrary decisions of an ignorant or unjust engineer, and yet this precaution is hardly necessary, as an appeal to the city council or board of public works would probably obtain justice.

"The brick composing the top course shall be regular in shape and size, free from flaws, cracks or breaks, and of the very best and hardest selected brick specially burned for street paving. No broken or irregular-shaped bricks shall be placed in the top course. All bricks used in this street shall be equal to the best quality of Galesburg paving brick, and such as will meet the approval of the city engineer and committee on paving, samples of which, such as shall have been approved by the engineer and paving committee, shall be deposited with the city clerk as guides."

This is certainly a compliment for the Galesburg brick, and gives them some advertising before all contractors who examined the specifications with a view to submitting bids for doing the work. We refrain from further comments.

Another specification reads: "Paving brick shall consist of the best quality of sound, hard-burned paving brick, made and burned specially for street paving purposes, and shall stand all reasonable tests as to durability and fitness, to which paving material is usually subjected. All bricks to be square-edged and straight, free from cracks and other defects and of uniform size, and of a quality to be approved by the Board of Public Works, and equal to the approved samples in its office.

"Each bidder shall state in his bid the kind of brick that his proposition is based upon, which must be of such kind as has been approved by the Board of Public Works, and the brick to be used upon the street under such contract shall be equal in every respect to the approved sample in the office of the Board. Each kind of brick bid upon shall be a separate bid.

"Each bidder shall also, if required, furnish a statement showing the proportion and kinds of material used in making the brick, and the manner of making and burning the same."

While it is right and the duty of the engineer to draw the specifications in such a way as shall protect the public, and secure work that is first-class in every respect, it is not necessary that he shall be overly exacting, and it is not in good taste that he should use the opportunity afforded, by virtue of his office, to appear pompous or officious. It is possible to make the necessary requirements without using "vain repetitions, as the heathen do." After specifying that the brick shall be of the best quality of paving brick and that they shall be subject to the approval of the engineer and Board of Public Works, it is not necessary to require that they should be straight, etc., etc.

When the bidders are required to "furnish a statement showing the proportion and kinds of material used in making the brick, and the manner of making and burning the same," it suggests that the city officials are either afraid to trust their own judgment or that they have private reasons for favoring the brick made of some special material or by some particular process. If the engineer and his associates are competent to pass judgment upon the brick furnished by the contractor and those brick are found to be "of the best quality of paving brick," it matters not to the tax payers, and has no influence upon the quality of the pavement what the material used or the process of manufacture may have been.

Any one who is familiar with the peculiarities of clayworking knows that this specification, which refers to the material used and the methods employed in the production of the brick, simply amounts to nothing. Those who have tried to make paving brick know that it is very easy to go astray, and produce an inferior product, so far as this specifications would distinguish, even with the best of materials; and while working

after the most approved methods.

Would it not be as well for those whose office it is to prepare specifications, to confine their requirements to first-class materials and work, subject to the approval of the proper authorities and leave the details of producing these with the contractor and brickmakers?

#### MODELING IN CLAY.

There are two methods of preserving the productions wrought in clay, writes Maude Haywood in the *March Ladies' Home Journal*. One is to have them cast in plaster and the other is to have them baked in the kiln, thus producing terra cotta. In order to insure the best results in the latter case, the clay must be free from impurities, and the work built upon a single support which can be easily removed when the model is fired. Yellow, red or gray clay may be employed, producing respectively white, yellow and red terra cotta. Artists can procure the different clays in working condition from the larger dealers in art materials or direct from the pottery, while small packages of dry clay, containing a few pounds in each, are obtainable at almost any art store. Dry clay can be prepared for use by soaking it in water, until it is of the right consistency to work readily in the fingers. In order to effect this well, the clay should be broken up in small pieces and when sufficiently moist, kneaded well together until all lumpiness has entirely disappeared, and the clay is sufficiently moist to be thoroughly pliable and yet not wet enough to be sticky and to adhere to the fingers. Work that is not successful enough to warrant preservation may be thus broken up and the clay used again and again; the more it is worked with, the better and more pliable it becomes. The clay is kept moist by means of wet cloths laid over it, with preferably an outer covering of waterproof fabric. A little experience will soon teach a student just how to keep the clay in good condition. Usually the cloths will require wetting afresh once, perhaps twice, a day; this depends however, upon the atmosphere in which it is kept.

It may be proved with much certainty that God intends no man to live in this world without working; but it seems to me no less evident that he intends every man to be happy in his work.—*Ruskin*.



## PUBLIC HIGHWAYS.

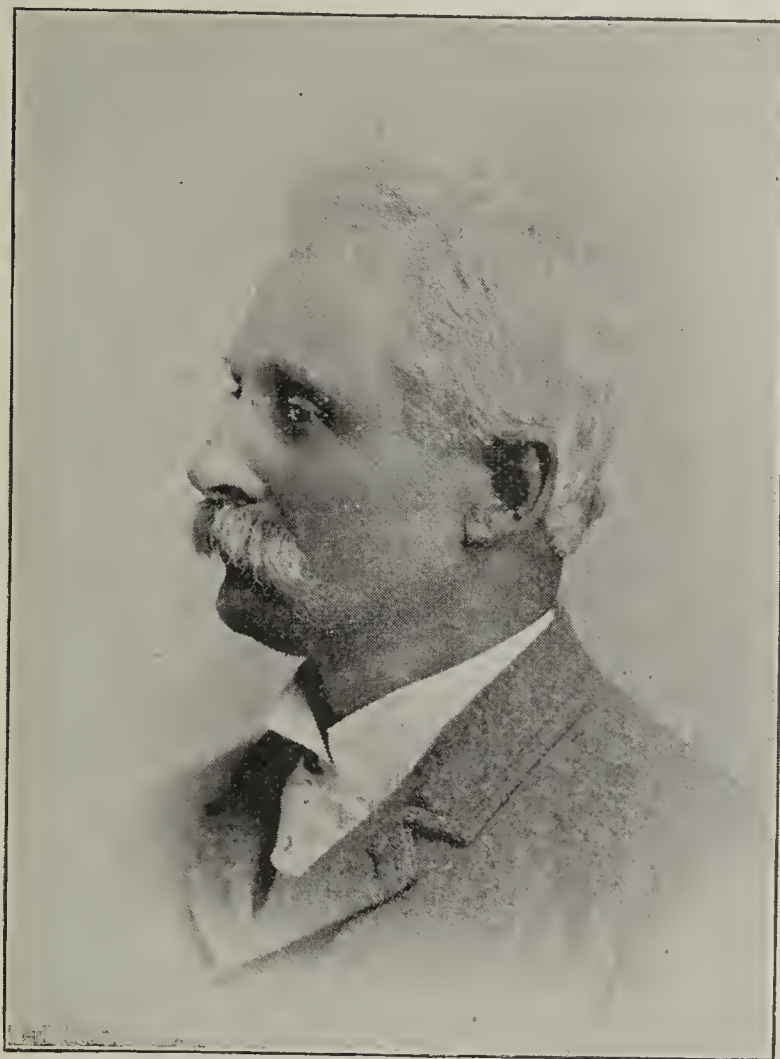
## How Country Roads May be Paved with Brick.

**M**R. A. O. JONES, Ohio's World's Fair Commissioner, President of the Zanesville Board of Trade and one of Ohio's best known brick and tile manufacturers, is a firm believer in the permanent improvement of public roads, and advocates the use of brick for this purpose. He thinks the brick might be made by convict labor, and so relieve the labor market of that unjust element of competition. In a recent paper on the subject Mr. Jones gives his views as follows:

"When the Romans of old made new conquests they took their prisoners of war and built roads, some of which are in every-day use to this time. They were fairly good at grading, but much better at constructing foundations. Occasionally some of these huge old bald-heads come too near the surface and expose the thin cover over them, and so are summarily pried out and broken in smaller pieces, to cover their yet hidden neighbor. Their idea was large stones for foundations and smaller ones on top, sort of a Telford-McAdams of these days. History repeats itself right here. We have prisoners and must employ them, but at present it is done at a loss and ruin to honest free labor, by way of our convict labor contracts in penal institutions. There is scarcely a trade but what is carried on under this abominable contract system and the poor free laborer has to be pinched down to a miserable pittance, so as to enable their employers to compete with these few favored and rich convict contractors, who live in opulence, while the free laborer and his family barely eke out an existence. Why not direct this evil force where it would not come in competition with free labor, and at the same time, prove a public benefactor? We have the worst roads of any civilized people on the globe, and suffer more from their bad effects, and there is no reason why we should not have the best.

"Since the successful use of brick for roadways has been introduced, there is no reason why we should not erect workhouses in locations where suitable clay, shale and coal can be procured at

reasonable prices, and near good railroad shipping points, and have the convicts employed at brickmaking inside of enclosures, and even turn the present penitentiary into a huge brick plant, the clay and coal to be unloaded and the brick loaded back on cars, and all the railroad switching to be done at night when the prisoners are safe in their cells, stamping every brick with O. C. L.—Ohio convict labor—and impose a heavy fine and imprisonment if they are used for any other purpose than roadmaking and state purposes. Have the prisoners of the western portion remain at the present peniten-



A. O. JONES, ZANESVILLE, OHIO.

tiary; also such as are convicted of capital crime or are desperate characters.

"The clays might be brought to the penitentiary by canal boats during summer months, and even a goodly supply laid away for winter use. The clays of Hocking county could by this means be sent to several other counties to help out native clays or shales. With diligent search there is no doubt but that strong clays or shales can be found near most county seats in the state, and needing but little of other clays to help out. Then let a number of counties join in erecting such plants as may be agreed upon, and divide the finished product and ship to their respective

county seats, and therefrom begin to make roads a mile or so in diverse directions, as may be agreed upon by a board of commissioners. Let the work of grading be in charge of a good civil engineer. The road-bed may be prepared either by a contract or under the supervision of a qualified superintendent, a premium to be given the superintendent who can show best results for least expenditure.

"For instance, by this mode of road-making we would get it first to grade; then take oak 4x6 laid lengthwise of the road, a row on both sides at the width agreed upon, then with a small pile driver, drive down, say, 4x4 oak stakes on outsides and bolt said 4x6 to them; this will form a curbing and should be so distanced that nothing less than half brick shall be used; enough shall be taken out between the curbing so as to have some six or eight inches of good gravel or stone foundation well rolled and a two-inch covering of sand; then the brick follows with another rolling then an inch of sharp sand; this completes your new or Ohio paved pike.

"Take into consideration that when properly made it would last for twenty years with comparatively little expense. One man could take good care of twenty miles, going over the whole every week or oftener. The secret of good roads in Europe is the good and timely care that is taken of them; also their broad tires on vehicles. Tax narrow tired ones heavy enough so that it would be cheaper to change than pay tax.

"The advantage of brick paved roads are very numerous. Among other things, the hauling over it is just as easy in wet as in dry weather. The durability and expense to keep in good order is most decidedly in favor of the brick. When repairs are made it is then as smooth as new, and quickly done. Owing to its smoothness every shower of rain washes it perfectly clean."

## CAUSE AND EFFECT.

She made a crazy quilt,  
A trifle for the fair;  
But when her husband saw the bill,  
He climbed the golden stair.



Written for the Clay-Worker.

### MISTAKES OF BRICKMAKERS(?)

BY J. A. REEP.

**I**N WRITING for the journals it is not always necessary, nor is it expected that every sentence or phrase uttered, shall be a set rule for the reader to blindly follow. But if the writer's views do not agree with the reader's, he has at least stirred up the thoughts of some and made possible the means of bringing out new ideas and still further advance along new lines.

In looking over the many excellent papers and discussions of same at the National Brickmakers' Convention at Louisville, the "Mistakes of Brickmakers" strikes me as containing probably as much food for thought as any other subject before that body of craftsmen.

Mr. Edwin McGraw, in his very able article, lays down a set of rules by which brickmakers are to be guided in classifying their mistakes. In these rules you will observe that all new methods, whether successful or not are listed as "Mistakes."

This statement smacks largely as a paradox, and can be dismissed with the remark, that it may be, or it may not be correct, or rather, "*as you like it.*" The inference is that most of the mistakes of brickmaking are along the line of new methods, which is perhaps the case, but there are some mistakes made that are "*old and musty.*"

It is a mistake, and a sad mistake, to call all owners of brickyards, or those who own stock in a brickyard, brickmakers, and then when these owners or proprietors, with their newly-fledged theories and inflated ideas of brickmaking, insist on inaugurating new methods and experiments in the business, and the experiments fail, to saddle the failure on the poor *bona fide* brickmaker, who is in no way responsible for the failure. We have in mind men who own large real estate interests, bank stock interest in hardware or dry goods stores, brickyard stock, president of the Fly-Hi insurance companies, vice-president of the Short-Cut Railroad and fill an honorable and lucrative government office, are up to their ears in State politics, and are called brickmakers.

Now and then we meet the statements of these, and some other such parties, about loss and waste in making, handling and burning, in the business of brickmaking.

It can safely be asserted, that their

knowledge of the business has been gained in an uptown office, with Brussels carpet on the floor, and an easy chair drawn up before a blazing grate fire, and an occasional run out to the works, in company with some prospective customer or visitor, or with the secretary on pay day; and on these periodical visits, their righteous wrath and economic souls were harrowed to distraction as they saw not less than five or six thousand brick bats carted out to the dump pile, and ruthlessly cast away, abandoned and about to be buried in the dust and ashes of brickyard oblivion. The proprietor stood there aghast and made a mental calculation on the enormous waste on his yard, and at once began to wage war on the hands engaged in the work of clearing out the rubbish. The foremen and superintendent are next summoned to account for this unnecessary waste. They are questioned why it is the men are so careless and handle the brick in such a rough manner as to break them. He demonstrates to them, by taking two of the best brick he can find, that it must require a sledge hammer and hard work to break a hundred of them, and here are cartloads of them broken into fragments. He is terribly in earnest about the matter; he wipes great beads of perspiration from his face and brow. He declares that this waste *must be stopped*. Men must be hired who will do the work right and not as if they were trying to see how many bricks they can break.

Why, bless your poor, stingy soul! There is neither sense nor reason in such a performance. You forget that your quarterly dividends last year and every year since you have been a holder of Big Brickyard Stock, were the largest you have ever had or ever expect to have.

You forget too, that there is no business carried on among manufacturers without some waste, and the rougher and more crude the art, the greater the waste. It seems to me a great mistake to expect that the manufacture of bricks can be accomplished with a percentage of waste less in comparison, than in that of any other business.

Go and take a look at the waste pile of any of our large lumber mills. There you will see slabs, edgings and sawdust carried out in a constant stream, which are burned up as fast as possible, to keep the yard clear of incumbrance. The proprietor is glad to get rid of it and does not worry himself about it.

The sash and door factory men are

not wailing over the waste of shavings and sawdust. The owners of quarries pay no attention to the spawls and broken stone. The smelting furnace makes slag and cinder, greater in weight and bulk than is extracted in metal. There is waste and loss in foundry and machine shop. There are not many branches of business or trade but can point to a waste in production. The brick manufacturer has some loss, and it is right that it be reduced to as low a per cent. as can be consistently, but on many yards the loss of bricks in burning and handling is between one-half and one per cent.

Where the output of the yard is common bricks only, and runs from fifty thousand to one hundred and fifty thousand per day, they must be handled in a manner that will not insure them against fracture.

The single brick is too cheap to worry over the price of a few. The dear people who want bricks are in a great hurry to get them; quantity is what they are after, and while the very careful man would save one hundred from breakage, the long-headed man in charge of the business of making them, has increased the daily output of the plant from three to five thousand, and there has been no increase of the working force. When the short-grained proprietor comes around and makes wry faces about there being more waste than there used to be, we think it would be a good idea to refer him to the fact that there is more brick made and more profits made than there used to be.

The manufacturer who is making fancy face brick, at fancy prices, can well afford to handle them quietly and with care, but the actual waste on a well managed brick yard will be a mere bagatelle in comparison with some other manufactures.

It pays to be economical, but it does not pay to be too much so.

### THE BUSY BEE—AN EXAMPLE FOR THE HEN.

A queen bee lays from 2,000 to 3,000 eggs in twenty-four hours. It is not necessary to ask, "How doth the little busy bee?" She doeth well, and should be a shining example to the lazy hen that can only be induced to lay one egg in twenty-four hours, and then only when eggs are cheap.

Hail, balmy, Spring!  
And when you've finished hailing,  
Turn in and snow and blow,  
For that's your failing.



## NOTES GLEANED AT THE IOWA CONVENTION.

## ARTIFICIAL DRYERS.

**A**N interesting and animated discussion was held upon the subject of drying and artificial dryers. A close study of the statements made, questions asked and experiences related showed that the subject was not only an interesting and important one, but that it was one that was full of vexations and uncertainties.

The opinion was advanced that brick should be thoroughly dried before setting in the kiln, as much better and stronger brick could be made than if the brick were set green. The color is much better and more uniform with brick set dry than from those but imperfectly dried.

In watersmoking, the moisture is often taken from the clay very rapidly and its expansion and steaming influence tend to injure the texture of the brick. Brick that are thoroughly dry take the heat rapidly and steadily without the disturbing influence caused by the evaporation of the moisture that would be left in brick that were imperfectly dried.

The forced evaporation from the surface of green brick in watersmoking leaves a superficial deposit of the salts that were carried in solution. These salts combine with the ingredients of the surface of the brick and exert a marring influence upon the color, as also does the condensation of moisture from the brick nearest the fire upon those more remote, in the early stages of watersmoking in kilns set with brick not thoroughly dry. The modern practice of drying brick made of some special clays in twenty-four hours has led many men into expensive experiments that have proven to be far from successful and satisfactory.

One member stated that in designing a dryer, it was necessary to consider the condition of the clay as it comes from the machine, as to the amount of water that the brick contain.

This is a valuable suggestion and a point of vital importance in the theoretical designing of an artificial dryer. By experiment, the amount of water in any number of brick can easily be ascertained, and by calculation the amount of heat required to evaporate this water may be determined. Further

estimates, based upon known data, will indicate the volume of air at any given temperature that will be required to remove the water from the dryer within a given time.

As the amount of available heat that may be produced from a given amount of known fuel has been determined and published in convenient forms, the quantity of fuel required to evaporate, this water can readily be found.

Similarly the area of grate surface, amount of air for the combustion of this fuel, area of chimney and flues have been determined and may be adopted by the designer of the theoretical dryer.



F. H. WHITE, PRES. TENNESSEE BRICK AND M'FG CO.,  
MEMPHIS, TENN.

This all goes to show that the matter of designing an artificial dryer with a capacity for drying a given number of brick, containing a known amount of water, within a given time, is merely a matter of calculation of dimensions from data that have long been known. The known data have been determined by carefully conducted experiments made by scientists who are universally accepted as authorities in their special lines.

This method of designing a dryer is the theoretical one based simply upon the sole requirement of evaporating and removing a given amount of water

within a required time. Theoretically, this kind of a dryer is all well and good, but experience has shown that the manner in which the water leaves the clay has a marked effect upon the quality of the brick, and that the usefulness of the brick may be entirely destroyed by improper methods in drying.

Experiments with artificial dryers in various clays have renewed the truth, so often learned by clayworkers and experimenters with machines, drying and burning, in the past, that the peculiar characteristics of each clay must be learned, and special methods of treatment adopted to it must be used in order that success may be attained.

There are two distinct processes to be accomplished in drying clay by artificial means. The first is to evaporate the water, and the second to remove it.

The first is accomplished by the application of heat and the second by applying a system of ventilation. Clays are so differently constituted that it is necessary to adjust both the degree of heat to which the fire is subjected and the amount of ventilation to suit the requirements of each clay. An elaboration of this thought suggests that it may be absolutely impossible to dry brick made of some clays in twenty-four hours and do it successfully, because the clays may not be able to stand the amount of heat and ventilation requisite to remove the amount of water which they contain within so short a time.

Not only must the temperature and circulation of air be adjusted to the requirements of the particular clay to be dried, but they must be adjusted to each

other, as the following statement will show:

As the brick are placed in one end of the dryer directly from the machine, soft and wet, and taken from the other hard and dry, it is seen that their conditions and requirements are very different in the two ends of the dryer, and that the heat and ventilation of each end must be adapted to these different conditions and requirements. In other words, there must exist different temperatures and states of ventilation in the opposite ends of the dryer.

Probably all clays will take considerable heat and stand a rapid circulation



of a dry air during the last stages of drying, while but a few would be capable of withstanding this treatment when fresh from the machine. Thus it appears that it may be advisable to keep the temperatures of the opposite ends at considerably different degrees. With a rapid circulation there would be a decided tendency to establish a uniformity of heat throughout, and this shows the mutual dependence of the temperature and circulation.

The temperature and hygrometric conditions of the air are very different in winter and summer, and it may be that an adjustment of the heat and circulation of a dryer that is working satisfactorily in summer may be so far from being adapted to the conditions in winter, that a new adjustment may be necessary to insure satisfactory results. In other words, a dryer may work successfully in summer and fail in winter, or vice versa.

#### BURNING.

During the discussion of the subject of burning brick, one member stated that the bottom of his down draft kilns were several times burned harder than the top.

He did not state that this occurrence was the rule, but that it happened repeatedly. By referring to a representative of the kiln used he verified the statement.

In explanation of the phenomenon he offered the statement that heat accumulates behind an obstruction, as water does behind a dam. The heat was supposed to gather back of the floor and this accumulation raised the temperature of the bottom of the kiln above that at the top.

When urged for an explanation, the representative of the kiln stated that the fire boxes were open and thus permitted the heat to pass through laterally without going to the crown of the kiln.

It is probable that neither explanation is correct. Very likely the kiln was heated to the bottom to the degree at which the brick begin to soften. The weight of the superimposed brick pressed those in the bottom out of form, while those in the upper part of the kiln were not subjected to such pressure and retained their shape, although they were hotter than those in the bottom. The misshaped brick in the bottom, when compared with the straight ones from the top, led to the idea that the kiln was burned hardest at the bottom.

#### OVER DRAFT.

In considering the amount of air that

should be admitted into the kiln and the over draft, the opinion seemed to obtain that two uses could be profitably made of this air. One was for the combustion of the fuel and the other for carrying excessive heat from the furnaces into the kiln. The use of cold air in a kiln for the purpose of reducing the temperature of the furnaces at times when they become too hot, is only choosing the least of two evils. It is better to lose a little heat than to injure the ware in the kiln.

The best way, if it can be done, is to regulate the fires so that they will not get too hot.

I remember once hearing some one recommend the use of an air inlet into the fire box just above the fire, so that the furnaces would not become too hot. This was obviously an expensive way of guarding against an avoidable objection.

At a paving brick plant, where round down draft kilns were used, I saw a kiln burning with a peep-hole the size of a brick, two by four inches, into each bag wall a foot or two above the fire. The use of this peep-hole is a good idea, but the burner apparently never had thought of the amount of heat that he was losing. This objection would readily be obviated by making the hole small or closing it with a piece of glass.

#### HEAT OF COOLING KILNS.

One member stated that he had seen a system of utilizing the heat from a kiln that was cooling, which was so successful, that the air in the green kiln was raised to a dull red heat. This question of utilizing the heat of a kiln is one upon which much thought and money have been expended in experimenting without satisfactory results, unless it be in the use of continuous kiln. These require an outfit of sufficient capacity to keep them going and are not within the range of small operators. One of the objections met in saving the heat from detached kilns is the necessity of having one set ready to start when a burning kiln is finished and ready to begin cooling. This calls for several kilns and a larger drying capacity than the average operator employs.

From this we get the deduction that the larger plants produce brick at a less cost than the smaller ones, and see ahead a hint of syndicates and trusts in brick-making that may freeze out the smaller plants. On the other hand, the average maker derives courage from the fact that freights on brick are so high that

the territory for each plant is limited, and large plants will only prosper near large markets.

#### PLATTING WITH ASBESTOS.

The use of sheets of asbestos for plating the tops of kilns was recommended and is certainly worthy of consideration.

Asbestos will probably not take the place of the usual plating of brick laid flatwise, but it could probably be advantageously used in covering the kiln when burning, instead of the old method of covering with loose dirt. The possibility of readily shifting the sheets from place to place would recommend their use in controlling the heat and directing it to different parts of the kiln. They might be found to be valuable as a covering over cold spots, caused by a downward current of cold air.

#### DISCOLORATION.

Aside from the influence of white-washing, several cases were mentioned which tend to effect the color of brick in burning. The condition of the weather, whether wet or dry, windy or calm, produces different shades of color. Windy and wet weather tend to give the brick made of common clays a grayish, stone-ware cast. This is probably due to chemical action between the moisture of the air and the brick. This is verified by the peculiar method of burning brick in China, mentioned in the CLAY-WORKER a few months ago. In that method a blanket was spread over an opening in the centre of the crown, and kept saturated with water. The account states that the brick burned have a hard, grayish cast.

Exposure to the fire, as is well known, discolors the brick and makes them dark. The amount of draft or the velocity with which the air and products of combustion pass through the kiln has an effect upon the color, as has been shown by burning clay goods made of the same clay in different kilns. My observation teaches that the better the draft, the brighter and more uniform the color.

D. W. STOOKEY,

Cedar Rapids, Ia.

#### HOW SOME MEN TRY IT.

Some men try advertising as the Indian tried feathers. He took one feather, laid it on the board, and slept on it all night. In the morning he remarked: "White man say feathers heap soft; white man d— fool."—*Exchange*.



## A GOOD EXAMPLE.

THE representative Chiefs of the manufacturing departments of the New York Architectural Terra Cotta Company held their Seventh Annual Banquet on the 16th, and it was a most enjoyable affair.

The party consisted of fifteen employees, and some invited guests. Each person represented some one department of architectural terra cotta work.

After the substantial part of the Banquet had been disposed of, the superintendent, James Taylor, called upon F. H. Kimball, architect, to respond to the Toast, "The Architects Who Show Us What to Make with Terra Cotta," and with pleasant words he told the guests what architecture required of the clayworker.

Clay miner, C. A. Bloomfield, responded to the Toast, "Clay diggers and Their Responsibilities for Terra Cotta."

I. R. Owens, the assistant treasurer of the Company, answered to the Toast, "The Financial Department of the Clayworking Industry."

Then in turn each Chief of his department spoke in response to Toasts specially given to suit each department, from the draughtsman to the skipper.

The final Toast was given with a hip-hurra,—*"The Terra Cotta Makers of America,"* and Mr. James Taylor gave a short address upon the technical relations necessary between all departments, and the responsible superintendent, not forgetting the good will, and co-operation that tend to that friendly intercourse and feeling, without which no such business as clayworking could succeed. The entire party then adjourned to the Star Theatre to see comedian C. H. Crane, in the play "On Probation."

The entire cost of this annual festival is provided by the New York Terra Cotta Company, and we judge must prove a very profitable investment.

We are indebted to Mr. Taylor for a copy of the menu card, which was designed especially for the occasion, and is a very pretty souvenir.

The distinctive feature, the portraits

of the participants, we reproduce that our readers may see what a fine looking lot of clayworkers Mr. Taylor has gathered about him.

## CONVENTION BRICKDUST.

BY A CHARTER MEMBER.

THE cause of discoloration of brick walls was finally, and frequently, and variously discovered, determined, and, sat upon. Our official chem-

gallant fight against heavy odds, and would have succeeded in whitewashing his theory, had he not got a little befogged, and disclosed that there was lime in rainwater in some localities, which threw Don MacDonald into a spasm, and the balance of the members into convulsions. Bro. Taylor, however, presented an unbroken front, and fell back in good order.

Friend Dingee came on the field rather late in the fight but rushed boldly to the front with his theory, just in time to fill up the wide gap left open in the front line by the withdrawal of Bro. Taylor. Mr. Dingee says to build your wall on the side of the street facing east, and no whitewash will appear; build it facing west and it will bloom like a plum tree. Now, Brother Dingee, most of our streets have two sides and we want to build on both sides of it, so your theory, to say the least, is mighty inconvenient.

While there were a few members that seemed to understand this mysterious thing we call efflorescence, and could explain it to their satisfaction, the majority of us were hopelessly left where Moses was when the light went out. However, the discussion was interesting, and the facts brought out and put on record by the discussion, will, doubtless, when taken up and carefully compared and studied, throw much light on this mooted question.

There is no question of greater import to the manufacturer of face brick than this one of discoloration of bricks in the wall. It is the great and only objection that can be brought against bricks as a building material,—they

are durable, fire-proof, cheap, and pleasing to the eye, but how many, many times does this fear of efflorescence cause the architect to recommend stone or marble—a material more costly, yet inferior in fire-proof qualities. It is a question upon which we can well afford to spend time and money, if we can discover the cause and find a remedy. I would suggest that all who are interested prepare an article upon this subject, giving their theory of the cause, their reasons for forming the theory, and, their ideas as



ist, my distinguished friend who dwells on the banks of "The Beautiful River," demonstrated, to his entire satisfaction, that horizontal contact of moist air was harmless, while vertical contact would cause the brick wall to "blossom for the tomb." My equally distinguished and scientific friend Eudaly, thought he could detect a distinction, but utterly failed to catch on to the difference. One of them was horizontally right, the other vertically wrong.

Brother Taylor, of New York, made a



to the proper remedy, and send them to the CLAY-WORKER, where they can be compared and studied for the purpose of ascertaining the cause or causes, and a remedy.

The writer will venture this much: Buildings put up in summer do not show this discoloration so much as those built in spring and winter.

Bricks made from same clay will discolor in one building and not in another. This would prove that bricks laid up at different periods are subject to different natural influences. There is one thing that should be understood in the discussion of this question, viz.: that there is a great difference between efflorescence and whitewash. The latter shows on the bricks burned in the kiln, and is deposited there during the process of watersmoking. The former does not appear until the bricks are laid in the wall, or exposed to the weather before they are laid.

#### WHY SOME PAPERS ARE TOO LONG.

"Smoky City" seems to think that the papers, or some of them, at least, are entirely too long. The writer would suggest, that if all the matter, or nearly all of it, that compose these papers read before the convention were strictly original, instead of so much encyclopediacal compilation, they would be not only more interesting to the average member but much more brief. In reading a paper upon any particular subject pertaining to our business, it is a mistake to attempt to exhaust the subject. If we succeed in doing this, we leave no room for discussion, and this gives no one else a chance to tell his story. The paper should treat the subject in a general way, and suggest topics for discussion by the convention; in this discussion, the details can be taken up and discussed at length, or briefly, as the members think best. Members do not attend these meetings to study history, they want practical truths and suggestions in a condensed form; one page of the Convention Number of the CLAY-WORKER will contain a vast amount of such matter. However, the papers read before the convention will compare favorably with those read before any preceding one, and some of them were well up above the average.

Friend Purington may talk some in the next convention, but if he takes a good square look at his picture in the Convention Number, *he'll never smile again.*

Written for the Clay-Worker.

### CHEMISTRY FOR CLAYWORKERS.

#### Paper No 11.

##### SILICON CONTINUED.

CONTINUING our subject from the February issue we have to consider further the manufacture of glass, and just now, that part which ought to be of some service, and therefore interesting to clayworkers, especially the vitrified paving brick manufacturers, because of some points of resemblance in the treatment of wares. Ordinary glass goods are very brittle at their best, but can be made comparatively tough and elastic by thoroughly annealing. It is absolutely necessary that they receive a considerable amount of annealing, or a large percentage of them would fly to pieces before leaving the factory. This annealing is simply a *very slow cooling*. The goods after being shaped are put into another hot furnace or oven, where they are gradually cooled down, care being taken to prevent cold air entering at any point; the furnace is, of course, considerably hotter than the goods being put in. This is to relieve the strains already developed in the articles while they were being formed by the workmen, their temperature being rapidly reduced during this period, the outer crust solidifying before the interior, producing irregular contractions, which the annealing regulates and equalizes. "Rupert's drops" afford a very good example of the brittleness and the internal strain on unannealed glass. These drops are made by dropping liquid glass into cold water. They are spherical at one end and conical at the other and if only the tail end be broken off one of these drops, it—the drop—flies into powder.

All are not familiar with "Rupert's drops," but I think all are familiar with kerosene lamp chimneys and with the breaking of them too; these sometimes break without any apparent cause; sometimes a drop of moisture or a breath of cold air does the mischief, this is when the chimney is hot. Glass being a very poor conductor of heat, it is quite as necessary to guard against sudden heating as sudden cooling, also local heating and cooling.

#### SAME PRINCIPLES PREVAIL IN CLAY GOODS AS IN GLASS.

These principles are all involved in the manufacture of pottery, sewer pipe, drain tile and every description of brick, and I think there will be no question about all these kinds of ware being improved by annealing.

The clay wares, of course, need no special annealing oven or kiln, but may be, and are, annealed in the kiln where they are burnt. "Cooling off" too quickly is a pretty general fault and ruins more ware and brick than is generally admitted. I think the manufacture of paving brick has drawn attention to this principle more than anything else has in the brick business. A well vitrified brick being a very coarse graded glass brick, we must naturally come to the conclusion that it will have similar properties and require similar treatment, and it may be set down as a rule that *the harder any brick is burnt, the more carefully it ought to be cooled*. This applies equally well to sewer pipe, tile, and clay goods generally. A careful study of annealing—not only glass and clay goods, but metals also—will soon convince us of the fallacy so prevalent amongst clayworkers and others who have become such ardent and enthusiastic admirers of chemistry that they are almost ready to stake their lives on chemical composition being the source of all the good and bad properties of their wares. While I am one of the last to detract the merits of chemical composition I cannot overlook the mechanical properties of matter, nor assign to the chemical that which belongs to the mechanical.

#### MECHANICAL APPLIANCES EFFECT CHANGES IN THE PROPERTIES OF MATTER.

Everyday life and labor is full of examples illustrative of the assertion just made, and we need not leave the brickyard to find one. Two bricks made in the same yard, from the same clay burnt side by side in the same kiln, are equal in their dimensions, etc., etc., but one is 25 per cent. stronger than the other. Why? One was made by hand, and the other made by a *stiff* mud machine, consequently had more clay pressed into the same space, or, in other words, a certain percentage of space in the hand made brick is occupied by water, while a much less percentage of space contains the water of the machine-made brick; this brick also required much more *power* to mould it. These bricks are vastly different in their properties, yet their chemical composition is the same, and their difference fairly ascribed to the manipulation or mechanical treatment they received.

Again two pieces of steel from the same bar heated to the same temperature in the same fire, withdrawn simultaneously from the fire, and one plunged



into cold water, the other buried carefully in hot sand; this latter must remain several hours in the sand, the one in the cold water bucket will soon be ready for examination. Assuming now that this steel contains about 1 per cent. of carbon, this is what an examination will reveal. Cold water treatment piece, full of *checks*, or water cracks, and so hard that no edged tool will cut it while cold and utterly ruined for almost any purpose but remelting. How different with other piece; it appears to have gone to the other extreme, and now instead of a stiff stubborn piece, it bends like iron and may be folded upon itself without trouble, or any signs of fracture. Now these pieces still retain their 1 per cent. carbon, but the treatment they received gave them entirely opposite *mechanical* properties.

If any of the CLAY-WORKER readers wish to try this softening hard high tempered steel, let them take a small piece of say  $\frac{1}{2}$ -inch square, heat to a cherry heat in the cooking stove fire and then put it in the oven, closing the door, and go to bed and allow the fire to die out, next morning they will find their steel as soft as they will ever need it.

In concluding this paper I must request the attention of the readers to a rather absurd misprint in my last paper, I am made to say "Lard" instead of *Sard*.

W. WAPLINGTON.

Written for the Clay-Worker.

#### CHARACTERS AND SHAMS IN BRICK-MAKING AND HOW TO GET RID OF THEM.

BY J. W. CRARY, SR.

**T**HERE is not a business, profession, or pursuit, known to man, but has its charlatans, and shams. I have long since come to the conclusion that evils, to a certain extent, are necessary, and this proposition is not only true in the arts, and industries of man, but also true in ethics. Can we doubt this? When the greatest of all teachers said, "It must needs be that offenses come, but woe to that man by whom the offense cometh." This grand, matchless text of ethical philosophy, suggests an immense volume of the most profound thoughts of man, and in the sweep of its investigation, would include even the modest *craft* of brickmaking.

But why *need* quack, or "offensive" brickmakers? The reason is obvious. If there were no bad brickmakers there

would be no bad brick, and the good brickmaker would have no test for distinction, or reason to claim preference in the sale of his brick, unless he *cut* prices under his competitors, which would not be a desirable or profitable policy.

NO, BAD BRICKMAKERS, AS BRICKMAKERS, DO NO HARM.

No more than whiskey, as whiskey, or pistols, as pistols, do harm. If a man treats whiskey decently, and with common sense, and self respect, and don't make a beast of himself, by drinking ardent spirits as a beverage, but only as a medicine, keeping out, and away from such vile places as *saloons*, he will be sure to find "*John Barley-corn*" as harmless as a babe, and indeed a friend, as a medicine, in some cases. So with pistols, and everything that man can, or may use. It is the abuse of the use of a thing, and not the thing itself, that produces the great evil and harm.

ARCHITECTS, BUILDERS, AND CIVIL ENGINEERS

Are chiefly responsible for the growth and operations of charlatan, quack brickmakers. If they make a specification for brick work to exclude all *salmon* or bad brick, they either do it as a blind to deceive good brickmakers, or else they attend to the brick work in such a perfunctory manner, that the cunning quack brickmaker will get in his inferior brick, notwithstanding the owner of the work, private or public, will think all the time that he is getting a first-class job done.

THE THING FOR GOOD BRICKMAKERS TO DO,

If they want to get rid of the competition of bad brickmakers, is to educate the general public up to the idea of a good brick, and the importance of using only good brick. Let the true brickmaker talk, write and act, all the time, when, and where he can get attention, in favor of using only good brick. Let him show that an eight-inch wall, well-built, of hard, strong, well-burned brick, is stronger and better in all respects than a twelve-inch wall, built of inferior brick, and that a house can thus be built of good brick that costs eight dollars per thousand, cheaper than of bad brick that cost but six dollars per thousand, not only this advantage, but at least eight inches would be saved in size of rooms.

All intelligent, good, brickmakers, should lose no opportunity to influence architects and civil engineers to specify

and use none but the best brick in all of their work.

It is said, that if only first-rate brick were used it would be impossible to get a supply, and this suggests the great importance of having more well skilled experts in the brickmaking business.

All this time, there is a great need and want of thoroughly trained, and competent, expert brickmakers. As I have said, bad brickmakers are not a positive evil, but a scarcity of good brickmakers is an evil.

If consumers of brick cannot find enough good brick in the market to supply the demand, they will buy such brick as can be had, and thus the use of inferior brick is a necessity, and, hence, they are respectable, and can keep company with the best brick. Just as boys and girls get into bad company, if their social wants are not well supplied with good company. The tendency of human nature and action, is to grade down, and as long as society is satisfied with a low grade of men and things, of course the supply will be abundant, because the demand seems to be respectable.

As it is now, good brickmakers are forced into company with bad ones, because there is not enough good brick to supply the needs of builders. It is a common thing for builders to get enough good brick of good brickmakers to hide the bad brick they get from bad brickmakers. When there comes to be a full supply of well skilled brickmakers, the builders and consumers of brick, generally, will have no cause or reason for patronizing unskilled adventurous brickmakers. Such brickmakers will be classed as fictitious, or "shoddy," and only those who wish to do temporary cheap brick work will patronize them, they will in no way compete with, or damage, good, well skilled brickmakers.

HOW CAN A SUPPLY OF EXPERT BRICKMAKERS BE HAD?

I have often, from time to time, in articles heretofore written for the CLAY-WORKER, proposed, and pointed out the ways and means, by which a fair and good supply of skilled brickmakers could be had and provided, for all the demands of the brickmaking industry; and I am glad to see that such thoughtful, intelligent men as Joseph Fairhall, brought this subject forward in the late convention of the N. B. M. A. at Louisville.

Of all the excellent papers read before that convention, I think I can say in all



fairness, that the one read by Mr. Fairhall on the "*Professional Brickmaker*," will rank first in importance and ability. This is no invidious distinction; personally, Mr. Fairhall is a stranger to me, and I do not write this in return for any compliment that Mr. Fairhall paid me in his address, but as I am now speaking of the necessity of more well skilled brickmakers, it is just and proper that I should refer to Mr. Fairhall's address on this subject.

The convention of the N. B. M. A. as reported, was a success, and shows a growing interest and progress in the brickmaking industry, that must excite a just and laudable pride in all true brickmakers. But the best of conventional bodies will make some mistakes, and the N. B. M. A. *smashed* all parliamentary rules "flat as a flounder," when they "flew the track" and ignored the discussion of Mr. Fairhall's paper on the "*Professional Brickmaker*." The order of business was to discuss the papers read, and until the discussions were had, and over, no motion could be in order, but the *privileged* motions, which are to "refer to — committee," "lay on the table," or "adjourn." I do not know that the N. B. M. A. even pretends to be governed by parliamentary rules. Be that as it may, Mr. Fairhall was entitled to common conventional courtesy, and some proper disposition of his address should have been made. I do not think that the convention had the slightest intention of showing contempt for Mr. Fairhall, nevertheless, the introduction of a resolution not "*germane*," or in any way referring to the regular order of business, and then ignoring Mr. Fairhall's paper altogether, was in contempt of the right of Mr. Fairhall as a member of the *body*.

A COLLEGE FOR BRICKMAKERS A "NEW THING,"

They say. So are brick machines, and brick kilns, and many kinds of clay goods new things. The N. B. M. A. is a new thing, and the excellent journals that are talking *clay work* intelligently and interestingly, are new things. Now all these new things are pregnant with either good or evil, will any one say that it is evil, and, if good, will not the *fecundity* of all the fine clay journals, and the healthy, robust N. B. M. A. bring forth in due time a healthy brickmaker's college? And will not such a *baby* college soon grow to vigorous, efficient manhood? And will it not be fully equipped and able to practically, and theoretically, instruct and educate all, naturally com-

petent, and inclined to be expert clay-workers or brickmakers? Certainly it will; and in a very few years to come, we will see a brickmaker or clayworker of any kind, with the initials of his diploma "M. C." (Master of Clay Work) on his *card* or *breastpin*, and he will not *shy* when he meets any other professional — though he might not want to be mixed with the "M. C's" at the national capital, few of which have the mental and industrial qualities to become real true expert clayworkers.

Written for the Clay-Worker.

#### ENAMELED BRICK.

THE many difficulties that present themselves to the individual who is induced to commence the manufacture of enameled brick may be called legion. Some have overcome them; others have gone down under them. The demand for this class of goods, is only for the very best quality. Nobody can afford to buy poor enameled bricks and consequently no one can afford to produce an inferior grade. Therefore my advice to those contemplating the manufacture of enameled brick, is, to give up the idea altogether unless they are "sure" that they are able to produce as fine a quality of goods, and a little finer, then either imported or home made.

To make a pure "enameled" brick successfully a person must have had a long and practical acquaintance with the compounding and manipulation of enamels suitable for all kinds of clay and then even the most practical and efficient must be able to so mix his clays that enamel and clay will agree.

The question is very often put, "Which is the best kind of brick for enameling purposes? The dry dust made brick, the semi-dry or the one made from plastic clay. After a number of years, during which time, I have made many experiments with all kinds of bricks and in all conditions, made from dry, semi-dry and plastic clays, I believe it to be just as easy to enamel one as the other. The main thing in the whole matter is, the particular kind of enamel to be used or whether, strictly speaking, it shall be an enamel at all, the kind of brick to be enameled and the condition of the brick at the time the enamel is put on.

Why have so many failed to produce good enameled bricks, and others failed to produce even a fair quality? Simply because they have been ignorant of the principles I have laid down as absolute-

ly necessary to their successful production.

It has been surprising to me, how easily capitalists and others owning beds of clay, have been persuaded to go right into the manufacture of enameled bricks. They have not had any experience themselves, not even in the manufacture of common brick, but some one has come along who has been able to put an enamel on the face of several small bricks, about two inches long, which he draws out of his vest pocket, saying at the same time he can give them whole kilns of bricks equal to them and that settles it. They are told that enameled bricks can be produced for \$20 per 1,000 and will sell at \$90 to \$100, and in an instant the man is asked how much cash he wants down, what interest in the concern and how much per week, salary? A case very recently came under my own observation, where three professional men, whose only guarantee of their success in the manufacture of bricks was, that they owned a bed of clay.

An individual came along with his vest pocket full of "samples." They took the bait, formed a company, built a plant, gave the "enameler" equal interest with themselves, without any liability, and a salary of \$30 per week. What was the result; he "experimented" for nine months, and never gave them one kiln of salable bricks. The company has now found out that (to them at least) there is no profit in enameled bricks.

The easiest thing in the world is to put an enamel on the face of a brown brick, and that same enamel will agree with the "surface" of almost any other brick, but the surface only, and then even the brick must be burned with the enameled face placed in the kiln upwards the brick laid perfectly even, or else when the enamel fuses it will flow towards the bottom of the inclined end but if the brick is placed in a perpendicular position the enamel will run off almost altogether.

My advice to all those desirous of producing perfect enameled bricks and who, through want of experience, etc., have to call in practical men, is to give the men some of your clay, let them manipulate it and return the clay, in the shape of good enameled bricks, with the enamel on the ends as well as the top or side and if they can't do this, don't have anything to do with them.

The adventurer desires to be paid



first, the honest practical man will prove his ability and then make reasonable terms.

#### THE CONDITION OF THE BRICK TO BE ENAMELED.

I am often asked whether the brick should be first burned before the enamel is applied in order to be most successful with it?

While this is a matter which in a great measure depends very much on the composition of the clay of which the brick is made, yet something may be said on the effect of enamel on burnt and unburned bricks, (*i. e.*) producing an enameled brick with one fire or with two burnings. The method usually adopted with an unburned brick is to cover the part to be enameled with a white slip by means of a brush or by dipping and afterwards the repeat the operation with transparent or lime transparent glaze; the glaze in most cases being a raw or unfritted one. I need not point out that this is not an enamel but simply an ordinary glaze, common glaze with a white slip lining. There is much to be said against this method. In my opinion it is utterly impossible by this process to obtain what is so much desirable in white enameled bricks, (*i. e.*) uniformity of color. The slip is sure to be put thicker on some than on others. Those which receive a thin coating of slip, if on an ochrous clay (buff) will throw up sometimes a pale brown and other times a deep straw color hue in patches. Bricks made of red clay, will, owing to the presence of ferrous acid, throw up dark brown spots if potassa be present. Sometimes the spots or blotches will be of deep black red. There are many other imperfections that are individually known to the brickmaker who has adopted this slip and glaze method and has but thinly covered his brick with slip. On the other hand, if the brick be thickly covered with slip he is subject to peeling and chipping and what is still worse cracking of the slip; nor is this all, he is subject during the burning to the treble variation of contraction and expansion. This alone sometimes gives a very high percentage of loss; but supposing all these defects have been remedied, there still remains the fact, that the slip is covered with a "raw glaze," I mean a glaze that has not, any part of it, been "fritted" and the consequence is the bricks won't stand the various atmospheric changes. The glaze

after a short time will "craze" the lining, chip off and the whole is a failure.

Another source of trouble, is the "blackening" of the glaze when the bricks are burnt in the open kiln, I know this is generally attributable to the presence of sulphur, but such is not always the case. Sulphur always proves its presence by giving a starry or mottled appearance to the "surface" of the glaze and which may sometimes be removed, but the "dirty white brick" is almost invariably caused by the impurities in the lead or spar, (chiefly the former.) This difficulty would in a very great measure be obviated if the glaze was "fritted."

Their still remains the other question whether it is profitable with all its attendant risks, to enamel with one burning, but as this is a question more for a practical brickmaker than myself I shall pass it by, believing that the true American brickmaker with true American grit will "do" what he has concluded will be the best for "himself."

In my next I may deal with some points bearing on the "true enamel" and will now close by saying to those contemplating the production of enameled bricks, see to it first of all, that your pocket book is well lined.

WM. CLAYTON.

#### NEW YORK NEWS.

##### WHAT THE CAPTAINS ARE DOING.

IN the spring, the fellows who write poetry tell us, is the time a man's thoughts turn to love. I think that the brick captains this spring have a problem before them that calls for the use of "gray matter" to its fullest extent, and not on the matter of love,—but what is going to be the result of making brick in 1893 from present standpoint. When playing cards, if one can catch a glimpse of his opponent's hand, he is in shape to somewhat protect himself. Just so, as early as it is in the season, the buyers are playing their cards openly, and if the manufacturer does not take care of himself, a lower range of prices will prevail this season than last—and before new brick reach the market. There is a limit to the extent of financial help, and probably there are those who are in the business that have all they want to carry, and if some propositions should be made to help the market, they would be ready to fall in, where in other yards they would not agree to anything. If something is not done, 1893 will be a "record breaker" long to be remembered.

##### WHAT HACKENSACK CAPTAINS DID.

Before the last number of the CLAY-WORKER was placed before your readers, the ice embargo had been raised and some of the changes that had taken place would cause almost any one to wonder "where they was at." On the 13th of the month the ice in the Hackensack had become soft, so that it was possible to get a tug boat with barges through, and if you could have seen the captains hurrying around to get barges, you would have thought that New York City was suffering from a scarcity of brick. The little "Joker" was under the other thimble; they were looking after the high prices, before their brethren at Haverstraw could reach the market. Robbie Burns saying, of "the best laid plans of mice and men gang aft a gley," was fully carried out. The boat started out on the 14th, reached the Erie railroad bridge to find it frozen fast. Before they got it loose the ice moved and crowded down on the bridge, causing a jam, with the result that the boats did not reach the yard until the 19th Sunday. On the 13th, one of the captains asked his agent what he could get for a cargo of his brick. "If I could get it here, I could get \$7.50,"—something nice after the \$5.00 price of the season before. While the boats were waiting for the bridge to open, the Haverstraw captains were not idle; they came to New York, procured a large tug with an ice breaker attached and with another boat to help, started for Haverstraw and in Haverstraw Bay, went through 12 inches of ice, and on the flats 18 inches were found. Mr. Editor, don't you think that the dealers in N. Y. should appreciate such favors as these? They appreciated it to the extent that they bought just as small a quantity as they could get along with, knowing that there were 7 barges loading at Haverstraw. They let the market meet the fate of McGinty with the difference, he reached bottom, in the case of the brick it is a slow second.

##### PRICES.

While the men were busy loading the barges at Haverstraw, hurrying for all they were worth, to be told that the Haverstraw tow was in ahead. Manfully through the rain they kept at it, loading when masons could not lay brick, to hear next day that prices was off, and so from day to day a fall, and a decided one from that which they started to grasp. Before the first loaded boat left Hackensack, Haverstraw brick were



selling below \$6.00 per M and the outlook is that there is not a barge load of brick from here that will bring over \$5.50. Such is life, if there is any life in the trade, with from 25 to 30 barges on the market from day to day, to pick from, and buyers combining together and buying one barge, each drawing from her as they need, is a fine point to keep a full market and a low one. The Hudson is not open above Newburgh Bay, and the first tow from there has not reached the market. Where the market will go when the Up River men can ship, time only will tell.

#### USE OF COAL DUST.

Probably many of your readers have never seen coal dust mixed in green brick. It may be of interest to some who may be so situated that they could procure and use it, thereby being a help to them in burning. It will save wood as well as enable them to carry a steadier heat than where all wood is used, and certainly the heads and outsides and top will burn out better. Anthracite dust is the grade used, that about the size of brickbats, giving the most satisfaction. Like everything else, the quality does not always range the same. A very large percentage of the dust comes from the coal yards of New York and Brooklyn, and is apt to have more of mother earth mixed with it than is beneficial for heat, as is soon found out when they begin to heat up and the heads do not take hold.

The dust that comes direct from the mine is best, but cannot always be procured when wanted. Coal dust in brickmaking is like the druggist putting up a prescription—in both cases the benefit or damage is in the hands of our "man." On the brickyard it is in the power of the cartman who is sent after it, to bring more than he should or drop some, as will be readily seen; too much or not enough heat is the result. You may impress on the minds of the parties that draw it, and the one who levels the pits, the need of uniformity and have the confidence that they will attend to the matter satisfactorily, but they become careless.

I may quote a case that occurred here not long ago. On adjoining yards they were burning their last kiln, and the same men on each yard had leveled pit all season. On the one yard the kiln was keeping hot without any trouble. On the other they could not get heat enough and they were firing heavy to swell her from head to head. It cer-

tainly was not in the coal dust, as both yards had made of the same lot. There was but one conclusion to be reached and that was, that there had not been dust enough put on, or, in other words, that those who coaled the pit had failed in their duty, which was found to be the case when they were questioned. When asked why they left off some, their reply was that they did not think it would make any difference. The difference to them was the shoveling of a few more shovelfuls of dust—to the manufacturer the loss of dollars in the increased number of light brick. Each yard has, at the dust pile, a box. A certain number filled and struck off and dumped in the cart will be sufficient for the pit, and no mistake would be made. With rare exception, after the cartman has drawn the dust a few times, he will just shovel it in the cart, and "guessing" that he has the amount of bushels required. Some may say, why does not the man who levels pit detect the overrun or shortage as he puts it in the pit. Human nature is the same in all, he wants to get through. The cartman has his horse turned out and is done.

In coaling pits there is but one method by which the man who levels pit could positively say that there was not enough or that there was more coal dust than there should be. It is the practice in all yards to draw the dust to the pit and dump it at one side, for use as it is needed. Some have a box holding so much, which the leveler fills, and as the clay is dumped in the pit, puts it on. When that box is empty he refills it, and when the last box has been filled he can see if he has more than usual left, or if he falls short. He is like the man who loaded wood, he says nothing, let the result be what it may. If any of your readers who have used dust and not had very good results, or if any should be about to try the use of it, they will see by the above it is not a case of man proposing and God disposing, but man's carelessness.

#### DIFFERENT WAYS OF COALING.

The Hackensack clay is hard and stubborn and requires to lie a while in the bank, which makes it very lumpy and it does not lay compact in the pit, particularly in the "sod pits," which we have here. The required amount of dust is drawn to the pit by cartman and the leveler has a box which he fills. He then sprinkles some on the bottom of the pit near curb, as that will get less than the rest of the bottom, as there is

not the surface for the dust to work down to the bottom of the pit. As each cartload of clay is dumped in the pit, the leveler throws water on it and then sprinkles two shovelfuls of dust over it, and so continuing until the pit is full. If he has not exhausted all his dust, he throws the balance over the top of the pit of clay.

Where circular pits are used, after the pit is filled, the cartman goes for the dust, draws and dumps it alongside the pit, where the leveler spreads it over. In this case the cartman has it all his own way, as there is no measure at the pit but is just spread it on. In Haverstraw where the clay is of a plastic nature, the dust is drawn to the pit, the leveler spreads some over the bottom of the pit and when the pit is filled even with the curb, he spreads over it about half the dust. After the top has been put on, spreads the rest over the top, as the clay becomes a compact mass. When the pit shovelers open the pit what loose dust runs down adheres to the wet clay, so that when put in the machine it becomes thoroughly mixed. As in the case of the circular pit, if the cartman does not attend to his orders there will be trouble in the camp. The foreman generally makes it a point to appear unexpectedly at the dust heap to see if things are going on as ordered, thereby causing cartman to do as he is told. If he is left to himself he will shovel in cart without measuring.

#### SINGLE COAL.

The quantity of dust put into a thousand brick. At the present time there is rather more used than formerly. Some men seem to be possessed to keep changing the quantity of dust to put in. They think that it needs more and will add to the quantity, with the result of having quite a supply of roly brick, then drop off, and the next kiln will be off color, until he gets it through his head that he had it right in the first place. Some put in one bushel to a thousand brick, which is the greatest amount used, others between three pecks and a bushel, say, 29 to 30 quarts, with, in this vicinity, the best of success, as the yards use circular pits.

#### DOUBLE COAL.

In making, double coal, as I have said before, the grade of coal has a great deal to do with its efficiency. If the usual number of bushels is put in and the heads do not take, it shows that it is not strong enough. As with single coal a certain quantity per M is put in, so



the ratio is raised with double of about 5 to 1, or if say, you was moulding 20 M a day and used a bushel per M, if you were going to make double coal, you would put in a hundred bushels, but instead of measuring that quantity you would get at it by cartloads. In this way, in your single coal if you found that your carts would hold 16 bushels, to draw the hundred bushels it would take 6 and a third loads for the larger number. It would be the same if you were only putting in 29 or 30 quarts to the M; that is, number of cart loads in proportion to smaller numbers. As a larger quantity of coal dust being put in, it is the custom to drop off as many loads of same as the extra coal displaces, or, say, one-third, as four loads of same to the thousand is used, so that the size of the double coal-pit is no larger than the single, only that the coal put in is of larger proportions.

#### BURNING WITH DUST.

For burning, it has its advantages in several ways: As regards the consumption of wood, it holds a more uniform heat, as well as being easier on those who have to be around the kiln when burning. As there is a varied use of dust as to quantity put in, some of your readers may think that there are some burns made on new yards that turn out very poor, but such is not the case.

Of course a foreman may burn brick in Hackensack or Haverstraw this year, and next year he may be in Mass. or Conn., or some where along the Hudson. If dust has been used the quantity put in is known, he looks at the brick as they stand in the burned kiln, and forms some idea whether there was too much or not enough dust put in, and coals his pit accordingly. If he is starting a new yard and he is not aware of the nature of the stuff, he, as any of your readers should, who introduce dust in their brickmaking, commences by putting about three pecks to the M in his first kiln, he may burn a little more wood, or it might be just what is right. If it will stand more, he will then coal heavier till he reaches the right proportions.

A. N. OLDTIMER.

#### SAWDUST BRICK.

Experiments are to be made with a light brick for interior partitions, ceiling and other places, where crushing strength is not required. With ordinary clay and sand about fifty per cent. of fine sawdust will be mixed; the brick

will be molded under heavy pressure and then burned until the sawdust is consumed.—*National Builder.*

#### ABOUT PAVERS.

THE tests of pavers known to me clearly demonstrates, that so far the best and greatest brickmakers have not yet succeeded in producing an article which possesses all desirable quantities in combination, and that there will be room for improvements, until we finally, as I hope, shall arrive at a Standard Paver, of which could be said, what a French ambassador in the Orient said when asked why the French (western people) only loved (married) one lady: "That all the most excellent qualities are found in one."

If in the following I succeed in inducing some fellow craftsman to investigate and consequently advance one step, I shall have gained part of my object. We may soon see the time when each important brickyard will have a little sanctum adjoining its office, wherein chemistry will find due consideration as an important branch, which can no longer be ignored by any progressive brickmaker, even in its mere negative form, it only should help to show what ingredient we must use.

Now, let us suppose we have a clay free from objection in a chemist's sense, of which we want to make pavers. In order to find the size of mould or die to get the desired dimensions when burned to a density, that the absorption by volume, is not more than 3 per cent, we must know the shrinkage. Here is the way to find it. If you have seamless clay and it requires no admixture, save out a brick, otherwise prepare your clay well, make a brick, repress it in some way, then dry it and burn it a salmon brick. Take note how much if any shrinkage took place so far. Next, weigh the brick, soak it for twenty-four hours, find the absorption by volume. If, for instance, the absorption is 20 per cent., it follows that you cannot get an almost impervious paver unless you reduce its volume to about 80 per cent. of its size when a salmon brick. Any burnt brick, provided the water of crystallization is driven out, will do to base your calculations on, and it affords pleasure to find how far one may go in burning, how the result is correct. Some brick can be made so dense as to be perfectly non-absorbent and of a specific gravity of 2.49. There are a

number a good kilns shown in the CLAY-WORKER wherein this can be done, and if your material does not stick and keeps its shape well, you will undoubtedly have a paver with at least one or two essential good features.

ROBERT NIEDERGESAESS.

#### NEW INVENTIONS.

The following is a list of patents appertaining to brick, tile, terra cotta sewer pipe, pottery, etc., and the machinery used in their manufacture, issued since our last number:

- 491,625. Roofing Tile. Carl W. E. Wutke, Germersdorf, Germany.
- 491,658. Brick Machine. Victor F. Lanquette, Dover, N. H.
- 491,712. Automatic Brick Machine. Thomas B. Lewis, Renovo, Pa.
- 491,747. Brick or Tile Cutting Machine. John Thompson, Bucyrus, Ohio.
- 491,764. Method of Burning Clay to make Ballast. Wm. Butler & H. G. Butler, Kenosha, Wis.
- 491,995. Brick and Tile Kiln. L. Falasconi, Fermignano, Italy.
- 492,064. Brick and Tile Kiln. Elwood F. Stephenson, Cartersburg, Ind.
- 492,251. Brick Kiln. Peter L. Youngren, Oakland, Cali.
- 492,388. Undried Brick Protector. Auguste C. Contant, Fort Wayne, Ind.
- 492,663. Brick or Tile Cutter. James Cornelius & E. R. Collins, Brooklyn, N. Y.
- 493,077. Tile Machine and Cutter. John Fernald, Wellington, Ill.
- 493,098. Brick Mold Sanding Machine. Wm. Lane, Aberdeen, S. C.
- 493,244. Apparatus for Ornamenting Architectural Tiles. Isaac Broome, New Brighton, Pa.
- 493,366. Ridge or Gutter Tile Machine. Wilhelm Ludowici, Tockgrim, Germany.
- 493,930. Brick Kiln. Abram B. Horne, Logan, Ohio.
- 593,951. Continuous Brick Kiln. Jas. P. Veirs, Omaha, Neb.
- 494,515. Clay Mill. C. W. Vaughn, Cuyahoga Falls, Ohio.
- 494,620. Gutter Tile. Geo. A. Bedgood, Cincinnati, Ohio.
- 494,687. Continuous Brick Kiln. Wm. Oakes & Jas. Oakes, Leeds, Eng.
- 494,911. Brick Machine. Harry L. Balson, St. Louis, Mo.

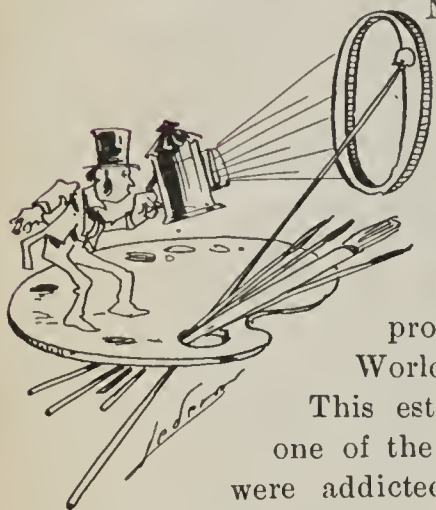
A correspondent writes that the yards at Philadelphia expected to start about April 1st if the weather continued favorable, and that reports showed that nearly all the yards were cleaned out of stock, which will probably result in an advance in prices.



## THE BURGLAR'S ERROR.

A CHARACTERLESS STORY FOR CHILDREN UNDER TWO YEARS OF AGE, WITH THREE DIFFERENT KINDS OF MORALS.

Also an Assortment of Drawings Made by the Author Immediately After a Chicago Municipal Election.



NCE — or may be twice upon a time—no, it was once, an industrious and amiable burglar invested the surplus proceeds of his profession in cheap flat property adjacent to the World's Fair grounds.

This estimable burglar was one of the few of his ilk who were addicted to the wearing of plug hats and sported side-whiskers. These peculiarities he had acquired during the early part of his eventful career when he was engaged in the banking business—I think he was president of the bank he was connected with. Well, one day he found himself short of funds, on account of an assessment—but I am getting ahead of my story. He had built the flats, I speak of, with materials bought at the bargain counter of a builders' exchange. The mortar which he bought was made of street sweeping treat-



ed by a chemical process, the necessary cohesive qualities being obtained by the addition of corn starch. The stone he used was a mixture of old tin cans, ground up fine, on the cheeks of deceased Chicago alderman, and which, by the way, wasn't such a bad substitute for granite. The bricks were a remnant lot that he purchased at the rate of \$3.67 a thousand.

The lumber used in the flats was the wreckage of a coal barge that had stranded on the lake shore. However, by the addition of some terra cotta trimmings, a few stained glass windows, and a janitor in a dark green uniform and a bit of gold lace on his peaked cap, the flats looked quite swell. Nevertheless he only succeeded in renting one of them—flat G—and this one to a rising young artist, the rent being something like \$87.00 a minute.

The burglar-landlord induced the self-rising young artist to believe that he could more than get his rent back by sub-letting the rooms, furnished, to World's Fair visitors.

But, as I remarked, the burglar became short of funds on account of an assessment. It appears that a trusted pal jumped his bail, and, (a new state's attorney being in office, and not up in his business) my burglar friend being on the skipped pal's bond was mulcted to the extent of the same.

So he was short.

When he collected the last month's rent from the artist, he noticed, to his own surprise, that the artist had some change still remaining. The burglar concluded to do a little job of burgling and thus become possessed of the change—which he really needed to pay another burglar, who had the street cleaning contract for that ward, and who had levied an assessment on all the property owners along the line, though of course he hadn't the remotest idea of cleaning the streets.

It was two a. m.

The unwary burglar-landlord tried to get into the artist's flat by way of the portico, but the portico came down with the poor fellow. Then he incautiously tried to get in by the back door without taking precaution to support the brickwork above with his thumb and he got damaged again. Then he tried a side entrance with equally disastrous results.

\* \* \* \* \*

A short time after the artist met the burglar-landlord by chance. He was out of the hospital but not at all the man he used to be. The artist notices that burglars always hurriedly pass his door now, and try further on.

CHARLES LEDERER.



## SAND THE PRIME ESSENTIAL.

A TIMID man can never be a successful advertiser. He must be bold without rashness and generous without recklessness. Otherwise, he had better not advertise. A timid advertiser and a beginner look for a return from the first ad. As well might Longfellow look for



a return from his first poem, or Beaconsfield from his first speech, or Boucicault from his first play, or Balzac from his first novel, and he wrote a score before he made any money. The man of nerve keeps at it, till he attracts and accomplishes. Such a man was Dr. Helmbold, P. T. Barnum, the elder Bennett, Robert Bonner and Dr. Ayer Sand is the most desirable thing an advertiser can keep in stock.—Exchange.

Man wants but little here below ;  
But as the days go by.  
He finds with every rising sun  
He needs a fresh supply.

—Puck.





## SOMETHING NEW.

## The Mock Portable Rack and Pallet System of Handling Brick.

**P**ROGRESS! is now the cry with all industrial arts. The oldest of them, brickmaking, is not behind in the procession, but on the contrary, keeps well to the front. Improvement in methods of work and appliances are constantly being made. One of the most recent and important to the soft clay brickmakers, is the Mock Portable Rack and Pallet System of Handling Brick. An idea of the character of this innovation is given by the accompanying illustration. Strictly speaking, the method and appliances are

30,000 brick a day with it for the past two years.

## HIGHLY RECOMMENDED.

In speaking of the system recently, Mr. Adams said: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."

The Mock Portable Rack and Pallet System is especially adapted to soft clay

and specifications for the erection of brick works of any desired capacity. As they are practical brickmakers of many years experience and still engaged in the business, having a large plant in operation near Muncie, it will be well for those contemplating the erection of new works or remodeling old ones, to consult with them.

They will be pleased to correspond with any one interested, and cordially invite those who can to visit them and see their system in actual operation.

There are brickworks also at Anderson, Marion, Kennard, Chesterfield and Sheridan, Ind., and many other points where the Mock system is in use.

## THE YATES KILN.

## Satisfactory Experience of a Practical Brickmaker.

Office BLANDFORD BRICK & TILE Co.,  
RUSSELL, MASS., March 24, 1893.

MR. ALFRED YATES,

*Dear Sir:*—Thinking you might want to hear from us in regard to the success we had in burning the round kiln, will say, the kiln could hardly be any better. We burned it in seventy-nine hours with soft coal and every brick was burned hard (vitrified) from top to bottom of kiln. The buff are a fine color, all of an even shade, and we did not have to cull any of them. The white were, also, fine and we shipped all of them, and the fire brick in the checker are all O. K.

It took nine tons of coal, a cost of \$1.75 per M for coal, which is a saving of \$1.76 per M over the former kilns.

We are now burning the two square kilns and setting one of the others, and when burned and emptied, I will report. My opinion is that they will work equally as well as the round one.

Yours Truly,  
G. L. TWITCHELL, Manager.

## Cannot Do Without It.

*Editor Clay-Worker:*

Enclosed please find \$2.00 for one years subscription to CLAY-WORKER. There is so much useful information in it that I cannot do without it. It was my intention to attend the Louisville Convention, but at the time my wife was sick, so I could not get away. Business is moving down here, and that is about all.

Wishing you success with the CLAY-WORKER and trusting you will have a prosperous year, I am

Respectfully,  
FRANK L. FOOTE,  
Mount Pleasant, S. C.



MOCK'S PATENT TRUCK AND PALLET RACK.

not entirely new, having been in use by the inventor, Mr. Mock, of Muncie, Ind., for several years. Two years, or more, ago he decided to offer his truck and rack system to the trade generally, and succeeded in introducing them on several yards in Central Indiana, whose proprietors had seen the system in operation at Mr. Mock's yard. Among them the Adams Brick Co., Sheridan, Ind. Mr. J. C. Adams, of Indianapolis, the president of the company, and ex-president of the National Brick Manufacturers' Association, investigated the system thoroughly and being convinced of its economy over the old methods, introduced it at his new plant, and has been handling

yards drying by gas or steam. One man with one truck easily takes 30 to 40 thousand brick a day from machine to dryer, and one man and truck is required to convey the brick from dryer to kiln and two small trucks, operated by boys, return the empty racks to machine, thus reducing the cost of handling the brick very materially. The brick are placed in the kiln in much better condition than where handled in the old style.

Mock Bros., of Muncie, Ind., who have charge of the manufacture and sale of these trucks, are prepared to furnish complete outfits, including trucks, racks and pallets, and also to furnish plans



## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## CONVENTION ECHOES.

## An Absentee's Impressions.

*Editor Clay-Worker:*

Last evening, the 13th, our Association held their annual banquet. Unfortunately the republican party held their convention the same evening, which deprived a number of invited guests from being present. However we had a very enjoyable evening. C. W. Larmion was master of ceremonies, and had a very interesting programme prepared, which was responded to by the several gentlemen present to whom the toasts had been assigned, one of the toasts being the "Mistakes of Brickmakers," in which the "Four-Year-Old" came in for his share of criticism, in a jocular manner. The manufacturing of clay was discussed in its various uses, among which a very interesting statement was given in its use in the manufacture of sewer pipe by Mr. William Geddis, who has a plant second to none in the country in which he manufactures pipe exclusively.

Mr. Thomas Tonge, Secretary of the Manufacturers' Exchange, gave a description of the several kinds of clay which had been brought to his notice from different parts of the State of Colorado and their uses. Among other things he said kaolin had been discovered in large quantities, of a superior grade to any he had ever seen in Europe. Well, the fact is, the banquet was a "Kindergarten Powwow."

While sending the CLAY-WORKER these few notes, I wish to express to the members of the National Brick Manufacturers' Association my appreciation of their selection of Anthony Ittner as President of the Association. While there are hundreds of members who could fill the "bill" satisfactorily, there are but few who have had the varied experience, both in the manufacture of bricks and parliamentary tactics, that Mr. Ittner has had. Not being able to be present at the last convention I have read the proceedings with more than usual care, and I think you had some excellent subjects, as well as having them very ably discussed. But, alas! "What was the Matter with Purington?" It

would seem as if somebody had taken the advantage of him at an early date and ————. But there is none of that in "Old Kentucky." I dreaded poor "Old Adam" being in that hospitable city when "Cain" was not there to remind him of an occasional discipline, and I see my fears were well-founded as the old fellow wanted to organize the convention into a "Methodist Camp Meeting." I hope that banker didn't get his hat so full of bricks that he has forgotten to charge the percentage when discounting his brickmaking friend's notes—that would be sad indeed. It would appear by W. H. Alsip's opening remarks that he had been accompanying "Rip Van Winkle," but he recovered his memory before he traveled far in his discourse and stated some very plain and truthful facts. That Jacob Merriweather is certainly a descendant of "Solomon" for he demonstrated his wisdom in quitting a business so prone to "mistakes" and following the business he was master of. Now see the difference between a "Quaker and a Hoosier." Mr. Dingee, although a class leader at home, and a thorough orthodox preacher to his men daily, when he gets beyond hearing of his Quaker brethren he becomes a "Boy" again, and that sweet, oh, so sweet, "Our Old Kentucky Home," rises above all the Methodist songs his good old mother taught him, and which he uses as an accompaniment to his preaching at his yard. Yes, "Jim" has and keeps a "Moody" class of men.

Eudaly, Eudaly! when I read your advice to our brother brickmakers I wept. Have you forgotten what the scripture teaches in regard to the broad and the narrow road, or do you think we can't get fire enough here, or did you throw it out as a gentle reminder to your Southern friends that the "fire water" would be acceptable, that you advised them all to take the broad guage? Now, friend Eudaly, you know the broad road leads to destruction, but, probably, as the "Big 4" were there, and it was very likely they needed a reminder to keep them in the straight path you were performing a missionary work, for which you will receive your reward.

And, modest, unassuming "Gates," how nicely he brought in the "Parable of the Blind Beggar." He, I presume, is accustomed to an "eye opener," but, being amongst strangers, and, being so very bashful, he struck an idea, that was to convey to the commissary that the "needful" was very much required in his case at least.

The "four-year-old" has cut one more notch in the calendar of time, and like a good Christian, has, in part, confessed to the highest tribunal known in brick-making, but, as Mr. Webster's Dictionary is unreliable, I move you right now that the National Brick Manufacturers' Association concoct a Dictionary to suit themselves. Still, I am afraid they will have to define a "Mistake" a "Mistake," call it by what name you like.

Clayworker, I am going to bring this letter to an end, if I don't I shall have to drop on my knees and pray long and loud for the intercession of Divine Providence amongst the members of our craft, to lift the load of sorrow from their heavy burdened spirits. Brother Snell charges us about that hereafter, and that we must be burned over again. The light weight, Brother Blair, sings "Do they miss me at Home" very solemnly, and, that old father of the convention, Capt. Crafts, wants all the four and five-year-olds to be shipped immediately to Heaven—even the Rev. S. S. Waltz was almost dumb-founded with your solemn appearances.

And now, my dear brother brickmakers, I have written this letter as a kind of atonement for my absence from the convention, which I could not prevent, as my letter of regrets explained. But I am real glad to know that you have held the most successful convention at Louisville, Ky., that you have ever held; that you have all been magnificently entertained by your Kentucky friends and brother brickmakers, and I sincerely hope that each and all of our members may enjoy health and happiness, and that they may all have a prosperous year, and that we may all, in company with our wives, meet in Chicago at the next convention, and join Bro. Dingee in singing "Our Old Kentucky Home."

Denver, Col.

JOHN MCCAIN.

## Reflections and Suggestions.

*Editor Clay-Worker:*

After our convention each year, there comes, to most of us, a season for thought and reflection. It is a duty we owe to our Association, our fellow craftsmen, and ourselves, to devote some of our spare thinking moments to a retrospect of the pleasant and enjoyable time we spent. That our meeting at Louisville was all that could be desired in this respect, is, I am sure, patent to every one who was present, and enough has been said on this point to make all the absentees wish they had made an extra



effort to attend. How pleasant it is to look over the assembly and to be greeted by the same old familiar faces of "the faithful," who, year after year, make the pilgrimage to this shrine, of what we hope is "brickmaking progress."

It is question in my mind, however, whether we are, as an association; progressing. That we are increasing in numbers is an indisputable fact, but, numbers alone constitute progress? Is there not such a thing as striving for quantity at the expense of quality? The papers read and addresses given were of a higher order than ever, and showed that a great amount of thought and care had been bestowed on their preparation, but the discussions that followed were hardly so satisfactory. This, to my mind, is due largely to the promiscuous membership. We cannot, of course, expect to crowd our conventions with men like Adams, Purington, Pearson, Ittner, etc., or even our promising "Four-Year-Old," nor can we expect that each succeeding year will send so brilliant a star in our midst as young Alex. Prussing, but we have reason to hope that we may at least get brickmakers. As it is at present we have no standard of qualification for membership. A man may be a butcher or a dry goods man or anything else but a brickmaker, yet if he have the, "open sesame," *the two dollar bill* in his pocket, his entry is secured. He hands over his money, gives his name and address, receives the current badge of membership and takes his seat. From thence on he is privileged to take up the time of the convention, enter into its discussions, stuff the question box, and impede the business with as much impunity as the oldest charter member. This is something that brickmakers should enter a protest against. We have made a move in the right direction by selecting a president outside of the convention city, for which all honor to MacDonald of Louisville, for the firm and decided stand he made on this highly important point. Having selected our president, we now look to him to do all in his power during his term of office, to raise and elevate, not only our National Association, but the brick-making craft generally. And while it may seem presumptive on my part, yet I venture to offer some of the reflections which present themselves to me.

First, with regard to our next convention, I would suggest that instead of the programme being made up promiscuously by members presenting a paper or

address on any subject that they feel interested in, that the president select certain topics of interest to BRICKMAKERS and publish same some three months prior to the convention, inviting members to prepare an address on them, that two papers be prepared, pro and con. That each subject be limited to time. That after the two papers have been presented, so long a time be set apart for discussion of same; strictly adhering to the rule that no one member shall speak for more than five minutes, and only once on the same subject. That when the time for discussion has expired the president stop all further remarks, and that the respective members presenting the subject, shall be allowed a few minutes each, to reply to points brought out in discussion.

I would further suggest that the regular programme of the day end at a certain hour, at which time it should be in order for any member to read a paper, or deliver an address on the subject connected with other branches of clayworking, limited to time, and upon which there should be no discussion, notification of such paper or address having previously been given to the president. After which the question box be opened and passed upon.

I would also call attention to the lack of provision for the ladies, which seems to grow worse each year, and would suggest that a certain morning or afternoon session be set apart, which they be invited to grace with their presence. That during the time the ladies are in the room, all use of tobacco be tabooed, and that we show at least a deference, and some recognition of their presence.

These, Mr. Editor, are some of the reflections that present themselves to me as I look back on our last meeting. No doubt others see these things in a different light, or other points present themselves to their minds. At any rate, I am sure all will admit that our last was the most pleasant convention we have yet attended. Let us hope that each succeeding one will be an improvement on this, and let each member use his utmost influence to this end.

JOSEPH FAIRHALL.

Grape Creek, Ill.

#### Philadelphia News.

*Editor Clay-Worker:*

Everything indicates that the season now opening in the building trade will probably be the most prosperous known for years, contracts have been let already sufficient to keep a large force of house

mechanics employed continuously until next fall, unless a strike should occur in the mean-time.

Brick manufacturers representing over 95 per cent. of the entire output of Philadelphia have organized what will be known as the Brick Manufacturers' Association, with Albert H. Dingee as president, and Henry Senter, secretary. The only subject considered at the maiden meeting was as to a schedule of prices for the season just opening. It was stated during the discussion that no profit had been realized by anybody from the manufacture of hard brick in recent years and that the other grades are now selling for lower prices than ever before. A schedule was prepared, naming the following prices: Salmon bricks, \$5.75 per thousand; hard bricks, \$8; machine-made stretchers, \$10 to \$11; and pressed bricks \$18 to \$20. Every manufacturer present signed the scale and a committee was appointed to draft a constitution and prepare by-laws for their government, which will at once secure a meeting place and perfect plans to improve the condition of the brick market, which is now thoroughly demoralized.

The entire visible supply of bricks in Philadelphia will not meet the demand of the next month, if the weather moderates sufficiently to permit operators to begin in earnest their season's work.

ANON.

#### Suggestions For Machine Manufacturers *Editor Clay-Worker:*

Can you explain why it is that so much mystery exists as to the prices at which clayworking machinery can be obtained.

I receive from time to time, numbers of exceedingly handsome catalogues of machinery, etc., for which I wish to take this opportunity of thanking the senders. The capacity, weight, height, length, breadth, etc. of the machines are invariably given, but the prices at which all these good things can be obtained, seems to be carefully guarded secrets, divulged only upon special application. If there is one thing more than another of importance in a catalogue, it is the prices of the articles it contains. A price list which does not give the price is like what the play of "Hamlet" would be with the character of "The Dane" left out.

The machine manufacturer who will boldly, on all occasions, advertise his "rock bottom price," will place those of



his competitors who do not at once follow his example, at a great disadvantage

R. M. GREER,  
Tuxpan, Mexico.

#### Ohio Valley News.

##### Editor Clay-Worker:

The sewer pipe and brick works in and about Steubenville, Ohio, are all running steadily with a good demand for their products, and much to their satisfaction, there is at present no car famine.

The strike of the employes of the John Porter Co., of New Cumberland, W. Va., as related in last month's letter, came to a sudden end, by the Company posting notices throughout their works and in the town, that all who desired could go back to work at the same scale of wages existing prior to March 1st. Nearly all the men resumed their old positions, and all the works are now running to their full capacity; a happy solution of what threatened to be a long and bitter struggle and the probable loss of some life and property.

The fire and paving brick works of the late Wm. G. Barnard, of Bellaire, Ohio, was, on March 31st, sold at executors' sale to Mr. E. McCullough of that city, for \$32,600, being considered a very fair price.

The large brick works in course of construction at Hamilton, W. Va., for Mr. John Porter, is rapidly nearing completion, and as soon as the Penna. R. R. Co. extend their New Cumberland branch to the works they will be ready for business. This plant is said to be a model one, being built under the personal supervision of Mr. Porter, the pioneer paving brick manufacturer of this region.

The sewer pipe men held another meeting at the Sewer Pipe Exchange in Toronto, Ohio, on March 21st. Their efforts toward an iron clad organization are meeting with much success. They claim the outlook at present is very flattering for a large business for quite a time to come, as the population of our country increases, the demand for this product increases proportionately, and as yet the supply does not exceed the demand, and low prices are apparently a paradox.

The Calumet Fire Clay Co. of Calumet, Ohio, are trying an experiment in their clay mines which, if successful, will make a new avenue and increase

the demand for salt glazed sewer pipe. The copperas water in such mines has a most ruinous and destroying effect upon iron pipe, repairs on the line being required almost constantly. They have decided to put in a discharge water line of sewer pipe, required to stand a pressure of 30 lbs. to the square inch.

Salt and copperas water will have no effect on clay pipe, and leaking is the only trouble to be avoided. The result is looked forward to with interest.

On April 1st, near midnight, the immense plant of the Dresden Pottery Co., of East Liverpool, Ohio, was almost totally destroyed by fire, caused from a gas main bursting. The loss will reach over \$100,000 with about \$70,000 insurance. This was a co-operative concern and will throw 250 men out of employment.

The Steubenville (Ohio) Council are contemplating paving the alleys with brick, as it is one of the best sanitary measures known, and a great cholera preventative.

"BUCKEYE."

#### NEW BOOKS.

"TIPS TO INVENTORS" is the title of a neatly bound and printed book recently received from the Practical Publishing Co., 21 Park Row, N. Y., the purpose of which is to indicate to inventors the fields most apt to prove remunerative to them. It also devotes a chapter to perfecting and developing inventions and one to the selling of patents in which some valuable suggestions are offered. Price, \$1.

"BRICK REPRESSING AND REPRESSES" issued by J. W. Penfield & Son, Willoughby, Ohio. This is a handsomely executed pamphlet which not only shows the various represses built by Penfield & Son but tells all the advantages of repressing brick and how it should be done. It also contains color plates showing a great many of the designs of ornamental brick and blocks that can be made with Penfield machinery. Any of our readers may obtain a copy for the asking.

"SOME HISTORICAL FACTS FOR INTERESTED BRICKMAKERS" is the title of neat little pamphlet issued by the McLagon Foundry Co., New Haven, Conn. Those desiring information relative to soft clay brick machinery in general and the "New Haven" machine in particular should write them for a copy.

We are indebted to the Washington

Hydraulic Press Brick Co., Washington, D. C., for a copy of their 1893 pocket catalogue of molded and ornamental bricks. It is, like their brick, a handsome production. Architects and contractors, and anyone in their section wanting to purchase anything in the line of front or ornamental brick, should obtain a copy.

THE HENRY MARTIN BRICK MACHINE MFG. Co., Lancaster, Pa., is out with a new illustrated catalogue of soft mud machinery and brickyard supplies. Brickmakers are requested to send for a copy.

THE LINK-BELT MACHINERY Co., Chicago, are sending out circulars illustrating and describing their improved appliances for handling clay, brick and tile. If you have not received a copy, write them for one.

WE have received from the Drake Standard Machine Works, Chicago, a large, new catalogue of the stiff clay brick machinery manufactured by them. Among the illustrations is an excellent portrait of the genial proprietor C. T. Drake, and also a cut of his new office and salesrooms recently built at 298 and 300 Jackson Boulevard, where he is now very comfortably quartered. His full line of stiff clay machinery is fully described and illustrated in the catalogue, copy of which will be mailed to any of our readers on application.

#### AT THE WORLD'S FAIR.

In Chicago there are being arranged at this time, a number of very promising and interesting special exhibits of clay products, in or by which the brick manufacturers of our own country may show that they are not far behind the rest of the world. Several of these are to be noticed in the Mines and Mining building, and will well repay careful examination by all interested in this subject. Our own State especially, will make fine exhibits in clay, though probably none worth considering in clay products. We will be able to indicate that we are rich in raw material, and relatively poor in the finished product. While the latter is not altogether true, the Exhibition would so represent it.

On page 461 we introduce to our readers the well-known firm, The Harrington & King Perforating Co., who make a specialty of perforated steel plates and sheets for making clay screens of every description. Any of our readers wanting to repair their dry pans or sieves or put in new ones, will find it to their advantage to get prices from this firm before purchasing.



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

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INDIANAPOLIS, APRIL 15, 1893.

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address.

## ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL & CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

## EFFLORESCENCE ON BRICK.

Like Banquo's Ghost, this source of  
tribulation to brickmakers, will not  
down, but stalks forth ever and anon  
to disturb the peace and contentment  
of the entire craft. No subject is more  
sure to provoke controversy in our con-  
ventions, for the opinions as to its cause  
and cure are as numerous as the number  
discussing—if not more so. The subject  
is referred to in an amusing and, as  
well, common sense manner, by "A  
Charter Member" in his "Convention  
Brick Dust" on a preceeding page.

We recently interviewed an old con-  
tractor and builder on the subject; one  
who has had considerable experience  
with the pest. In answer to our query  
what do you do to prevent whitewash, he  
said: "Nothing. All that is necessary is to  
see that the building has a fair chance to  
dry out naturally. See that there are  
no places where from leaky gutters, in-  
complete flashing or other causes, water  
is frequently turned into the walls so as  
to keep them wet. If a building has a  
natural chance to dry, efflorescence may  
appear at times, but will soon disappear.  
I have seen buildings here in our vicini-  
ty that seemed fairly covered with the  
stuff, but on which there is not now a  
sign of it. Efflorescence may appear  
near a leaky down spout. When the  
down spout is repaired it will disappear.  
To my mind, the proper thing to do is  
to build in such a manner as to insure  
comparatively dry walls, and then let

them severely alone. Avoid the tinker,  
who 'knows how to remove and prevent  
the nuisance,' and in a short time the  
white stuff will disappear."

## A NEIGHBORLY SUGGESTION.

We extend to the editor of our es-  
teemed cotemporary, *Paving and Muni-  
cipal Engineering*, of this city, the assur-  
ance of our distinguished consideration  
and congratulate him upon the good  
taste displayed in the selection of mat-  
ter. In the current April issue, we find  
the able paper read before the recent  
Convention of the N. B. M. A. at Louis-  
ville, by Cyrus Chambers, Jr., entitled  
"The Evolution of the Brick Machine."  
To be sure, there is nothing in the  
magazine to indicate the source from  
which *Paving* secured this interesting  
paper. On the contrary, it is used in  
the same manner and form as the papers  
prepared especially for that publication.  
That is, we presume the leading articles  
are prepared especially for it, for we do  
not believe there are conventions enough  
in this country to enable even that en-  
terprising journal to obtain all of its  
matter from such sources.

We call *Paving's* attention to the fact  
that there were several other instructive  
papers read before our Louisville Con-  
vention, that it might use to advantage,  
but we beg to suggest that in doing so,  
they give the National Brick Manufac-  
turers' Association the credit due it. It  
is a small matter, but one that reflects  
credit or discredit upon the magazine,  
according to its observance or omission.

Give credit to whom credit is due,  
neighbor, it is only fair.

## BRICK MACHINERY AT CHICAGO.

Some months ago we called attention  
to the fact that matters were not as they  
should be between the authorities in  
charge of the Chicago Exposition, and  
the American manufacturers of clay-  
working machinery. The Exposition  
managers had made no provision what-  
ever for a display of clayworking mach-  
inery and appliances. We did not pre-  
tend to say that this was through any  
desire upon the managers of the Colum-  
bian Exposition, to slight so important  
an industrial interest, but supposed that  
they were not properly informed on  
the subject, and did not know really  
what there was to exhibit; did not  
properly estimate the character of the  
clayworking industry, and we had hopes  
that when this matter was properly

presented by our people, that the mis-  
take would be rectified. Our hopes  
were not well founded, however, for not-  
withstanding the fact that the machine  
manufacturers were willing to bear the  
expense of erecting a special building  
for their use, and furnish the necessary  
power—in short, do anything reasonable  
to admit of a creditable display, they  
will not be permitted to do so. Foreign  
manufacturers will display their mach-  
inery, but American clayworking mach-  
inery will find no place in the Columbian  
Exposition. This is indeed unfortunate  
and the responsibility rests entirely with  
the managers of the Exposition, who  
have failed to provide in any way for the  
exhibition of American brickmaking  
machinery. That they should slight an  
industry so vast and important to the  
masses, an industry representing an in-  
vestment of capital and brains equal to, if  
not greater than that in any other in-  
dustrial art, is a matter that the Expo-  
sition manager will find very difficult to  
explain in any satisfactory manner.

The trouble is, it seems to us, that  
those in authority have assumed too  
much, they have become possessed of  
the idea that they, personally, are  
running the show. That men of such  
narrow calibre should have been placed  
in authority, is very unfortunate for the  
Fair and the people, whose interests it  
is supposed to conserve and advance.

Proper and adequate provisions have  
been made for the foreign manufacturers  
while we will have relatively nothing in  
an organized way to show to compete  
with them. As far as the Columbian  
Exposition is concerned, it will appear  
that foreign manufacturers are well ad-  
vanced in the manufacture of claywork-  
ing machinery, and that the Americans  
are behind; that they have nothing to  
offer worth considering; that they are  
without sufficient enterprise to make an  
exhibition, and all this through the  
narrowness, the obtuseness and exag-  
gerated self-importance of a few who are  
for a time in temporary authority.

Several of the leading machinery  
manufacturers will do what they can to  
correct this impression by establishing  
ware rooms in Chicago, where a full line  
of their machinery will be shown in  
operation, thus those interested in this  
line will be able to see what our Ameri-  
can manufacturers have to offer in the  
way of improved machinery and appli-  
ances.

In our next issue we will give a full  
list of the display rooms and their loca-  
tion.



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### Circular of ELEVATORS AND CONVEYORS

FOR HANDLING

Clay, Tile, Etc.,

Adapting the

**CURVED SLAT,  
CONTINUOUS PAN,  
LINK BELTING and..  
SPECIAL CHAINS,**

Mailed upon application.

**LINK-BELT MACHINERY COMPANY,**  
CHICAGO, ILL.

**LINK-BELT ENGINEERING CO.,**  
Philadelphia and New York.

Halbert E. Paine,  
Ex-Commissioner of Patents.

Story B. Ladd.

### PATENTS AND PATENT CAUSES.

**Paine & Ladd,**

Attorneys at Law.

Loan and Trust B'd'g.

WASHINGTON, D. C.



# THE COLUMBIAN SPECIAL ....RE-PRESS,

Used throughout the world and indorsed by all users. Will repress 4,000 more brick per day than any other double die press. Capacity 20 to 25,000 Bricks per day.

Fifteen years experience on represses exclusively enables us to offer the Ne Plus Ultra of all presses,

## The Columbian ....Special,

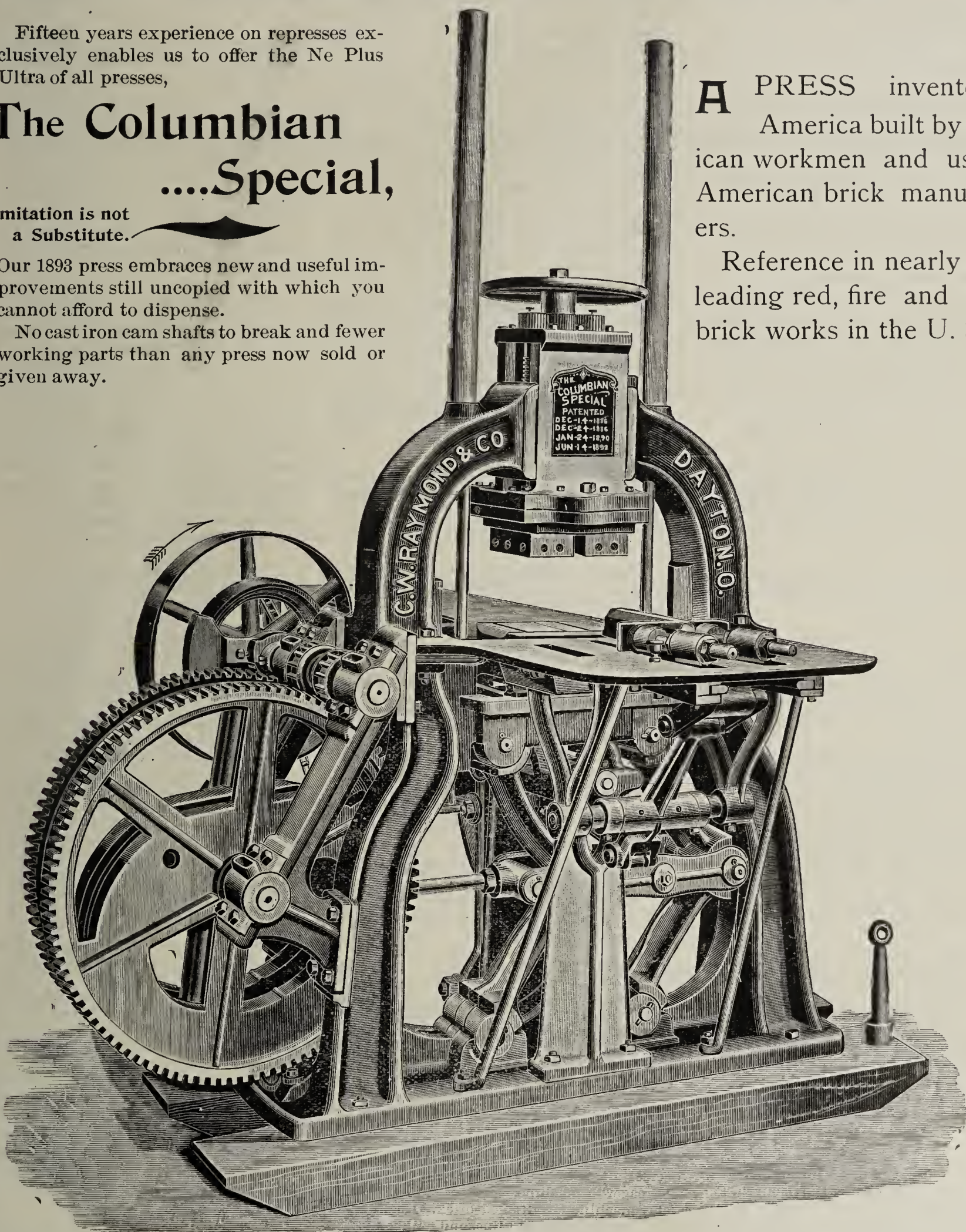
An Imitation is not  
a Substitute.

Our 1893 press embraces new and useful improvements still uncopied with which you cannot afford to dispense.

No cast iron cam shafts to break and fewer working parts than any press now sold or given away.

A PRESS invented in America built by American workmen and used by American brick manufacturers.

Reference in nearly all the leading red, fire and paving brick works in the U. S.



C. W. RAYMOND & CO.,  
DAYTON, OHIO.

(Mention the Clay-Worker.)



## EDITORIAL NOTES and CLIPPINGS.

R. Hunter will establish brickworks at Decatur, Ala.

A brick plant will be established at West Hamburg, Pa.

C. J. Monroe is negotiating to erect a brick plant at Marlon, Ohio.

The Bakersville (N. J.) Brick and Tile Works will resume operations.

The Highland (Ill.) Brick Co. has been incorporated. Capital \$6,000.

A new pottery will be established at Kennett Square, Pa., at an early date.

Omega Brick and Tile Co., Omega, Ohio, has been incorporated. Capital \$5,000.

Peter Stipp, contractor, Scranton, Pa., wants to purchase 700,000 first-class paving brick.

The Frost Engine Co., Galesburgh, Ill., have a fine, large cut of their dry pan on page 539.

Peterson Bros., write that they will probably go into the brick business at Estherville, Ia.

Ostrum Bros., Algona, Ia., want to purchase a second-hand clay crusher or disintegrator.

W. A. Heaply will erect brickworks at Lee, Mass., for the manufacture of brick and tile.

The Virginia Vitriified Brick Co., at Chilhowie, Va., will increase the capacity of their plant.

A company has been organized at Table Rock, Neb., for the manufacture of brick and tile.

The Central Sewer Pipe Co., Toronto, Ohio, has been incorporated with a capital stock of \$50,000.

Manufacturers of brick by the dry clay process, will find an ad. on page 528 that will interest them.

The Dalton (Ga.) Brick Co. has been reorganized and will manufacture paving brick as well as building brick.

A. T. Barnes, Neola, Ia., writes that he will establish a brick and tile factory, and desires catalogues of machinery, etc.

The Clifton Brick Works, New Cumberland, W. Va., will resume operations under the new firm name of Smith, Porter & Co.

W. F. Graham has severed his connection with the Sag Harbor Brick Co., and will start a brick plant at Southampton, L. I.

The Lovett Pressed Brick Works will be removed from Bissell Station, Pa., to Pittsburg, on account of their clay being exhausted.

The partnership of Klein Bros., brick manufacturers at Baltimore, Md., has been dissolved and Jacob Klein will continue the business.

The Elmwood, (Ill.) Brick and Tile Co. has been incorporated by W. E. Phelps, P. P. Beesob and Chas. F. Graham, with a capital stock of \$30,000.

On the 28th ult., the dry kiln and sheds at John D. Leedy's brickyard, Harrisburgh, Pa., were burned to the ground. Loss \$800. Partly covered by insurance.

The brick works of R. H. Montgomery, Lewistown, Pa., were damaged April 5th by fire, which started in the lumber yard and saw mill connected with the place.

Wm. Clayton, Practical Chemist, Trenton, N. J., makes an announcement of interest to those having undeveloped clay lands on page 519.

The Fishkill Brick Co., Dutchess Junction, N. Y., has been incorporated by M. A. Fowler, C. A. Fowler and Squire Vanburen, with a capital stock of \$5,000.

There will be considerable paving done in Des Moines, Ia., in the near future, and the citizens, at a mass meeting recently, declared themselves in favor of brick.

S. Linderoth, 52nd and Wallace Sts., Chicago, Ill., writes us that he is on the market for a pug mill, stiff mud brick machine and re-press, and desires to receive catalogues, etc.

Elgin & Richmond, of Hannibal, Mo., have purchased land of Thos. Gill, Perry, Mo., and will erect brickworks and commence the manufacture of bricks at an early date.

Richard Thomas & Co., Milwaukee, Wis., have purchased two and one-half acres of land in the Menominee Valley, and will erect a plant for making patent cement brick.

The entire plant of the Kulage Steam Brick Works, Linton and Blair Aves., St. Louis, Mo., was totally destroyed by fire on the 5th inst. The loss is estimated at \$50,000. Fully insured.

The Sieberling & Shrader Brick Co., Gas City, Ind., will build an addition to their plant, and put in two more large brick machines, enabling them to increase their daily capacity to 120,000 brick.

Messrs. Colbert & Heafey have purchased land and will erect a large factory, and equip it with modern machinery, for the manufacture of common and pressed brick and tile, at Barkersville, Mass.

American Enameled Brick and Tile Co., New York, N. Y., has been incorporated with a capital stock of \$20,000. Incorporators are E. Frank and W. A. Pfingsthorn of Brooklyn, and B. Jacquart of Philadelphia.

The Enterprise Brick and Pottery Co., of North Galveston, Tex., has been incorporated with a capital stock of \$20,000. The directors are S. M. Houghton and H. V. Dougan, Minneapolis, Minn., and Chester W. Delvey.

American Consolidated Mica Co., Minneapolis, Minn., has been incorporated. Among the several articles of manufacture will be brick. Jas. and Thos. Bishop, E. F. Dodson and C. F. Brown of Minneapolis, and J. B. Dickover of Hot Springs, Ark., are interested.

The Fairchance (Pa.) Brick and Lumber Co., successors to Fairchance Fire Brick Co., has removed the plant about a mile from Fairchance, where they will commence the manufacture of brick, with a daily capacity of 12,000.

The brick factory at Elwood, Ind., recently burned, will be rebuilt at once. A company has been incorporated with Lou Heffner, Cyrus Scotton, Line Harmon and Frank Legg as stockholders. The factory will have a daily capacity of 35,000.

Mr. D. W. Davis, East Stroudsburg, Pa., has organized a company at that place to manufacture vitrified, common, re-press and ornamental brick. E. C. Huhn has been elected superintendent, and will lay out plant and select all machinery, etc. He will put in a "Creager" machine, and later on a stiff clay machine for vitrified brick. He is undecided as to dryer and kilns, and will be pleased to hear from all having them for sale.

R. B. Morrison & Co. report a lively demand for their unrivalled up draft kiln for burning building brick of every grade in large quantities.

ties. They are putting in kilns at Selma, Ala., Shreveport, La., Baltimore, Md., Connellsville, Pa. and Coaldale, Ala. Next month they will begin the erection of kilns for South River Brick Co., Atlanta, Ga.; also at Binghamton, N. Y., Beaumont, Texas, and other points. Will also put in kilns for Ricardo Calvo, Bogota, Republic of Columbia, South America. *Keep your eye on Rome; all roads lead that way.*

A. G. Warriar, of Kreischerville, Staten Island, N. Y., writes that he has organized a company to manufacture a fire proof slab (substitute for lath and mortar), 4 by 18 inches by  $\frac{5}{8}$  or  $\frac{3}{4}$  inches thick; also a hollow block or tile for partitions. The mixture used consists of Plaster Paris, Asbestos, Cement and a fibre with water. He requires a crusher and grinder for reducing asbestos, a dry mixer for intimately mixing plaster, asbestos, cement and fibre before wetting and moulding; a dry kiln with cars, etc., for drying out finished slab and hollow tile; a machine in which above mixture can be used for turning out a hollow block 4 by 18-inches by  $3\frac{1}{2}$  inches, and would like to hear from any of our readers who can furnish same.

We are indebted to A. M. Strusholm, Perth Amboy, N. J., for a sample of clay and a burned brick, sent us to evidence the character of the clay near New Brunswick, N. J. The brick is very heavy and seems to be thoroughly vitrified. Its size leads us to think that the shrinkage is excessive. Mr. S. writes that there is a very large tract of the clay exceptionally well located with regard shipping facilities, both by rail and water, and that the clay is of a character suitable for the manufacture either by the stiff or dry clay process. He will be pleased to correspond with any one looking for a desirable location for the establishment of either a paving or press brick factory.

A visit to the works of C. & A. Potts & Co., of this city, found them running full-handed. As usual, they have all the work they can take care of. This firm manufacture nothing but clayworking machinery, of which they have a complete line. They report having shipped five complete plants in the last month, including the Horizontal Stock Brick Machine, Disintegrators, Mould Sanders, Elevators, Trucks and Barrows. They now have orders on their books for another complete plant for New Orleans, this being the third one this year; also one for Philadelphia. The demand for their Disintegrator continues as large as ever. They shipped six of their No. 4 "A" Machines in two weeks, besides a number of the smaller ones. They have facilities for making one Mould Sander per day, and this has been taxed to full limit since the 1st of February, at which time they had a large stock on hand, now they are behind with their orders.

In a recent letter to the Main Belting Co., Palmer Cummings, Mgr. of the great Cummings Cement Works, Buffalo, N. Y., says of the "Leviathan": "I wish to say that we have not, as yet, used the 36-inch belt, but instead have been using the 30-inch belt that you furnished us. We did not expect that the 30-inch belt would do the business, as it was taking the place of a 36-inch double leather belt, and we bought the 30-inch to put on top of the 36-inch leather. Finally the 36-inch leather gave out, and as I said before, we kept right on with the 30-inch 'Leviathan,' and the beauty of it is, we have no use for the idler, the 30-inch running comparatively slack, and transmitting nearly 500 horse power. I am telling you all this to let you know what your belts are doing. If you have occasion and desire, you can refer to us. A 30-inch 8 ply 'Leviathan' doing the work of a 36-inch Double Leather Belt, and that too, without an idler. Pretty good, eh?"



# Special Notice.

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Imitation is the Best Acknowledgement of Excellence.

---

**T**HE old reliable Iron Clad Dryer built under the J. J. and M. C. Curran U. S. Letters Patent, is being infringed, to restrain which and for the purpose of collecting damages, we have commenced suits in the U. S. Courts against—

Harmes & Schlake Brick Co., Chicago, Ill.

Chase Brick Co., Milwaukee, Wis.

Moberly Brick & Tile Co., Moberly, Mo.

Standard Dry Kiln Co., Louisville, Ky.

To prospective purchasers of Brick Dryers, this is a friendly warning that we propose to protect our patents and enforce our lawful rights regardless of expense. Parties having purchased infringing dryers are advised to secure good and sufficient bonds from the builders to cover cost of damages growing out of law suits that will be promptly brought in every instance as soon as we learn of the infringement. Do not be misled or intimidated by other builders—buy the best and cheapest. By actual use, the Iron Clad has demonstrated that for the amount and good quality of work our Dryer does, it is the cheapest Dryer in the market.

*Don't buy into a law suit—we own the foundation patents and if you buy our Dryer, we charge you nothing for the patent right. We can sell you a Dryer cheaper than any one else. Send for our Prices and convince yourself.*

Sae ads. on pages 480–513.





# HOW IS THIS FOR A STARTER.

---

## The Galesburg Paving Brick Co.

---

Galesburg, Ill., April 6th, 1893.

W. R. Cunningham, Esq., Sec'y,  
The Wallace Mfg. Co.,  
Frankfort, Ind.

Dear Sir: Herewith we hand you order for your machinery a duplicate outfit of Machines already furnished us by your Company, terms and conditions the same as covered by first contract. We beg to say that although we have not yet run ten hours consecutively—having started to make brick last Tuesday—and then we made at the rate of 60 M 10 hours and each day improving until this P. M. we made brick at the rate of 85 M 10 hours. These facts together with the quality of the brick made determine for us that your Big Wonder Machine covers nearer the points of a perfect brick machine than any we know of and hence this duplicate order. Wishing you success, we are,

Very truly yours,  
THE GALESBURG PAVING BRICK CO.,  
A. E. WILLIAMS, Gen'l Manager.

---

Paving Brick Companies desiring a machine and Automatic Table that will produce both quantity and quality, should not fail to look into the merits of the Big Wonder Machine.

Manufactured by 

## The Wallace Mfg. Co.,

FRANKFORT, IND.

[See ad. on page 567.]



# PLANT'S PATENT DOWN DRAFT KILN.

## Yard Rights For Sale.

.....

Can be seen in operation at **TIFFANY PRESSED BRICK CO.'S WORKS, Momence, Ill.**

Down and Up and Down Draft kilns can be remodelled.

For further particulars. Address

## Tiffany Pressed Brick Co.,

403 Chamber of Commerce Building, CHICAGO.

...Or, S. J. PLANT, Superintendent, MOMENCE, ILL.

## FOR SALE, WANTED, ETC.

**Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.**

**FOR SALE.** A Tallcot (Croton) brick machine, in good order. Address, **N. Care Clay-Worker.**  
4. 4. d.

**FOR SALE.** One Wm. Fisher (of Pittsburgh) 7 ft. Wet Pan, practically as good as new. Must be sold. **G. O. ROBINSON,**  
4. 1. d. **Bellaire, Ohio.**

**FOR SALE OR RENT.** Fire brick works located at Canal Dover, O., suitable to manufacture any kind of clay products. **C. S. BARRETT,**  
4. 2. d. **Cleveland, Ohio.**

**WANTED.** Situation by a man who has had 17 years (American) experience in the manufacture of Art and Floor Tiles. Address, **WM. DOUGLAS,**  
4. 1. c. **Perth Amboy, N. J.**

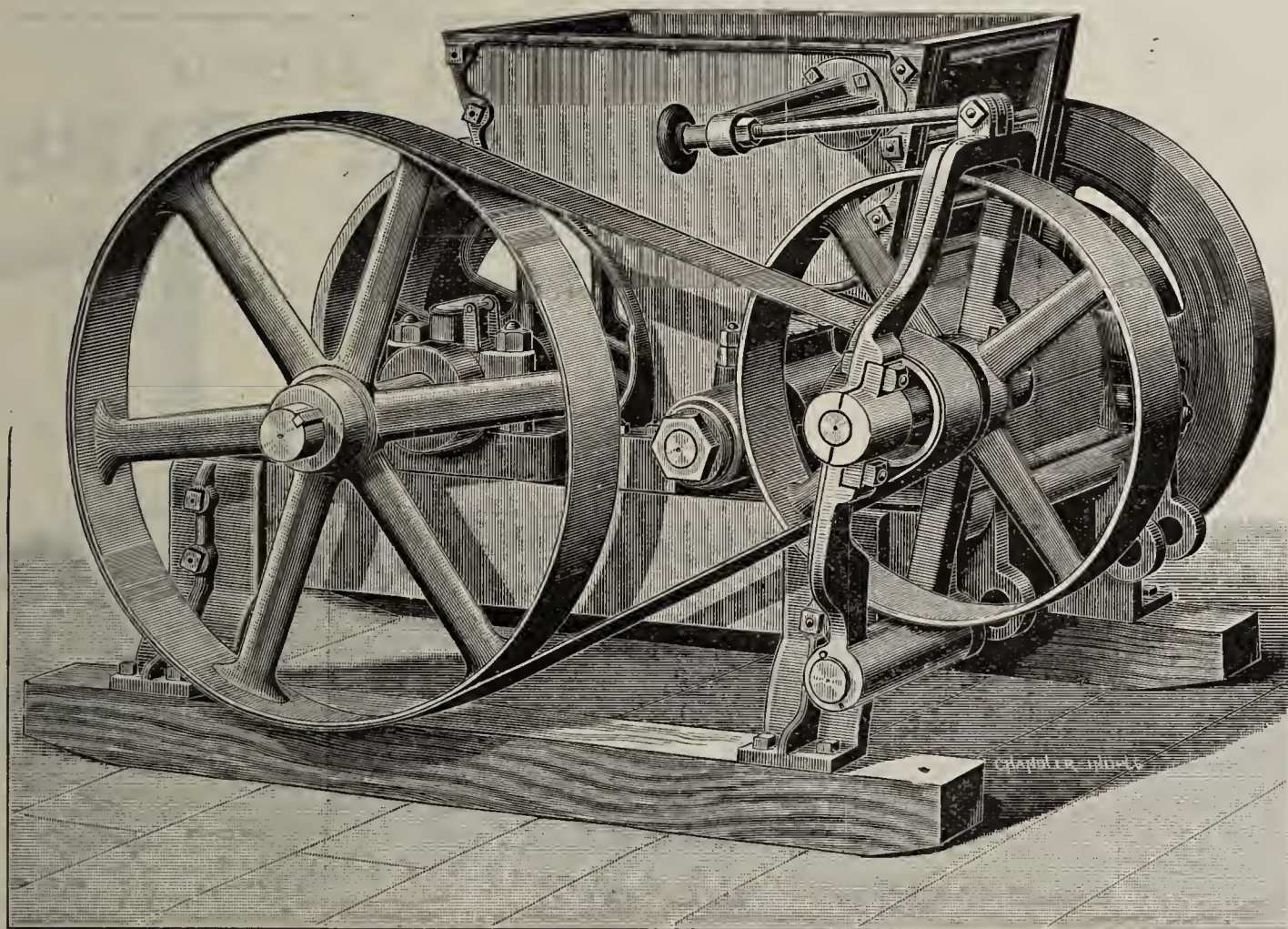
**FOR SALE.** Martin Soft Mud Machine and Pug Mill, Creager Disintegrator. 20,000 six brick Pallets in good order. Address, **WALTER D. HEDDEN,**  
4. 1. d. **New Albany, Ind.**

## J. A. SMITH, NEW CUMBERLAND, W. VA.,

MINER AND SHIPPER OF

# WEST VIRGINIA CLAYS.

In bulk or barrel, ground or unground, flake or dust. Correspondence solicited with Manufacturers desiring color and form in high grade building bricks.



## THE POTTS DISINTEGRATORS

Made in 12 sizes, having capacity from 25,000 to 125,000 Bricks per day.

They are

**STRONG,  
SIMPLE and...  
DURABLE,**

Having **CHILLED ROLLS**

Made to drive with one or two belts as desired.

**WE** manufacture a complete line of Disintegrators and Pug Mills. All machinery is well and strongly built and will do all we claim for it. Every machine guaranteed and shipped on trial. Write for prices.

**C. & A. POTTS & CO.,  
INDIANAPOLIS, IND.**

[Mention the Clayworker.]



**FOR SALE.** One Big Wonder Brick Machine, one Little Wonder Brick Machine, one Wallace two roll crusher, all in good order. Address, THOMAS D. CATLIN, Ottawa, Ill.  
4. 1. c.

**FOR SALE.** One Boyd Brick Press, the best machine for dry pressed brick. In good order. The makers will give same guarantee as on new machine. Address, THOMAS D. CATLIN, Ottawa, Ill.  
4. 1. c.

**WANTED.** Position as superintendent or burner of paving or building brick or sewer pipe plant, clamp or down draft kilns, either red clay or fire clay. Best of reference. Address Box 40, Care Clay-Worker.  
4. 1. c.

**FOR SALE.** One No. 6 Brewer Machine, Automatic Cut-off Crusher and a C. W. Raymond Repress, all new. Our clay not suitable for making paving brick. Address, C. CLIPPERT & SON, Detroit, Mich.  
4. 1. 1p.

**EXPERIENCED** fire brick maker, competent to erect complete plant, having thorough knowledge of clays and their development, desires position. Address, A. L. F., Care Clay-Worker.  
4. 1. c.

**WANTED.** A situation as superintendent or head burner. Have had several years experience in both stiff clay and dry press processes and understand the work thoroughly. Good reference as to habits, etc., etc., address, D. C., Care Clay-Worker.  
4. 1. T.

**WANTED.** Thoroughly reliable, experienced burner of paving brick. Round down-draft kilns. Will pay \$150 per month to satisfactory party. Give previous position, references, to save time. Address, B. C. D., Care Clay-Worker.  
4. 3. d.

**WANTED.** By an American, a position as manager, or foreman of brickyard. Have had a life's experience at making and burning common brick, both white and red. Also several years' experience selling in Eastern cities. Can give references. Address, Box 248, Gardner, Mass.  
4. 1. c. m.

**FOR SALE AT A SACRIFICE.** One Sword & Sons Brick Machine, of their latest pattern—good as new, but little used. Reason for selling, not adapted to the clay. Also new duplicates which cost \$33.60. Price for above \$250. Apply to JOHN S. HORLBECK, Charlestown, S. C.  
4. 4. c.

**FOR SALE.** Brick plant with latest improved machinery, dry house, sheds, kilns, etc., in complete running order and in operation now. Abundant clay. Reason for selling, death of partner, and the other member is unable to give business his time. Address, M. GOLDSMITH, Mobile, Ala.  
4. 1. d.

**FOR SALE.** A brickyard containing 17 acres of land. Dry by the pallet system, 200,000. A Henry Martiu Brick Machine, patent Elevator, and the best Continuous Brick Kiln in the world. Good clay for brick and tiling. Sold 3,000,000 brick the past year. There is always a good demand for brick, there being no stone quarry within 150 miles. Reason for selling, too much other business, my patent kiln taking a great deal of my attention. Address, CARL F. KAUL, Madison, Neb.  
4. 12. c.

**PUBLIC SALE.** The plant of the Muscatine Terra Cotta Lumber Co., with all machinery, lands, rights, etc., will be offered at public sale, and sold to the highest bidder on Thursday, June 1st, '93, at 2 o'clock p. m. Sale to take place at the works, located one and one-half miles east of Muscatine, Iowa, on the C. R. I. & P. R'y. The works are in good repair, with power and machinery for making 25,000 brick and 14,000 3-in. tile daily. For further information, address R. C. SCHENCK, Muscatine, Iowa.  
4. 1. d.

**WANTED.** A gentleman with \$10,000 to \$15,000 capital, and the ability to take the business management of an enameled brick manufactory which is now in successful operation, but owing to lack of capital cannot supply the demand for its product, which is a genuine enamel and not a glaze. A splendid opportunity for a good man. For particulars, address LAKESIDE, Care Clay-Worker.  
4. 1. t.

**WANTED.** Position as superintendent and general manager of first-class brick works. Either dry press or mud process, or both. Understand all about construction of yard, kilns and management of machinery and men. Been making all kinds of ornamental and front brick. Have held present situation for the past four years, and can still retain it, but desire to change location on account of health of family. Address, J. H., Care Clay-Worker,  
4. 1. d.

**FOR SALE.** One four-mold Improved Simpson Brick Press. One Williams' Cyclone Clay Pulverizer. All shafting and belting, Engine and Boiler. Press is new—have made with it only 200 thousand brick. Price for all \$4,000. Reason for selling, a change of system. Apply to W. CIZEK & Co., Manitowoc, Wis.  
4. 1. c.

**FOR SALE.** One slide-valve engine, 14x24, complete; two boilers 48 inches in diameter by 20 feet long, 12 6-inch tubes in each; mud and steam drums, fire fronts, breeching, sheet iron smoke stack, safety valve, steam gauge and steam pipe connections; one doctor pump suitable to supply above boilers. Also three Chaser Clay Mills, made by Turner, Vaughn & Taylor, of Cuyahoga Falls, Ohio, with all necessary gearing and shafting. Also extra heavy mill with revolving bottom, similar to wet pan, but much heavier, for grinding broken brick, sewer pipe and other similar material. The above machinery is in good order, and is to be sold on account of removal. It can be seen running at factory of Blackmer & Post Pipe Co., Ewing Ave., and Pacific R. R., St. Louis. Address, BLACKMER & POST PIPE CO., St. Louis, Mo.  
3. 1. f. d.

## JUST PUBLISHED.

## Tables of Analyses of Clays, Etc.

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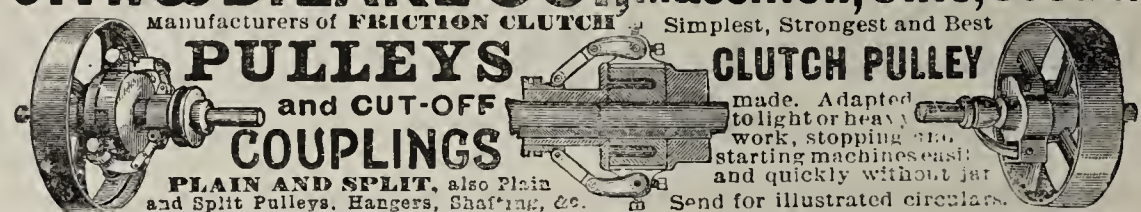
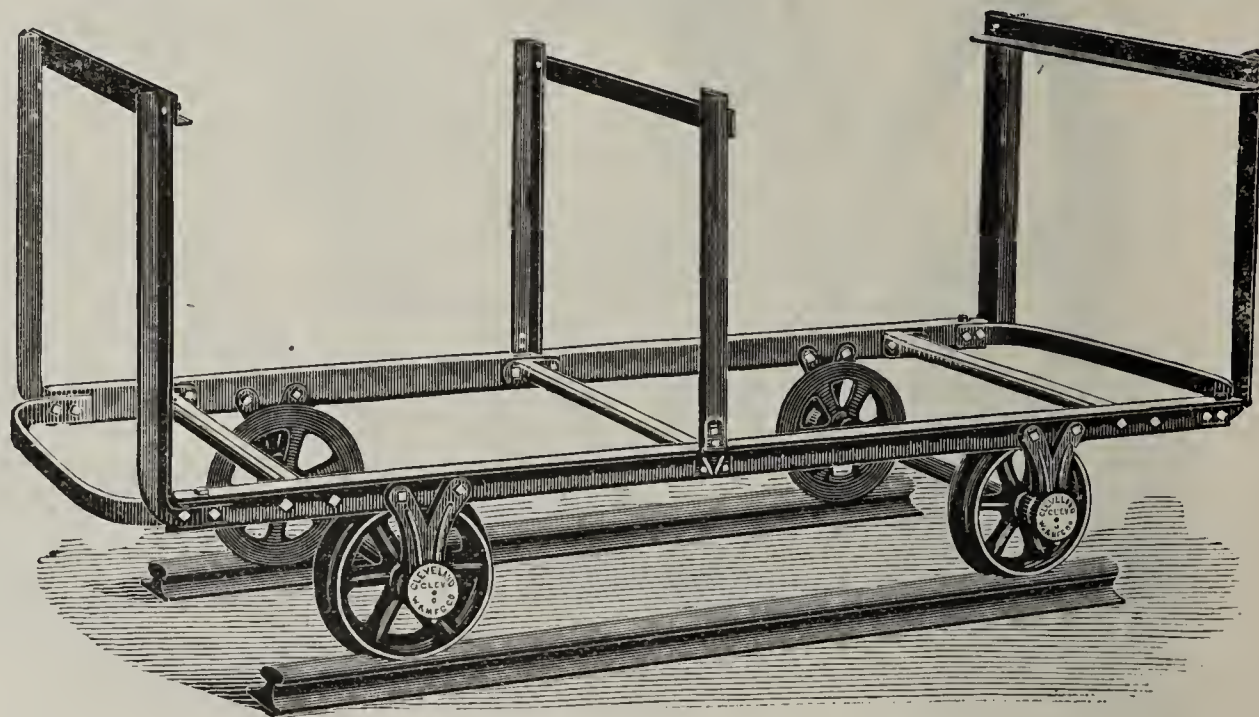
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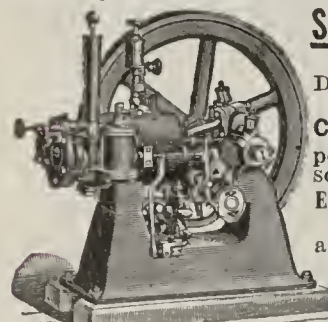
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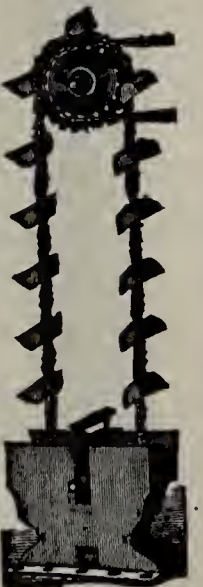
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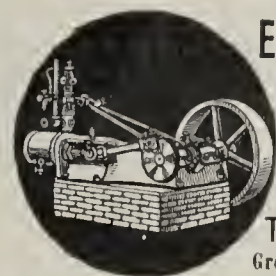




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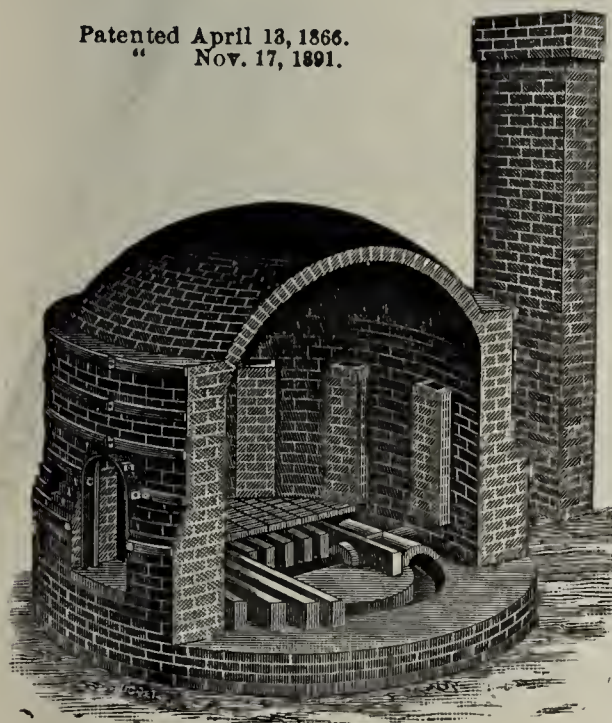
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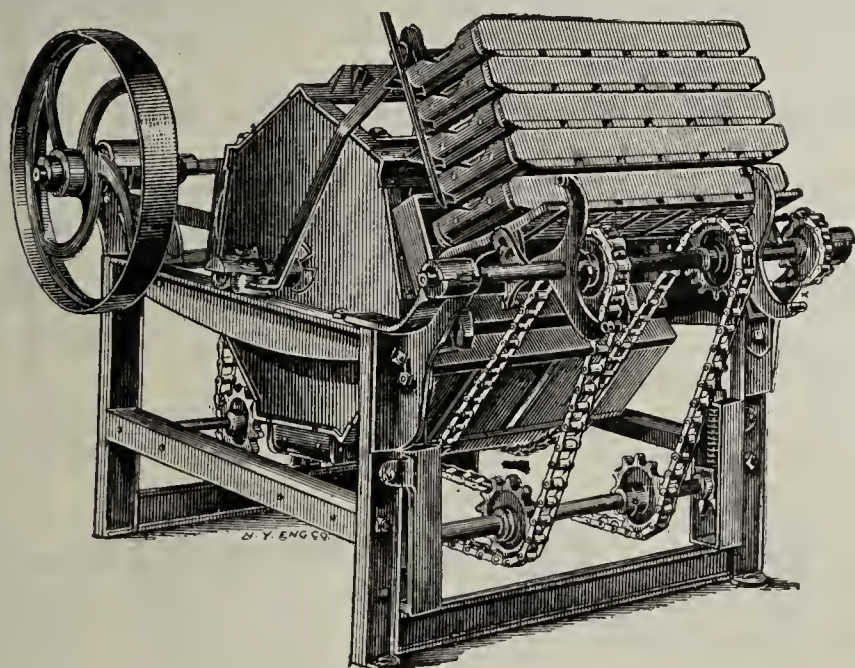
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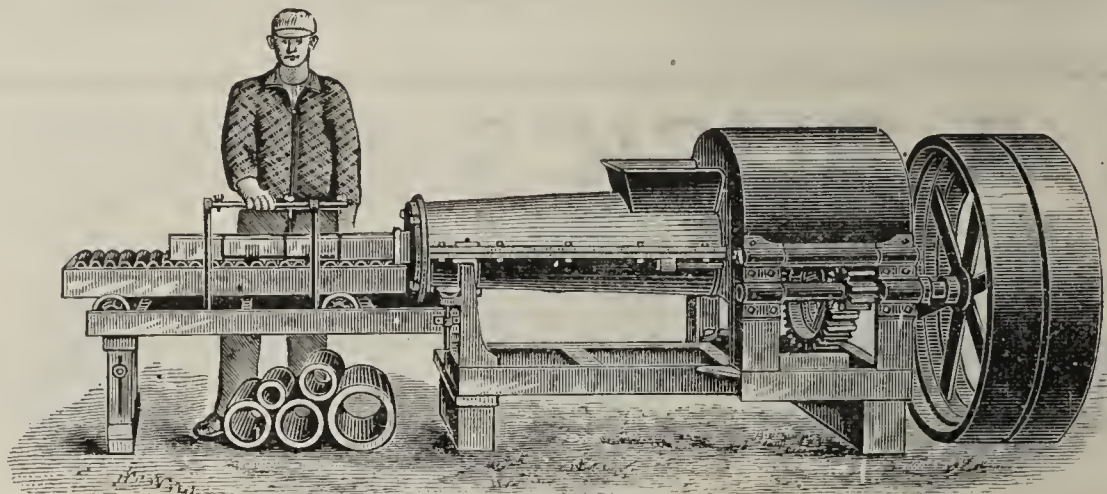
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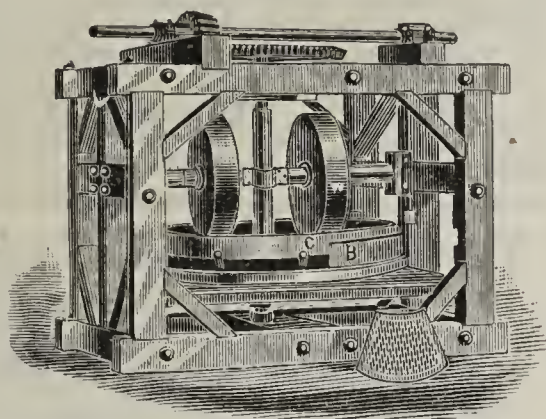
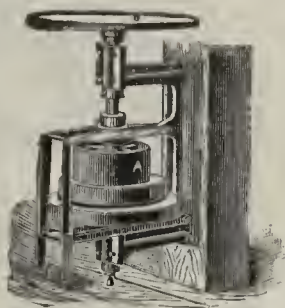
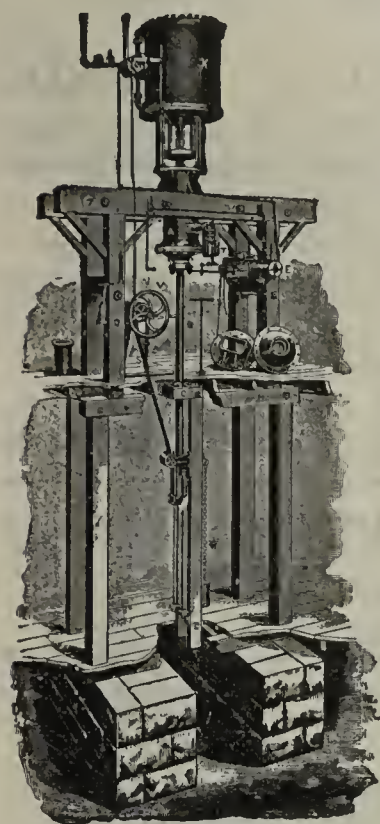


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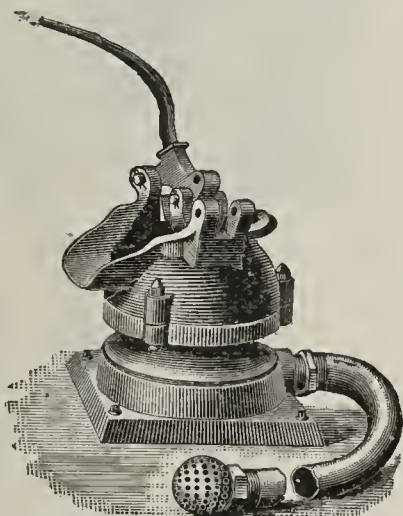
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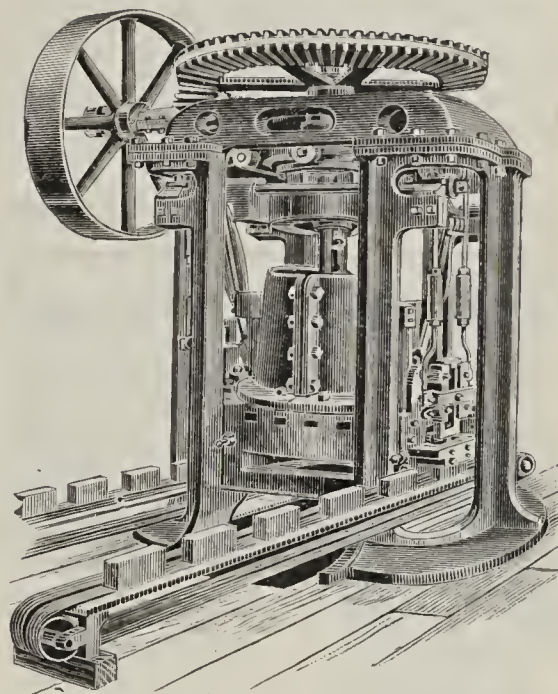
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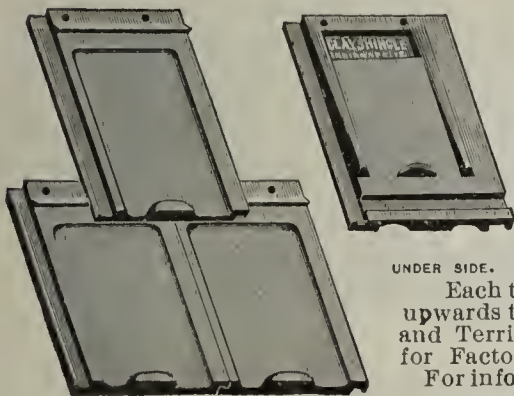
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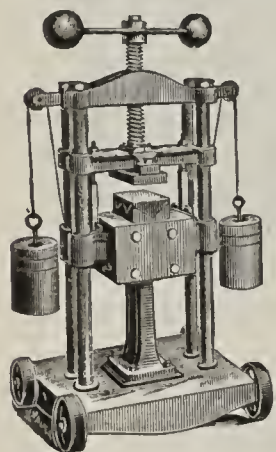


## ALBANY SLIP CLAY.

We have a large bank of a superior quality of SLIP CLAY. Price very low by barrel or carload. Best of reference as to quality. Address

JACKSON BROS., Albany, N. Y.  
N. Y. State Drain Tile and Pipe Works

## The Latest



CHASE'S

Improved

## BRICK PRESS

FOR MAKING PLAIN  
AND ORNAMENTAL BRICK.

Write for particulars.

BRICK MADE FROM CLAY RIGHT FROM BANK

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## AUTOMATIC CLAY CONVEYOR.

A New System, Very Practicable and Economical.

Illustrated Catalogue sent on application.

Lafayette Freight Elevator Co.,  
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Kiln Building  
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MANUFACTURED AND KEPT IN STOCK BY

Southern Fire Brick Works,

Correspondence solicited. RICHMOND, VA.



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## Tile and Brick Yards.

For handling Coal, Sand, Clay, Grain, Tan-Bark, Cinders, Ores, Sawdust, Lime, Cement, Shavings, Cotton-Seed, etc.

IOWA PIPE AND TILE CO.,  
Des Moines, Iowa, Sept. 24. 1887.

Borden, Selleck & Co., Chicago. GENTLEMEN—We have used the Harrison Conveyor for the past two years. It takes about 90 tons of clay per day from our dry pan and distributes it through our cellar. Gives good satisfaction. Yours Truly, IOWA PIPE & TILE CO.

BORDEN, SELLECK & CO., *Mfrs. and Sole Agents,*

Send for illustrated catalogue.

48 & 50 Lake Street, CHICAGO

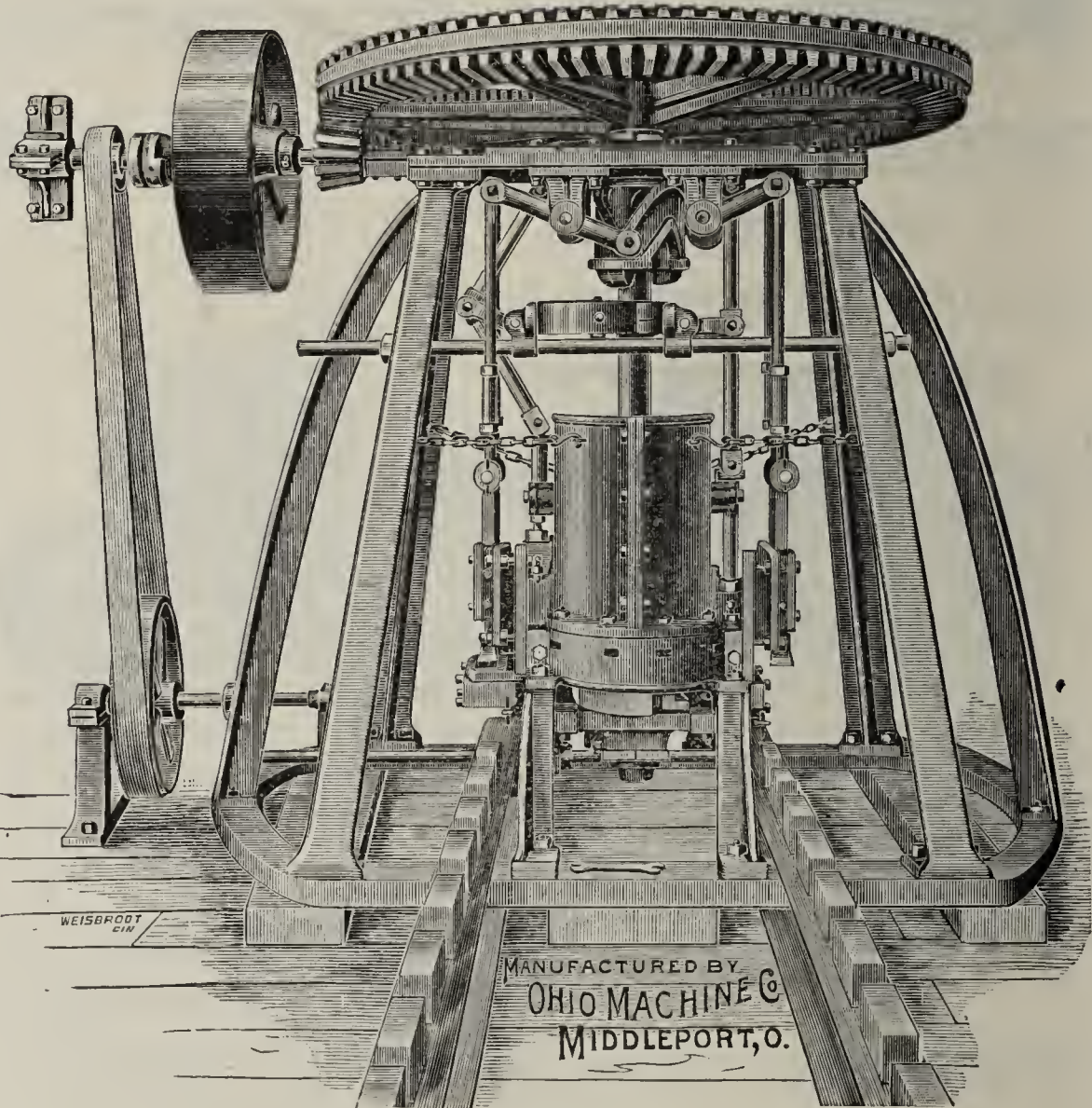
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MANUFACTURED BY

## OHIO MACHINE CO.,

MIDDLEPORT, OHIO.

Under the very LATEST IMPROVED GRANT-MURRAY PATENT.



MANUFACTURED BY  
OHIO MACHINE CO.  
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This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with

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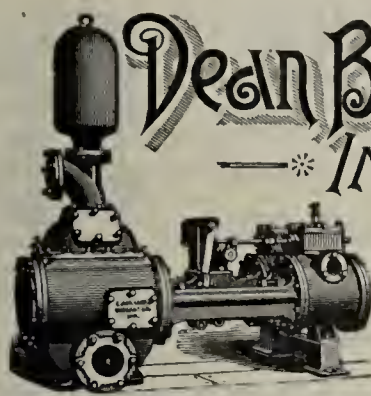
MANUFACTURERS.

We manufacture the Grant & Murray Patent Re-press  
Brick Machine, pressing 4 brick each revolution  
and 40,000 per 10 hour day.

Middleport, Ohio.

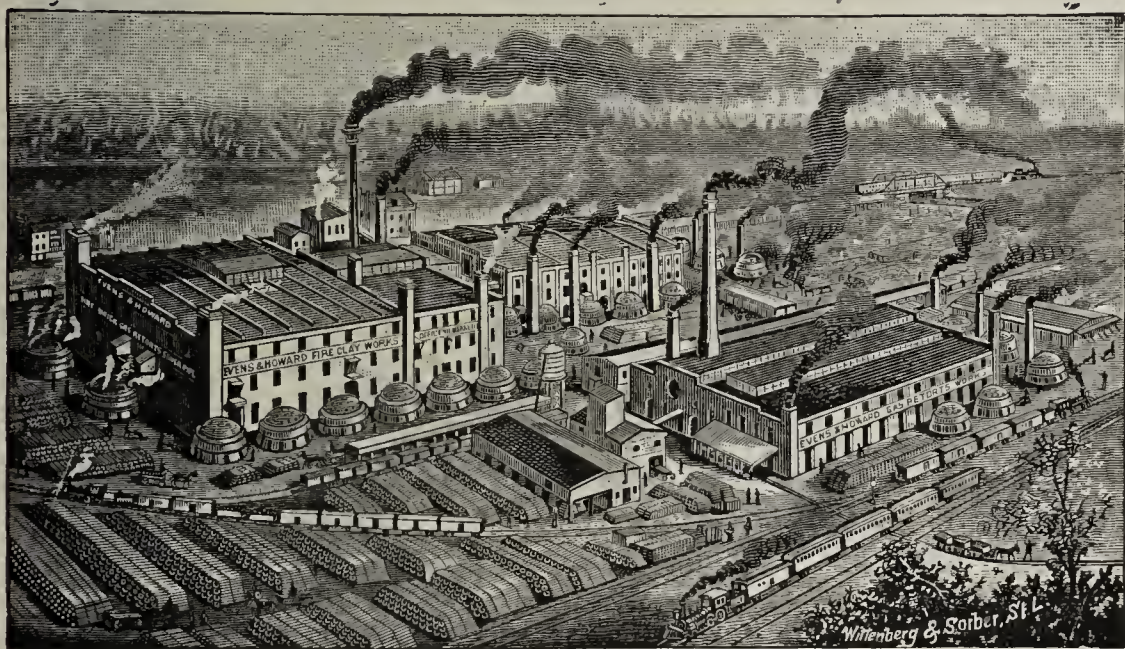


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 SINGLE & DUPLEX PUMPS.  
 HORIZONTAL AND VERTICAL PUMPS.  
 Best Design & Workmanship.  
 PRICES REDUCED Send for CATALOGUE.



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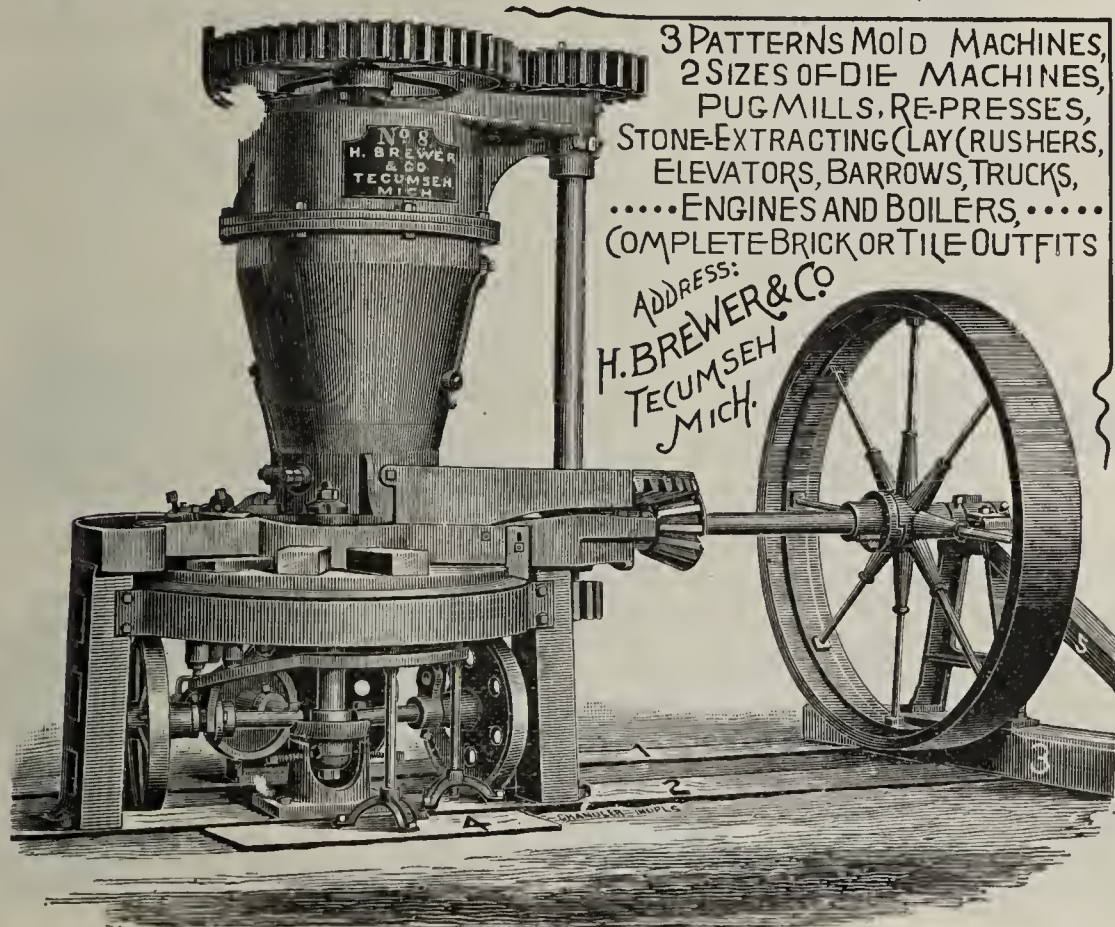
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Daily Output, 200 Tons.

Office: 916 Market St.      Factories: { Howard's Station, Mo. Pac.  
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3 PATTERNS MOLD MACHINES,  
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 PUG MILLS, RE-PRESSES,  
 STONE-EXTRACTING CLAY RUSHERS,  
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 SPECIAL ATTENTION GIVEN TO  
**HALF TONE PROCESS**

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**STEELE'S IMPROVED  
 Brick Truck & Portable Hack**



The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling an time in drying bricks. Can be used in any yard not too steep.

**Extracts from Letters to J. C. Steele.**

J. C. STEELE, ESQ.,      May 6, 1892.  
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DEAR SIR—We have now been using your Hacking Trucks for the last month and we cannot speak too highly of them. They are perfect, and the greatest labor-saving machine ever put on a brick-yard. With one man, and one of your Trucks, we take from the machine and put on the yard 25,000 bricks already hacked and ready to cover in case of rain. This is a saving of three men over the old style of using wheelbarrows. One man will also keep two setters and two tossers going with one truck. But the main thing is that the bricks do not have to be handled so much and they retain their shape so much better. We will gladly answer any enquiries concerning your Trucks who may refer to us. Respectfully Yours,  
 Florence, S. C.      COFFIN & PERRY.

MR. J. C. STEELE,  
 STATESVILLE, N. C.

DEAR SIR—I agree with your many subscribing testimonials as to the merits of your Improved Brick Trucks. They are indispensable helpers on a brickyard. Yours Truly,  
 Monroe, N. C.      W. A. WATSON.

For further information address

**J. C. STEELE, Patentee,  
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## Steubenville Foundry & Machine Works,

Established in 1820.

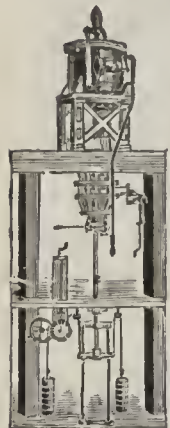
—Manufacturers of—

### STEAM SEWER PIPE PRESSES

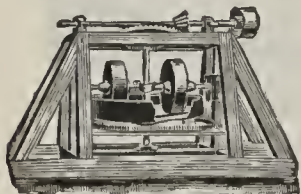
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Making From 2 to 30-Inch  
Pipe Inclusive.

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Clay Grinding and Tempering  
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FEED  
SCREWS  
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STEAM  
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Every Variety of Iron and Brass Castings  
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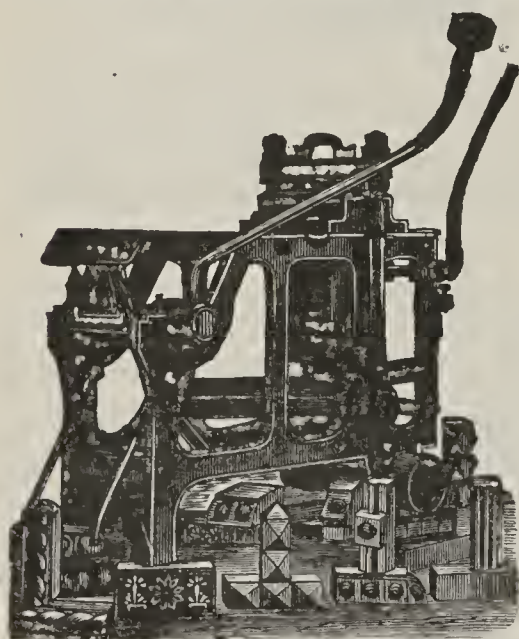
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**JAS. MEANS & CO.,**  
Steubenville, Ohio.

**N. M. KUENY,**

MANUFACTURER OF

## Brick Presses



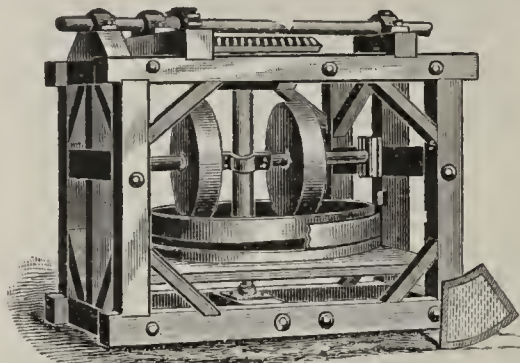
Cor. 21st and Point Breeze Avenue,  
PHILADELPHIA.

Mention the Clay-Worker

When writing to Advertisers

Mention the Clay-Worker

## EAGLE IRON WORKS, DES MOINES, IOWA.



FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
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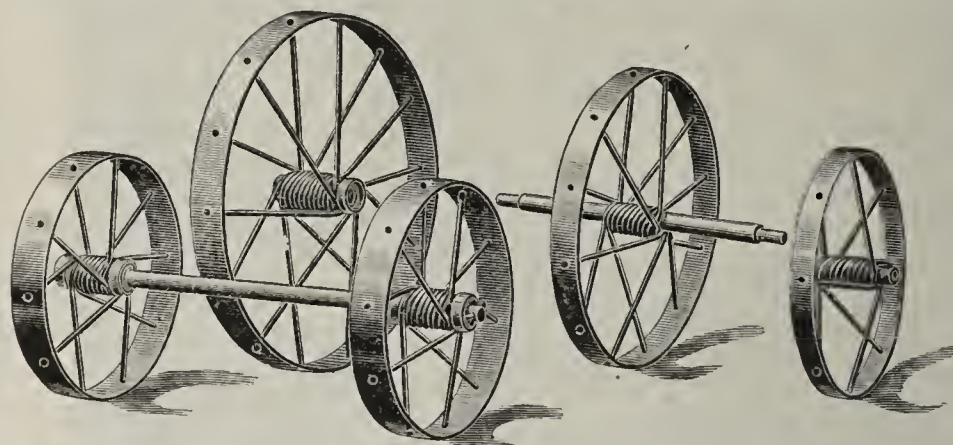
Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,  
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Headquarters for Brickyard Supplies in 1893 will be at the  
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**New London, Ohio,**  
**ADDRESS. D. J. C. Arnold.**

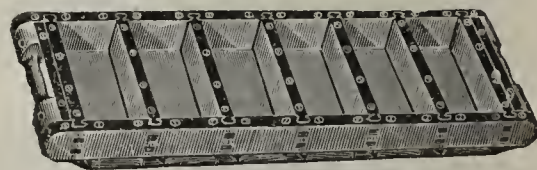
Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

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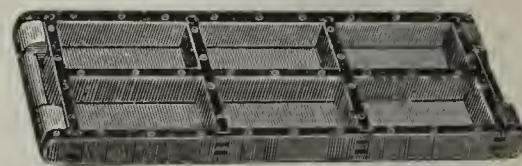


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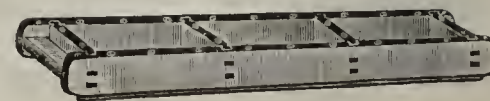
B. MACHINE MOULD.



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C B. HAND MOULD.



Some odd sizes at about  
half price. Send for list.



# THE AERATED FUEL COMPANY'S SYSTEM

Gives the best oil fire. 200 plants in use. Adopted by large concerns on Terra Cotta, Brick, Pottery and Cement Kilns. Send for Catalogue to Hall Steam Pump Co, Pittsburgh, Pa.  
GILBERT & BARKER MFG. CO., Gen'l Agents for U. S., Springfield, Mass

## The J. R. Armstrong System

....OF....

# Burning Crude Petroleum.

The secret of burning oil successfully, lies in atomizing it and furnishing sufficient air at the right point to consume all the gases generated. The setting and equipping is therefore as important as the burner or the boiler.

### REFERENCES:

We cheerfully refer by permission to the following plants who are now using our burners to good advantage:

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Delothe Brick & Tile Co., Nappanee, Ind.  
F. E. Dickinson Brick Co., Walcottville, Ind.  
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We are prepared to equip plants of any character. Our burners have demonstrated their superiority over all others. Send for Circular telling of the ADVANTAGES OF OIL as a fuel.

J. R. ARMSTRONG CO.,  
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# EAGLE BRICK MACHINE.

Steam and Horsepower.

THE BEST MACHINE IN THE MARKET.

The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

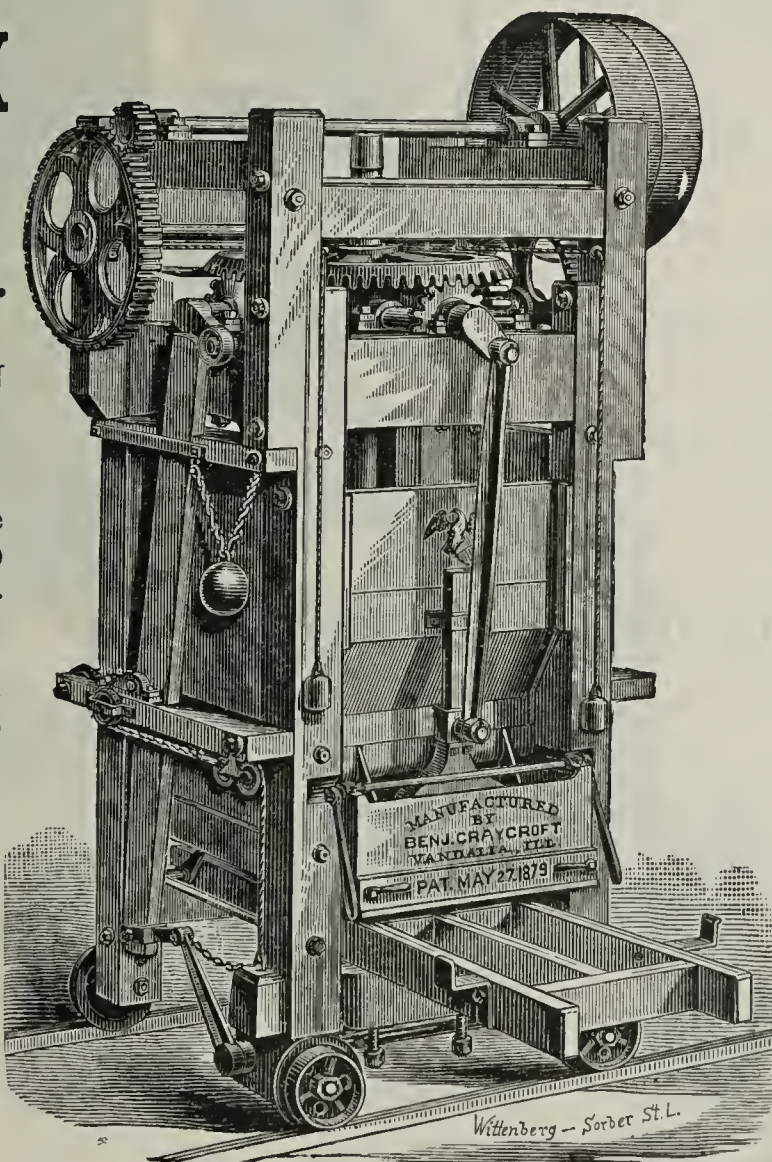
Send for Circular.

**BENJ. CRAYCROFT**

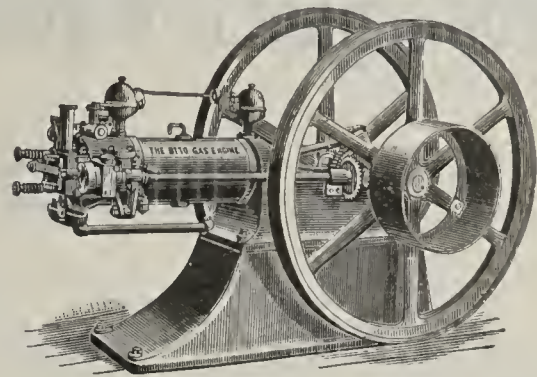
Manufacturer,

**Vandalia, Ills.**

C. J. CRAYCROFT, Fresno City, Cal., Gen'l Agent for Pacific Coast.



OVER 35,000 SOLD.



## Otto Gasoline Engines.

Cheapest Power for the Trade.

NO ENGINEER. NO STEAM.  
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Starts at any time at once.

Costs only while running.

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Invites attention to a few facts.

1st. It is the shortest and quickest line between Indianapolis and St. Louis and runs four fast express trains each way in addition to local accommodation trains.

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8th. For the above and other good reasons the United States Government has chosen the Vandalia Line for its Fast Mail Route between the East and the West.

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W. F. BRUNNER,  
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## Waplington's Regenerative Gas Furnaces

Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of Pottery and Fire Bricks, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

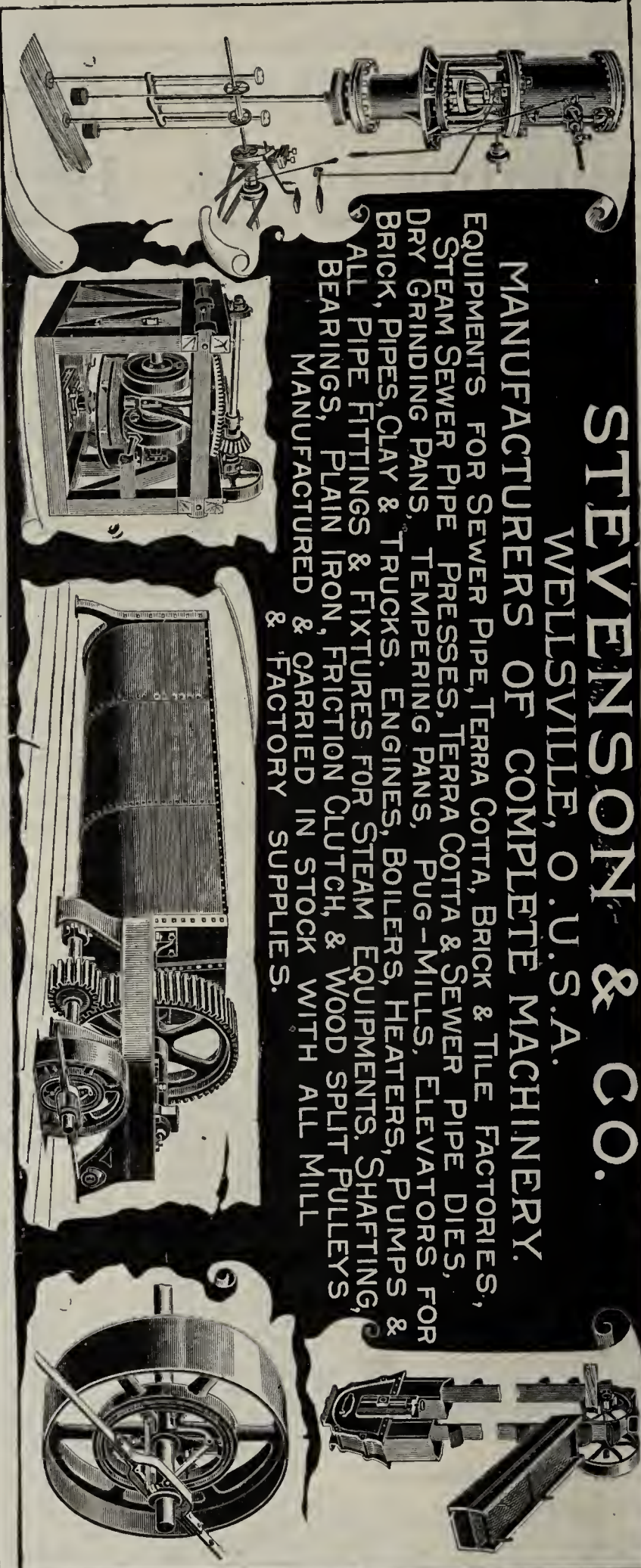
Estimates, specifications and plans on reasonable terms. Plants contracted for on approval to good, responsible parties. Sets of blue prints, 25 cents per set, showing the application of gas to any of the above mentioned purposes.

Send stamp for pamphlet "Natural versus Artificial Gas."

Address,

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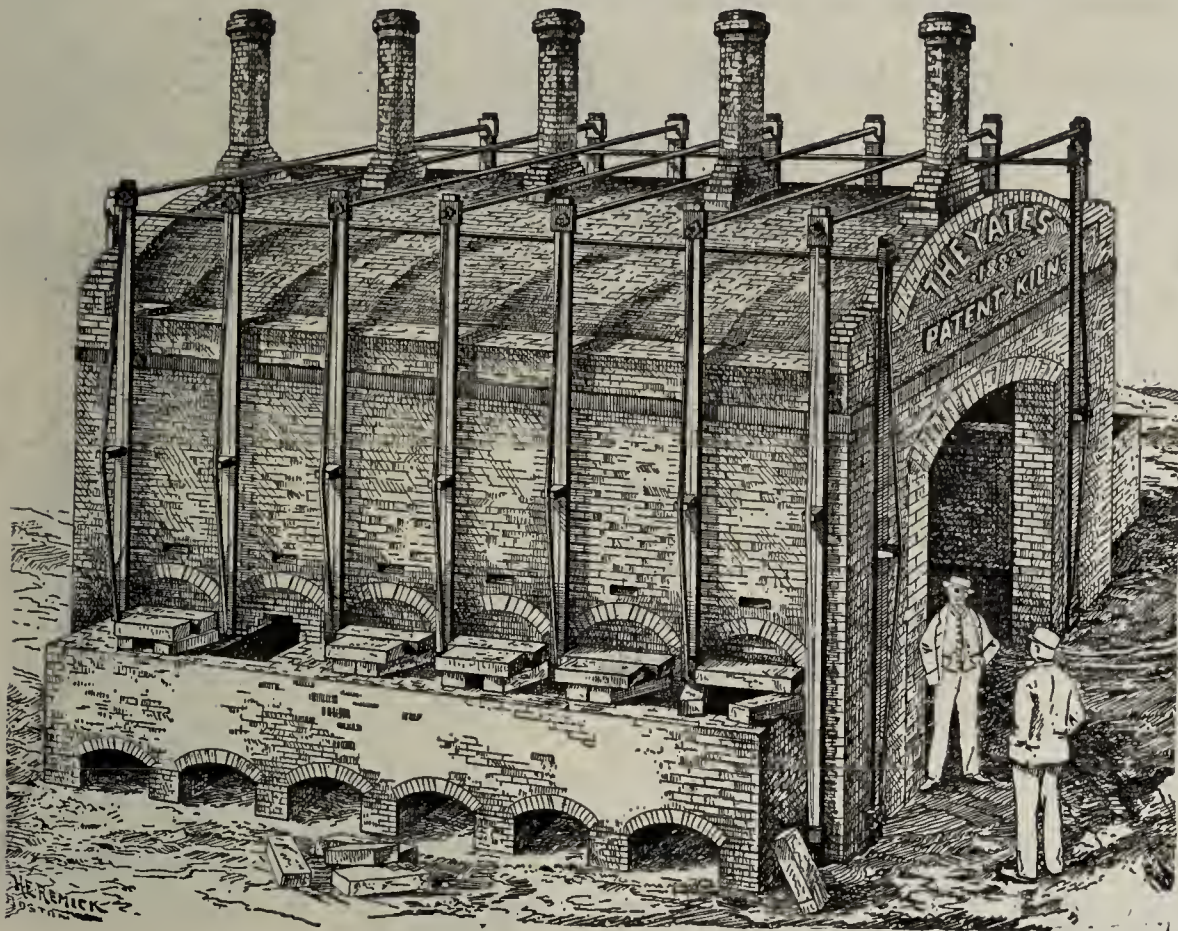
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EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS. SHAFTING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.



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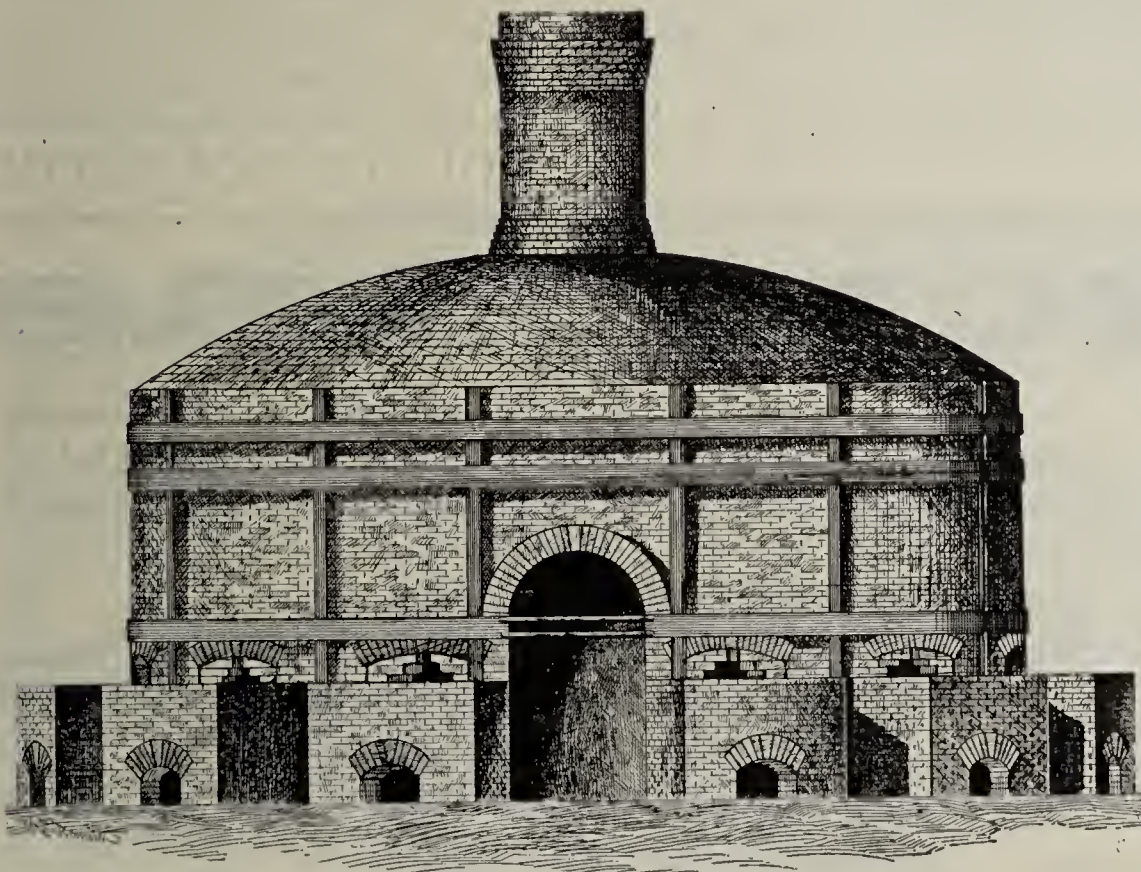
FOR BURNING BRICK OF ALL KINDS.



FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat, which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty.

❖ WE STAND ON OUR MERITS. ❖



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Write for full description. NORTH CAMBRIDGE, MASS.

## COLORIFIC.

For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of

WESTBROOK & WELLS,  
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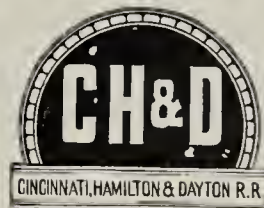
The only line running Dining Cars between Indianapolis and Chicago.

Magnificent Pullman Sleeping and Parlor Cars

For rates, maps, time tables, etc., apply to:

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# BRICK MOLD LINERS.

Do YOU know that....

**BRANCH-CROOKES SAW CO.,**

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

**Branch-Crookes Saw Co.,**  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

**A. M. & W. H. WILES,**  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



**BRICK**

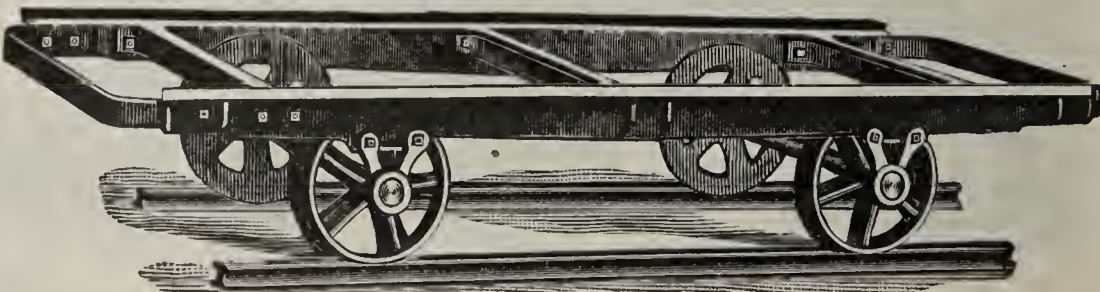
**48 Styles.**

Also  
Turn Tables,  
Transfers,  
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Iron Pipe.



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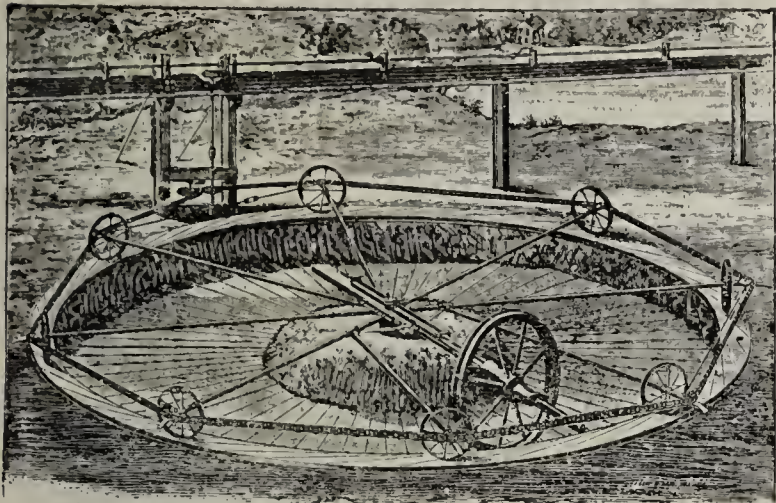
Send For Price List.



STYLE 28.

**THE WALWORTH RUN FOUNDRY & MFG. CO.,**  
Cleveland, O.





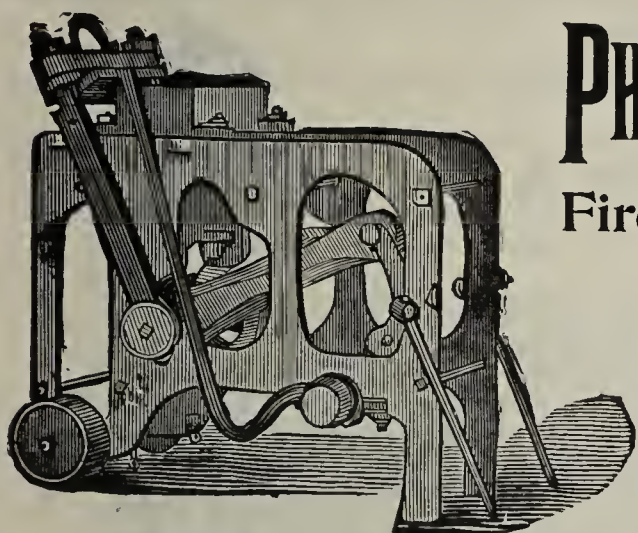
# DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,

PHILADELPHIA, - - - PENN.

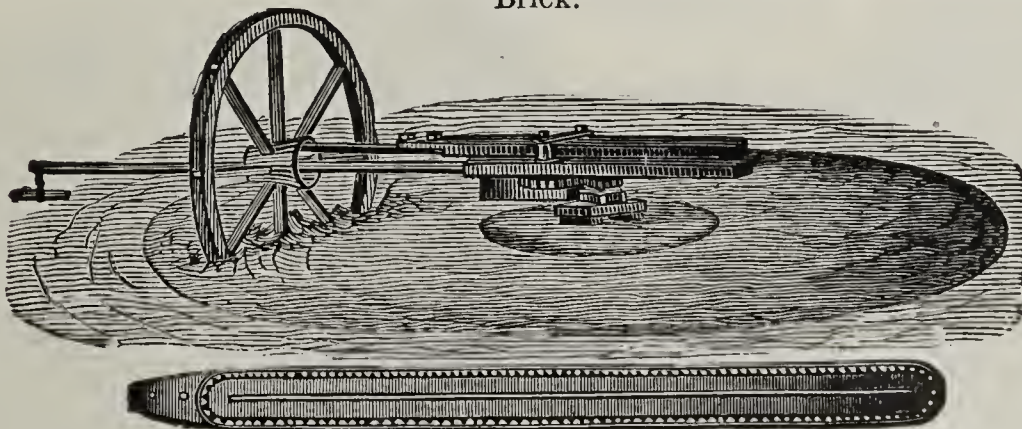
Send for Circular and Price-List.

# PHILADELPHIA BRICK MACHINE WORKS

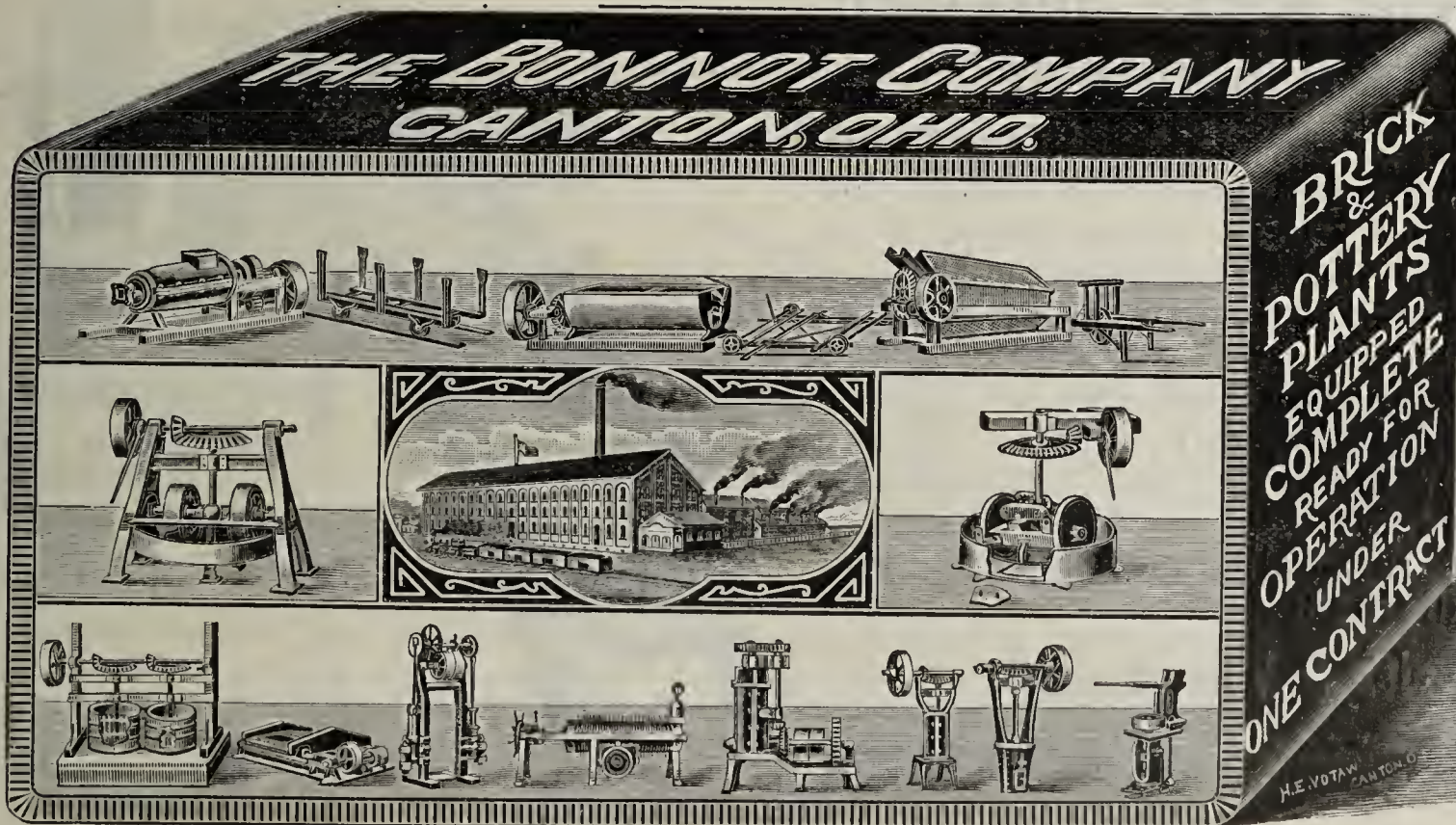
Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red  
Brick.

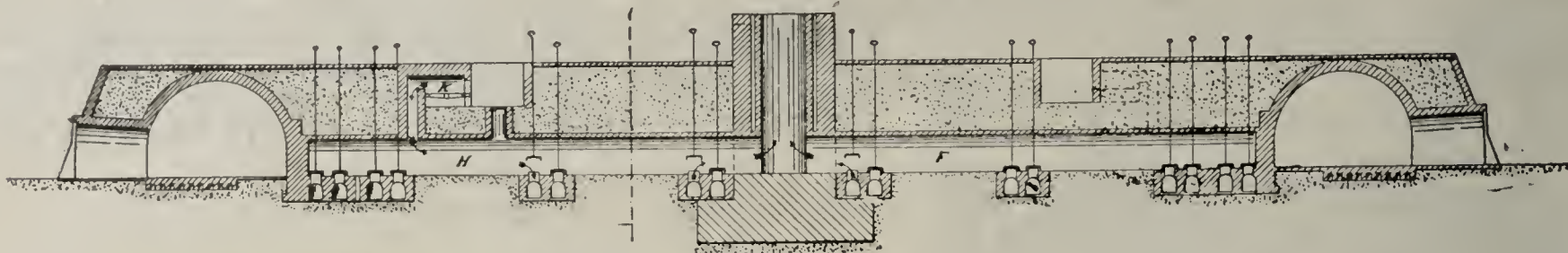


These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.





## YOUNGREN'S IMPROVED CONTINUOUS KILN.



Knocked out the Opponent in the First Round:

Office of SAN JOSE BRICK CO.  
SAN JOSE, Cal., Feb. 11, 1893.

This kiln is gaining a reputation that is justly merited. Its superior work is due to the peculiar features which are the result of a careful and systematic consideration of the continuous system of burning. I respectfully invite practical brick manufacturers to a thorough investigation of my methods.

For descriptive pamphlet address

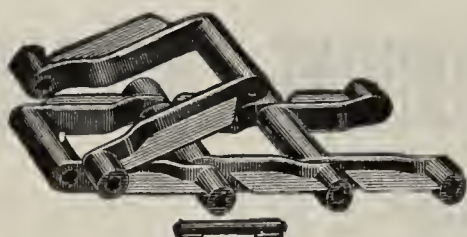
P. L. YOUNGREN, Oakland, Cal.

DEAR SIR: In reply to yours of the 13th inst, will say that the Continuous Kiln you erected for us last winter is giving us great satisfaction, having turned out all good brick on the first round, something we did not look for. We are now shutting down our B-ke kiln and contemplate applying your improvements on it. Please forward estimate cost of same if it can be done. We will give you statement in regard to fuel consumption of new kiln later.

Yours very truly,

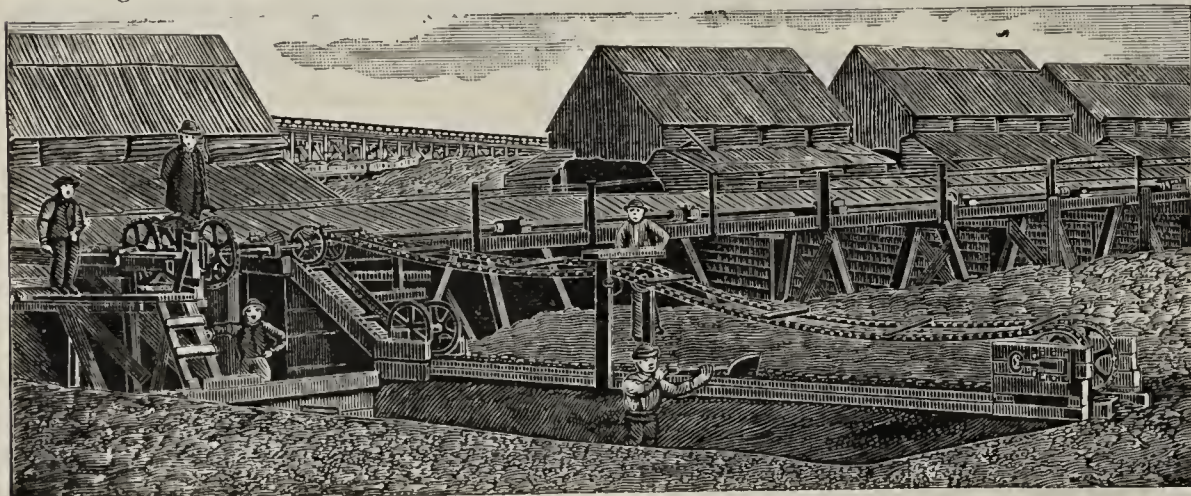
D. CORKERY, Manager.

P. L. YOUNGREN, Oakland, Cal.



May Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed at a glance by every practical brickmaker.



Mey Patent Clay Elevator.

F. H. C. MEY CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

Elevating, Conveying &amp; Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.

## A LONG FELT WANT SUPPLIED.

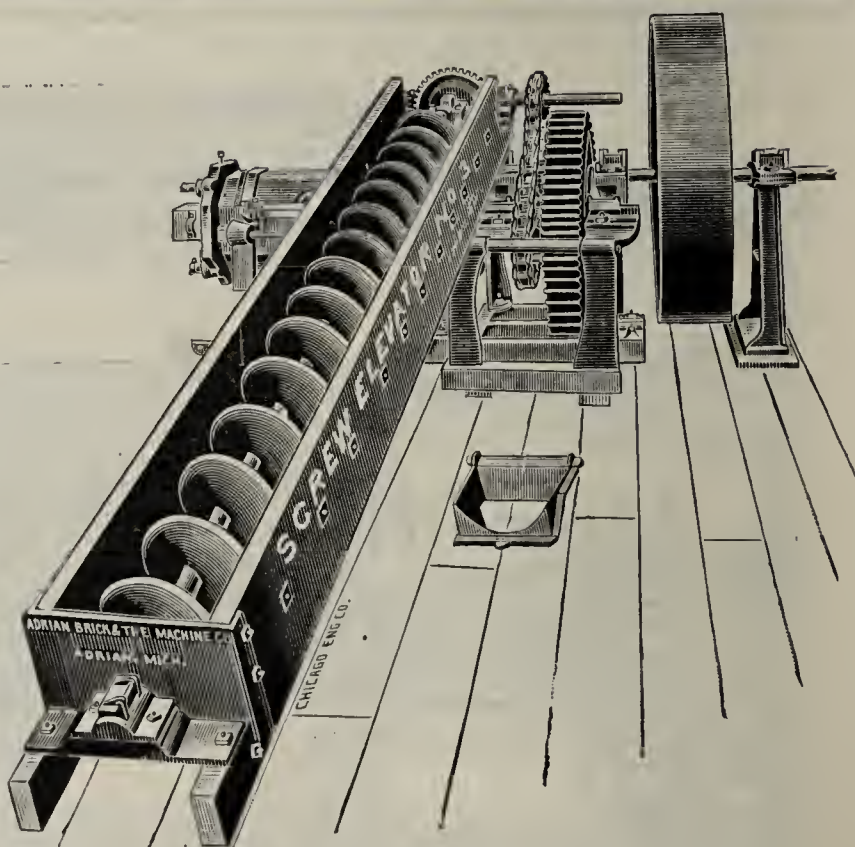
A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clayworker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

ADRIAN, - - MICHIGAN.

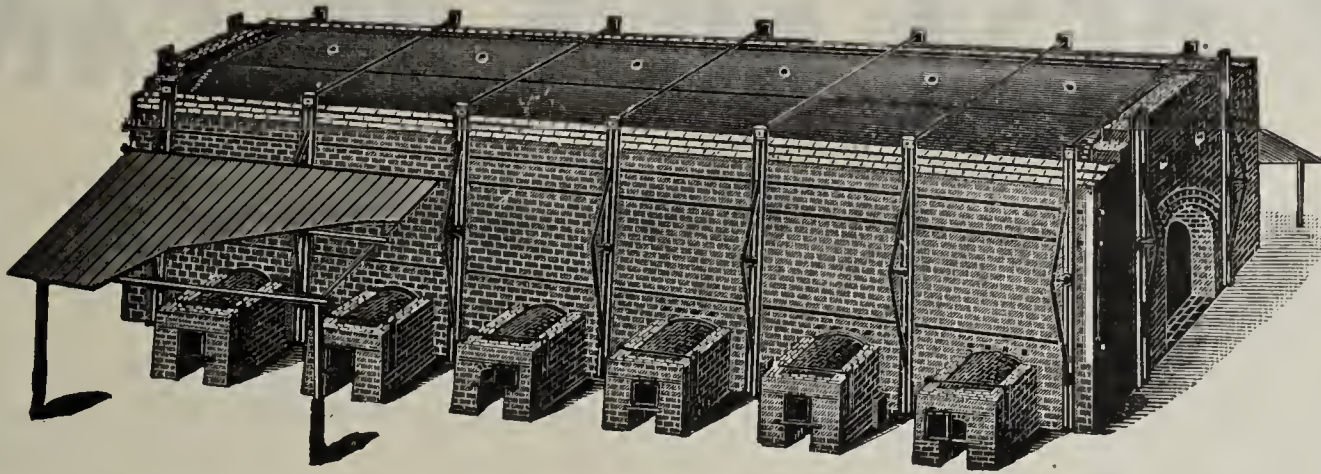




# THE GRISWOLD PATENT IMPROVED BRICK KILN

With  
Its  
Latest  
Improvements  
Has  
No Equal.

For further information and prices for Yard Rights apply to



Works  
with an  
Up and Down  
Draft  
Continuously]  
with No  
Change of  
Dampers.

J. B. GRISWOLD & CO.,

Box 1419, Zanesville, O.

Reference: The Oakland Press Brick Co., Zanesville, O.

**THE EXCELSIOR**

**COSTS LESS  
BURNS  
WITH  
LESS  
FUEL.**

**HEAT  
FROM BURNT  
KILN DRIES  
OFF GREEN  
KILN**

**HENNEYS  
PATENT**

**PERFECT IN COMBUSTION & VITRIFIES FROM TOP TO BOTTOM.**

**JAMES HENNEY**   **INDIANAPOLIS**   **CARE CLAY-WORKER.**

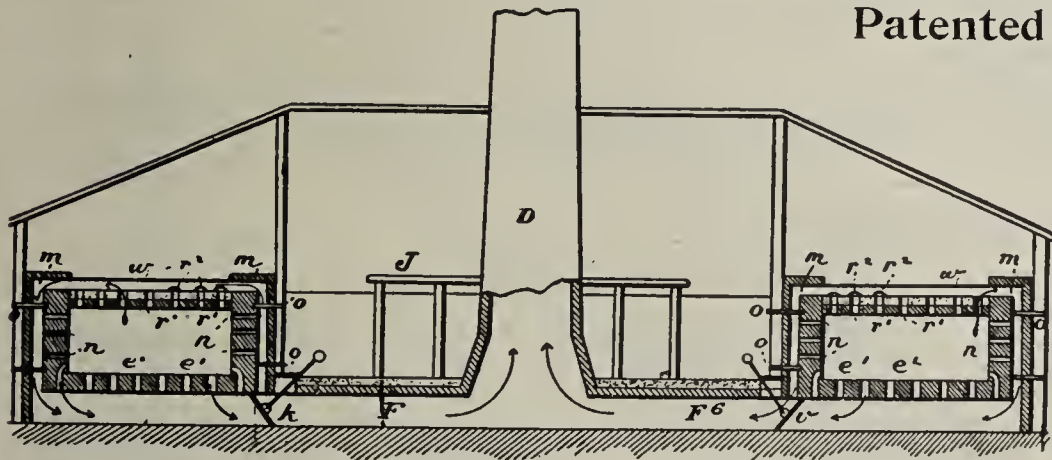
**EASIER TO  
HANDLE  
THAN ANY  
KILN IN  
THE  
COUNTRY.**

**WILL BURN  
ANY KIND  
OF WARE  
UNIFORM**

**CHEAPER BUILT  
THAN ANY OTHER  
KILN.**

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

[Mention the Clay-Worker.]

**CARL F. KAUL, Madison, Neb.**



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

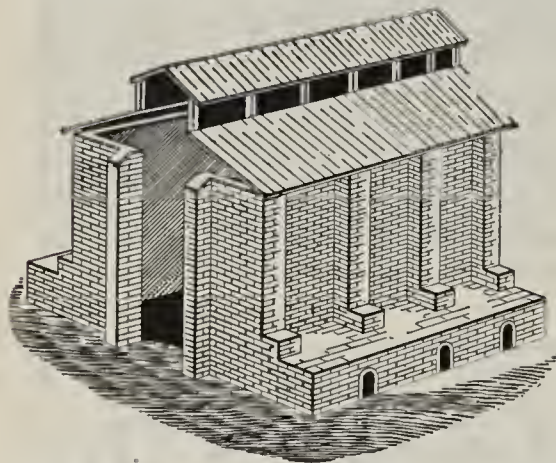
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

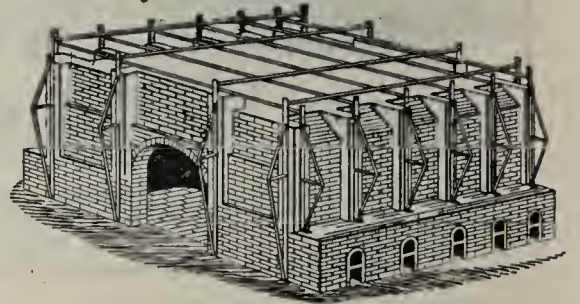
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOI



## LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

## TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands. Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,

1,913 Indiana Ave.

..

KANSAS CITY, MO.



# Your Attention, Please, Regarding CLAY DISINTEGRATORS!

SINCE WE CAN PROVE WHAT WE CLAIM  
LET US STATE SOME HARD FACTS.....

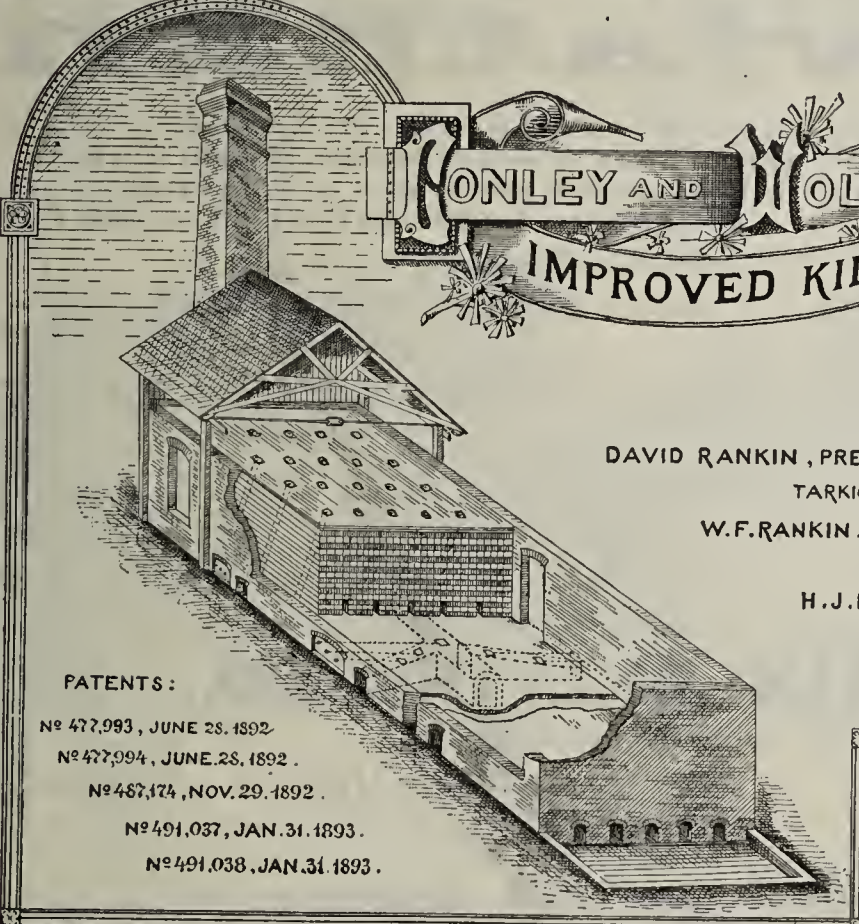
That the "Creager" Disintegrators are being adopted by the best known manufacturers because of their correct scientific principles—excellent mechanical construction—generous capacity and great durability. These machines are perfectly balanced, are arranged to drive with one or two belts and can be regulated to any condition of material. They will and are grinding wet clay and mud with equal rapidity. The **Cutting Bars** are hard and tough, have one and one-half inches wearing surface, being quickly and easily set out (as to the truth of this last item we refer to those who have been using the machines for the past three years). Blue prints, cuts and specifications of the various sizes will be furnished on application.

Kindly allow us to submit some letters from those who have thoroughly tried their merits.

## Jonathan Creager's Sons,

Sole Manufacturers,

CINCINNATI, OHIO.



**CONLEY AND WOLFE**  
IMPROVED KILN COMPANY.

TARKIO, Mo.

OFFICERS:

|                                              |                                                  |
|----------------------------------------------|--------------------------------------------------|
| DAVID RANKIN, PRESIDENT,<br>TARKIO, MO.      | JOSEPH CONLEY, VICE PRESIDENT,<br>ST JOSEPH, MO. |
| W.F. RANKIN, SECRETARY,<br>TARKIO, MO.       | J.M. WOLFE, TREASURER,<br>TARKIO, MO.            |
| H.J. BOWEN, GEN'L MANAGER,<br>ST JOSEPH, MO. | W.O. MILLER, ASS'T M'GR.,<br>ST JOSEPH, MO.      |

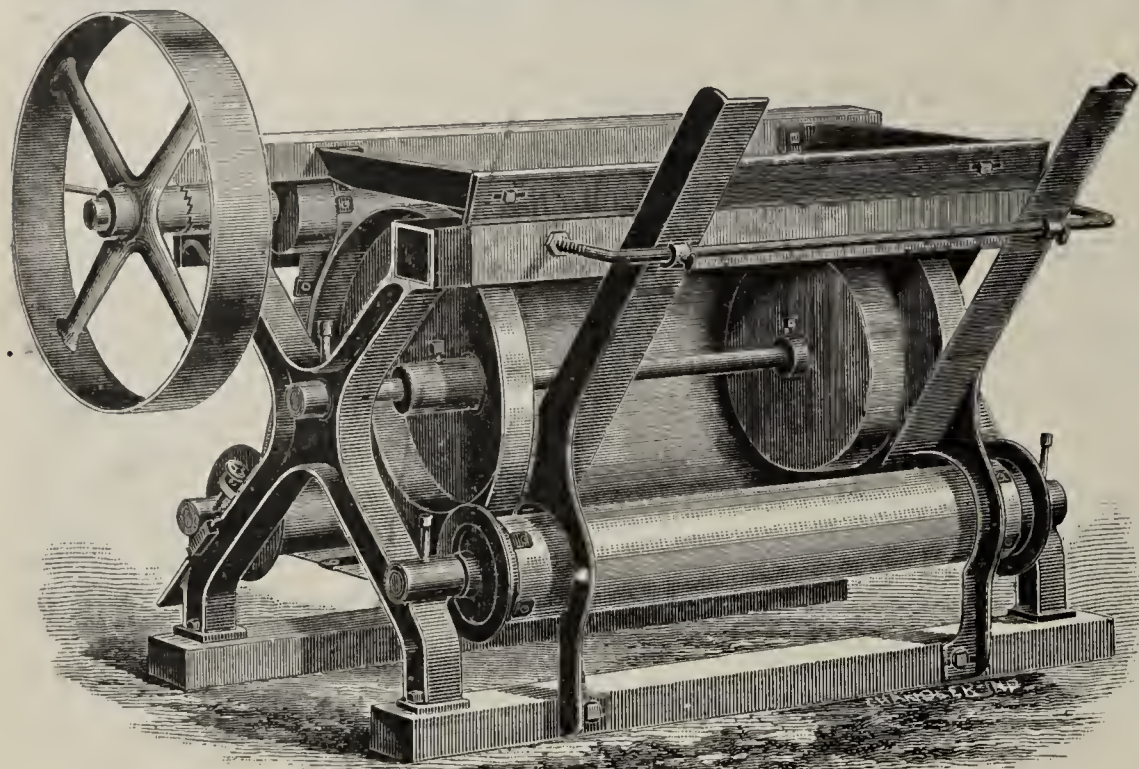
PATENTS:

No 477,993, JUNE 28, 1892.  
No 477,994, JUNE 28, 1892.  
No 487,174, NOV. 29, 1892.  
No 491,037, JAN. 31, 1893.  
No 491,038, JAN. 31, 1893.

THIS kiln is cheap to construct, simple in operation and permanent in character. It has no crown to fall in, or braces to keep in repair. The dampers in the bottom give you complete control of the draft. You can burn your brick evenly and thoroughly. It heats the brick gradually and cools them the same way, producing a tough and thoroughly ANNEALED brick. It requires less than 200 lbs. slack per M. to make the very best vitrified shale paving brick. One man can fire the largest sized kiln. The slack is converted into gas and ALL the heat energy of the coal is utilized. It is a smoke consumer and a profit producer. Please write our General Manager at once for full information.



# The POTTS MOULD SANDER



PATENTED FEBRUARY 5, 1889.

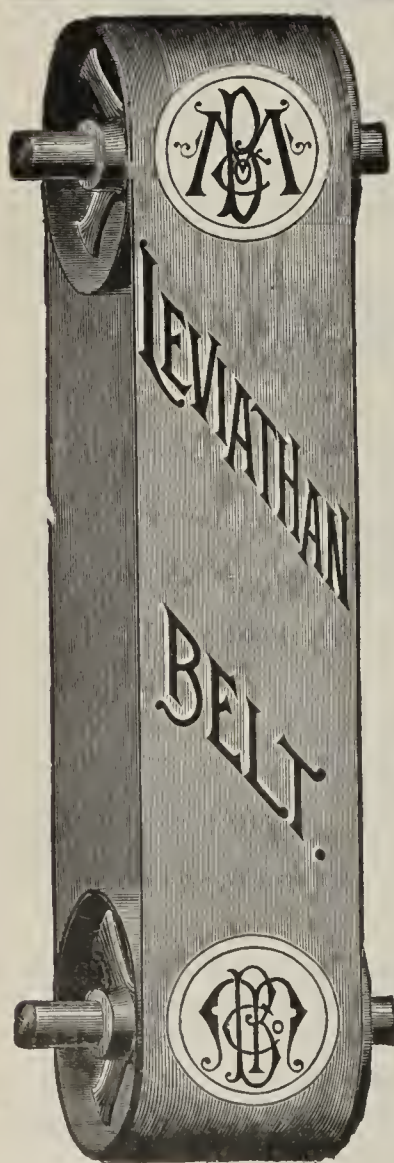
Is the only machine made that will sand the moulds better than can be done by hand; at the same time

**SAVE LABOR AND SAND.**

It has no light complicated parts to wear or break, no place for the moulds to catch and cause delays.

It does not waste or spill the sand. It is easily and quickly adjusted to any size mould. It is simple, strong and durable. We guarantee it to do as claimed and ship on trial. Write for prices to

**C. & A. POTTS & CO., Indianapolis, Ind.**



## "Leviathan"

The only Belt for Brick and Tile Machinery.  
Will outwear any three Belts of other makes in the Market.  
Runs in heat, steam and water without injury.  
Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 23, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

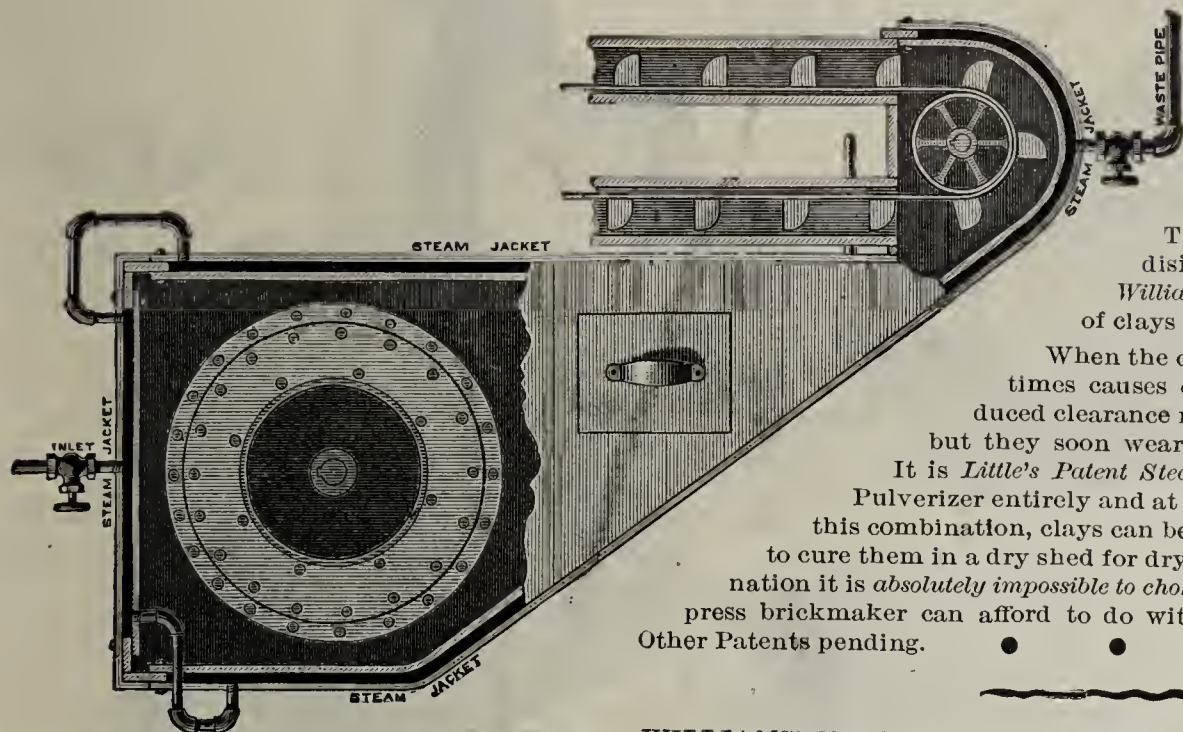
**Thompson's Water-Proof Belt Dressing for  
Leather, Rubber and Canvas Belting.**

**No user of Belting can afford to be without it.**





# Williams' Cyclone Clay Pulverizers



and Little's Patent Steam Jacket

FOR CLAY PULVERIZERS.

There is no known machine that will so thoroughly disintegrate and pulverize clays and other substances as Williams' Cyclone Mill. It thoroughly disintegrates all kinds of clays and shales.

When the clay is damp or wet it adheres to the housing and sometimes causes choking of the mill. To obviate this we have introduced clearance rakes which answer all purposes as long as they last; but they soon wear out. We now have found a remedy for all these evils.

It is Little's Patent Steam Jacket, represented in above cut. It encases the Pulverizer entirely and at the same time forms the Elevator Boot. By the use of this combination, clays can be worked directly from the bank; but it is preferable to cure them in a dry shed for dry press brickmaking. By the use of the above combination it is absolutely impossible to choke the Pulverizer or Elevator Boot, and, therefore, no dry press brickmaker can afford to do without it when he once knows its value. Patented 1890. Other Patents pending.

WILLIAMS' Cyclone Clay Pulverizer, 30 in. diam.  
WILLIAMS' Cyclone Clay Pulverizer, 36 "  
WILLIAMS' Cyclone Shale Pulverizer, 36 "  
WILLIAMS' Cyclone Clay Pulverizer, 40 "  
WILLIAMS' Cyclone Shale Pulverizer, 40 "  
WILLIAMS' Cyclone Clay Pulverizer, 48 "

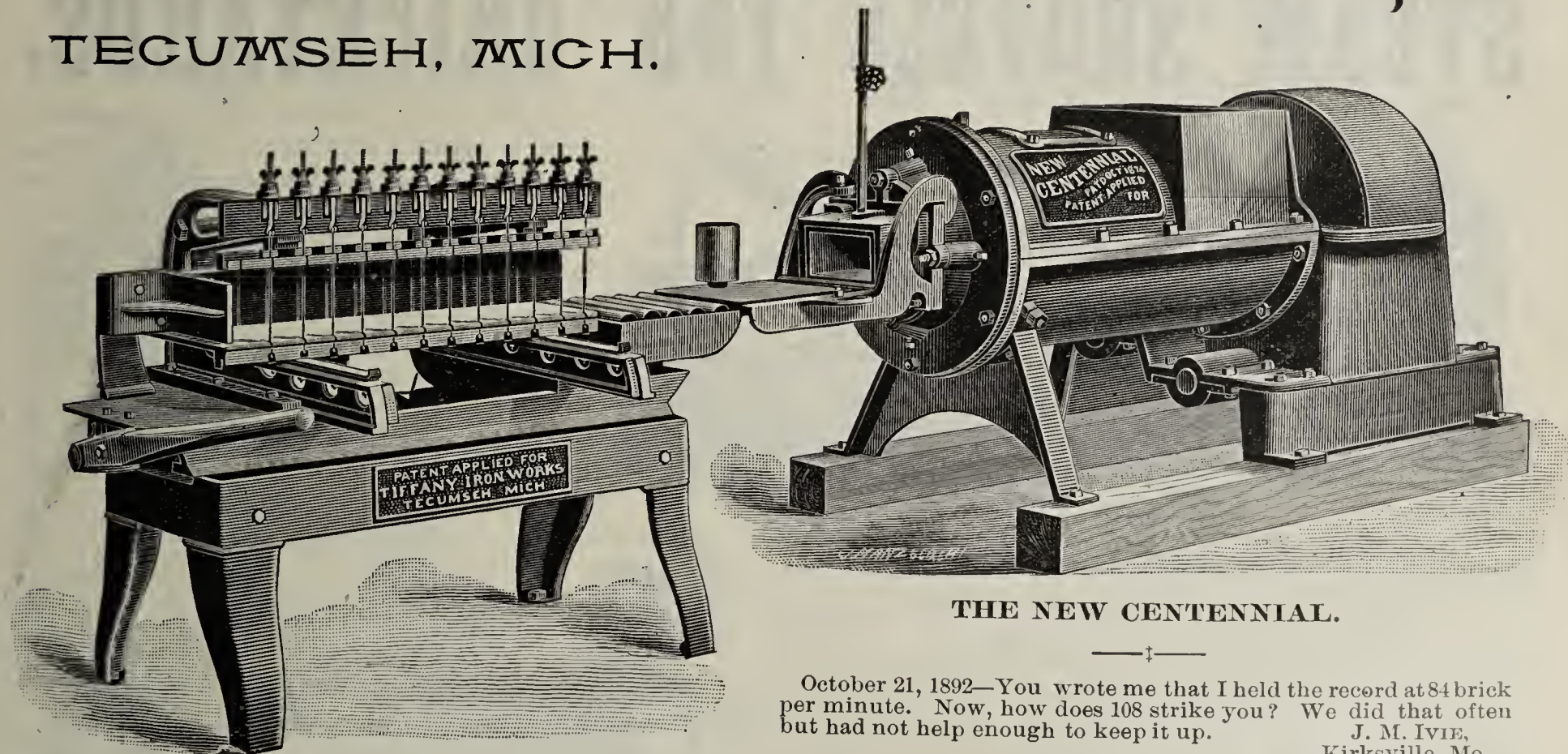
WILLIAMS' Clutch Pulleys and Couplings.  
WILLIAMS' Brick Trucks, 3 sizes.  
WILLIAMS' Cyclone Shale Pulverizer, 48 in. di.  
WILLIAMS' Revolving Clay Screen.  
WILLIAMS' Automatic Feeder for Dry Presses.  
WILLIAMS' Automatic Feeder for Pulverizers.  
WILLIAMS' Triple Roll Crushers.  
WILLIAMS' & Little's Pat. Steam Clay Screen.

LITTLE'S Steam Jacket for Pulverizers.  
WILLIAMS' Clay Elevators.  
WILLIAMS' Sizing Machine for Radial or Angular Brick.  
WILLIAMS' Pony Pulverizer for Testing Clay and shale.  
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO

M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway, ST. LOUIS, MO.

## TIFFANY IRON WORKS, TECUMSEH, MICH.



THE NEW CENTENNIAL.

October 21, 1892—You wrote me that I held the record at 84 brick per minute. Now, how does 108 strike you? We did that often but had not help enough to keep it up.

J. M. IVIE,  
Kirkville, Mo.

The Best Evidence of the Value of a Brick Machine is the Grade of Brick it Makes.

The Board of Engineers that have charge of the Niagara Falls Power Tunnel all say that they are the best red brick they ever saw for their work.

BEAMSVILLE PRESSED BRICK CO.

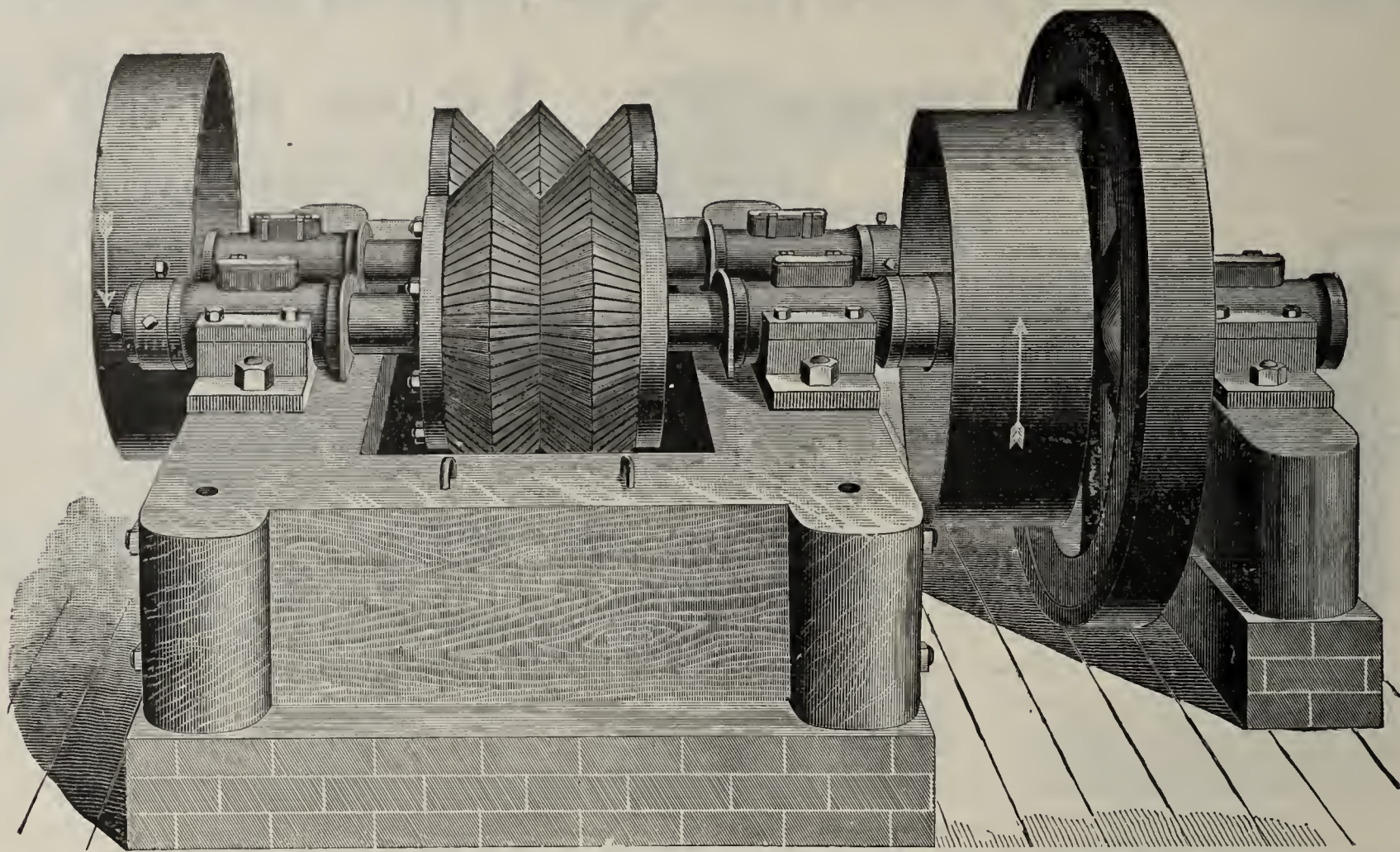
You ought to see the two houses we are building out of Hollow Blocks. They are fine and look better than anything in Ohio. Our brick will take the first prize sure.

KNOXVILLE SEWER PIPE CO



# NEWELL IMPROVED CLAY PULVERIZER

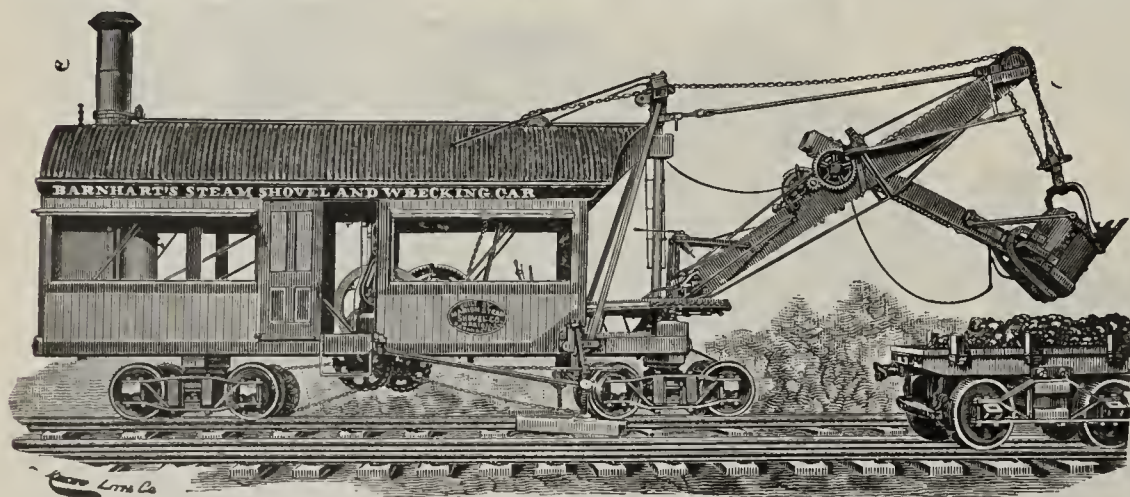
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, 26 Cortland and 21 Dey Streets, New York, U.S.A.

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A-1 1/2 YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1 1/2 yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (3/4 yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
MARION. . . . . OHIO.

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C-3/4 YD.



If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

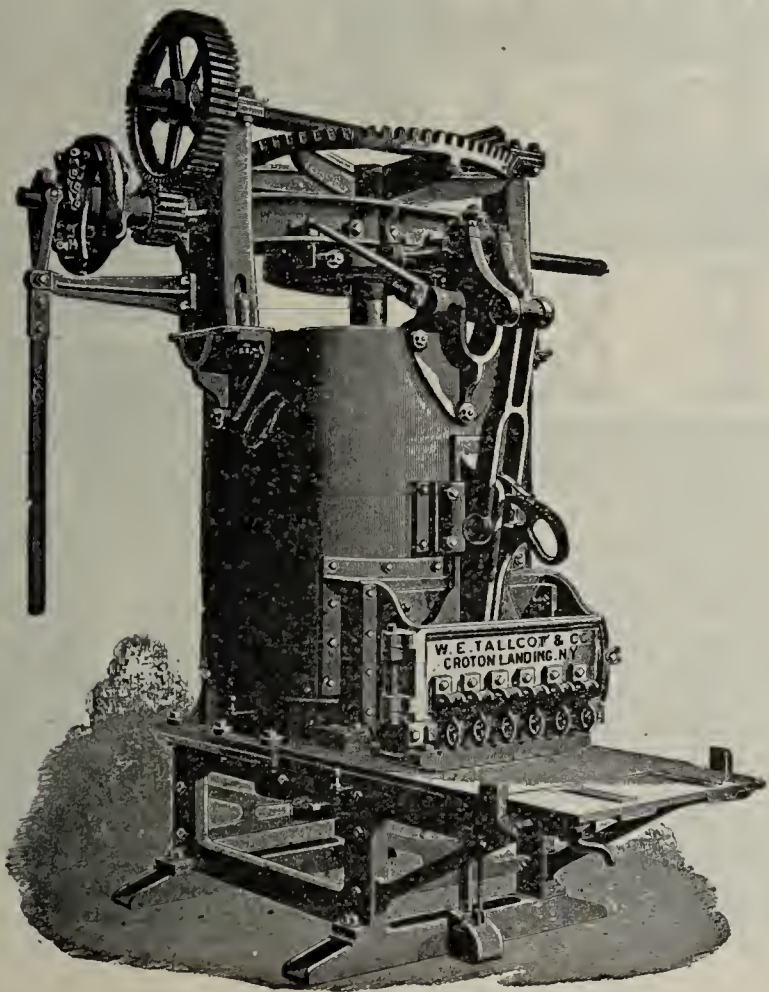
**Jonathan Creager's Sons,**

127 W. SECOND STREET,

**Cincinnati, Ohio.**

P. S. If you do not ask we cannot tell you of several very important improvements.

## The "I. X. L." Brick Machine. A Modern Type of Machine.



Extra Strong,  
Handy to Operate,  
Large Tempering and  
Pressing Capacity.

Made in two sizes:

The "Standard" for ordinary brick.

The "Special" for large brick.

Especially Adapted For

**PALLET BRICK WORK.**

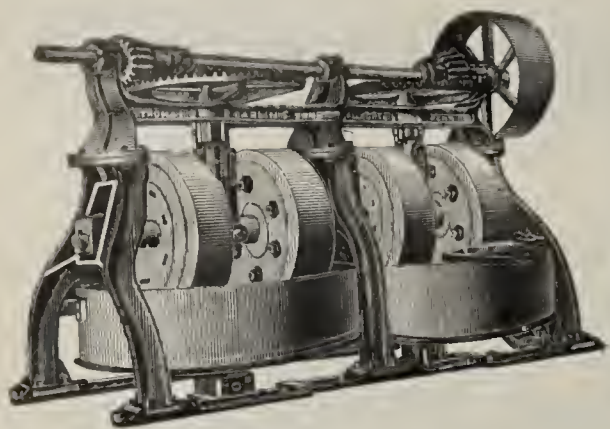
Write for Illustrated Catalogue, stating size of brick to be made and if wanted for pallet work.

**W. E. Tallcot & Co.,**

**CROTON-ON-HUDSON,**

**NEW YORK.**





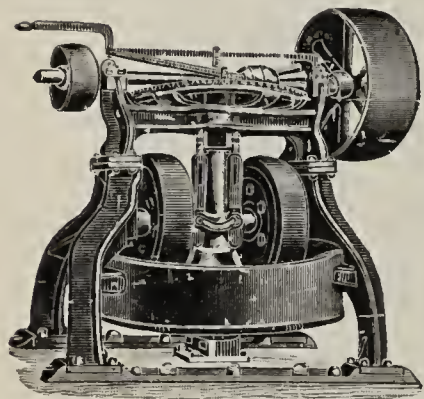
OUR SPECIALTY.

# GRINDING AND MIXING PANS

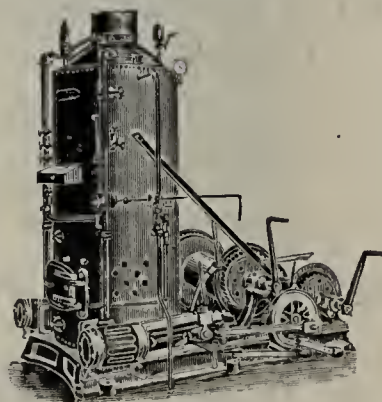
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot guage Dump Cars.

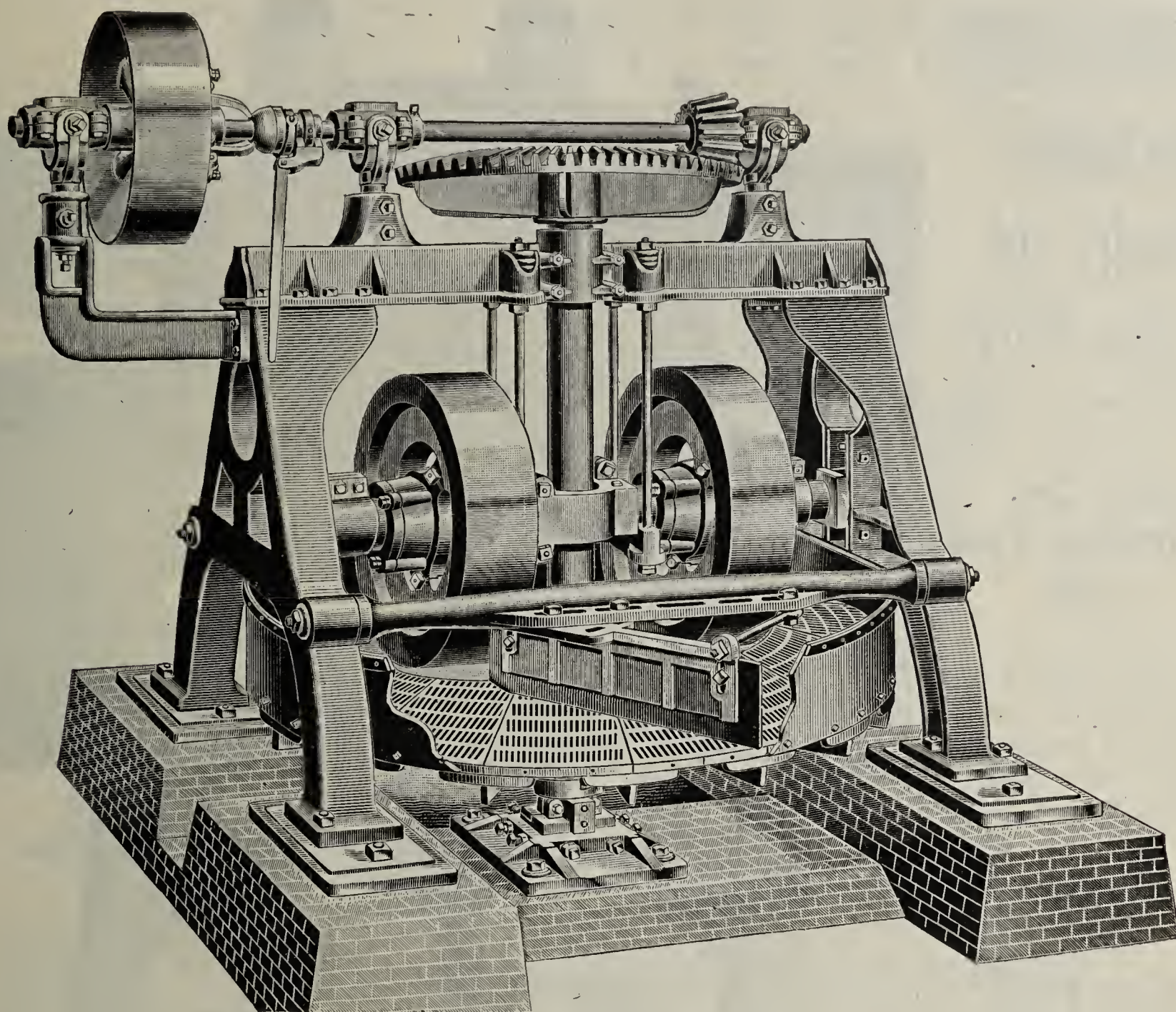
MANUFACTURERS OF  
**IMPROVED**  
**CLAY WORKING**  
**MACHINERY**  
 OF EVERY DESCRIPTION  
**TAPLIN RICE & CO.**

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.  
**AKRON, OHIO, U.S.A.**

PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

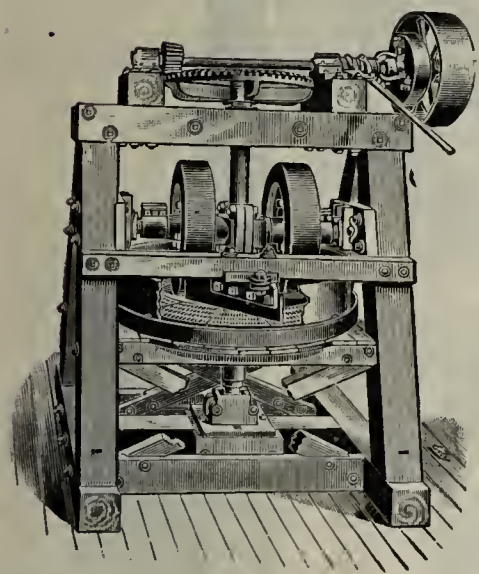
SEND FOR  
 CATALOGUE  
 A





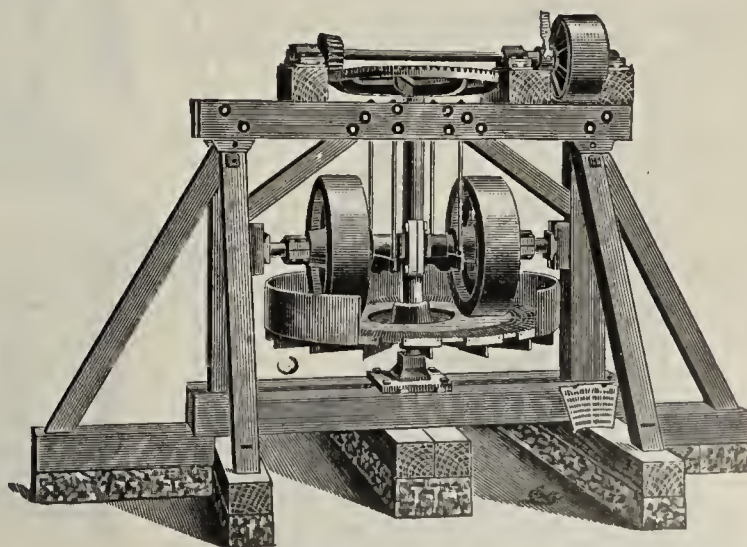
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

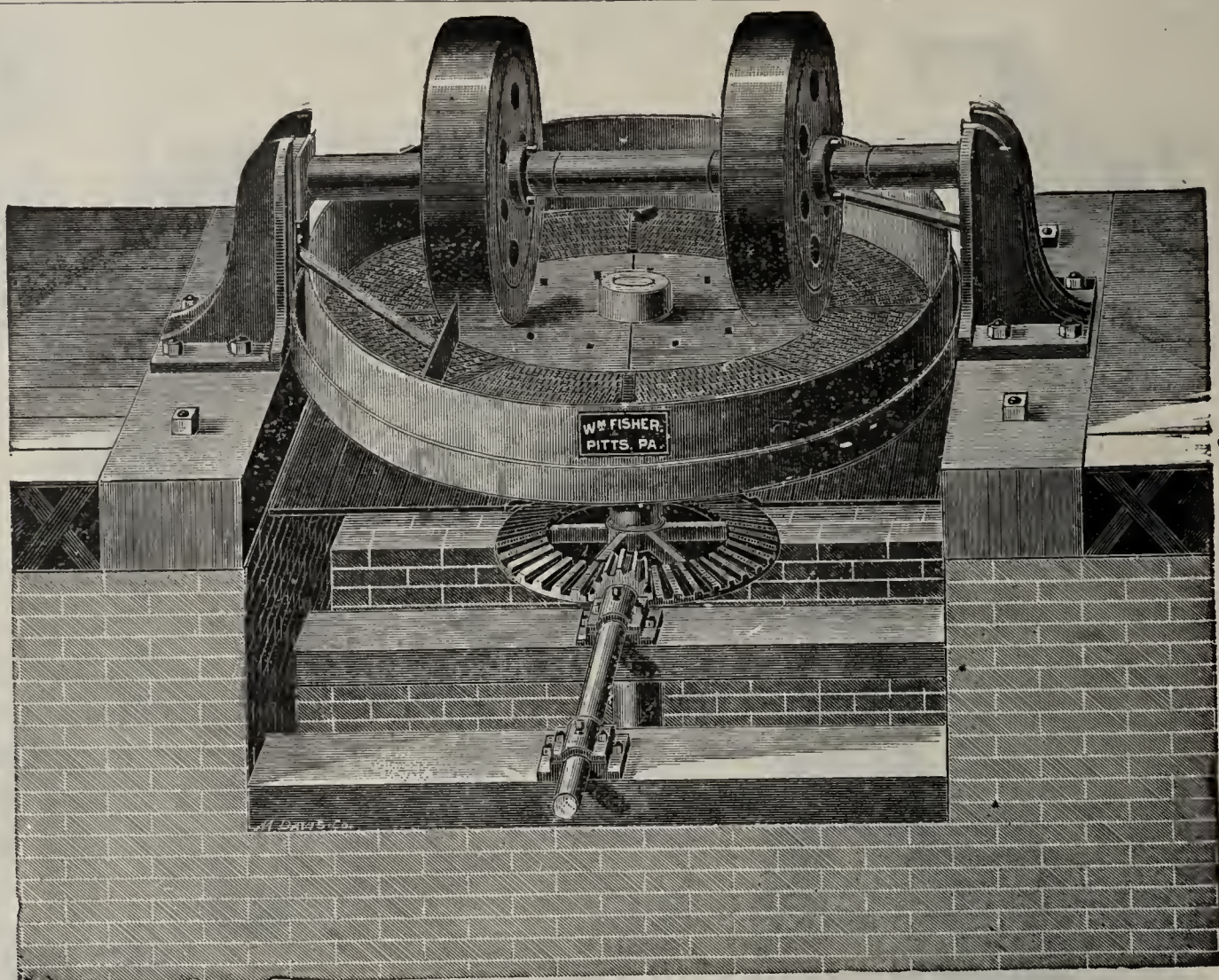
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

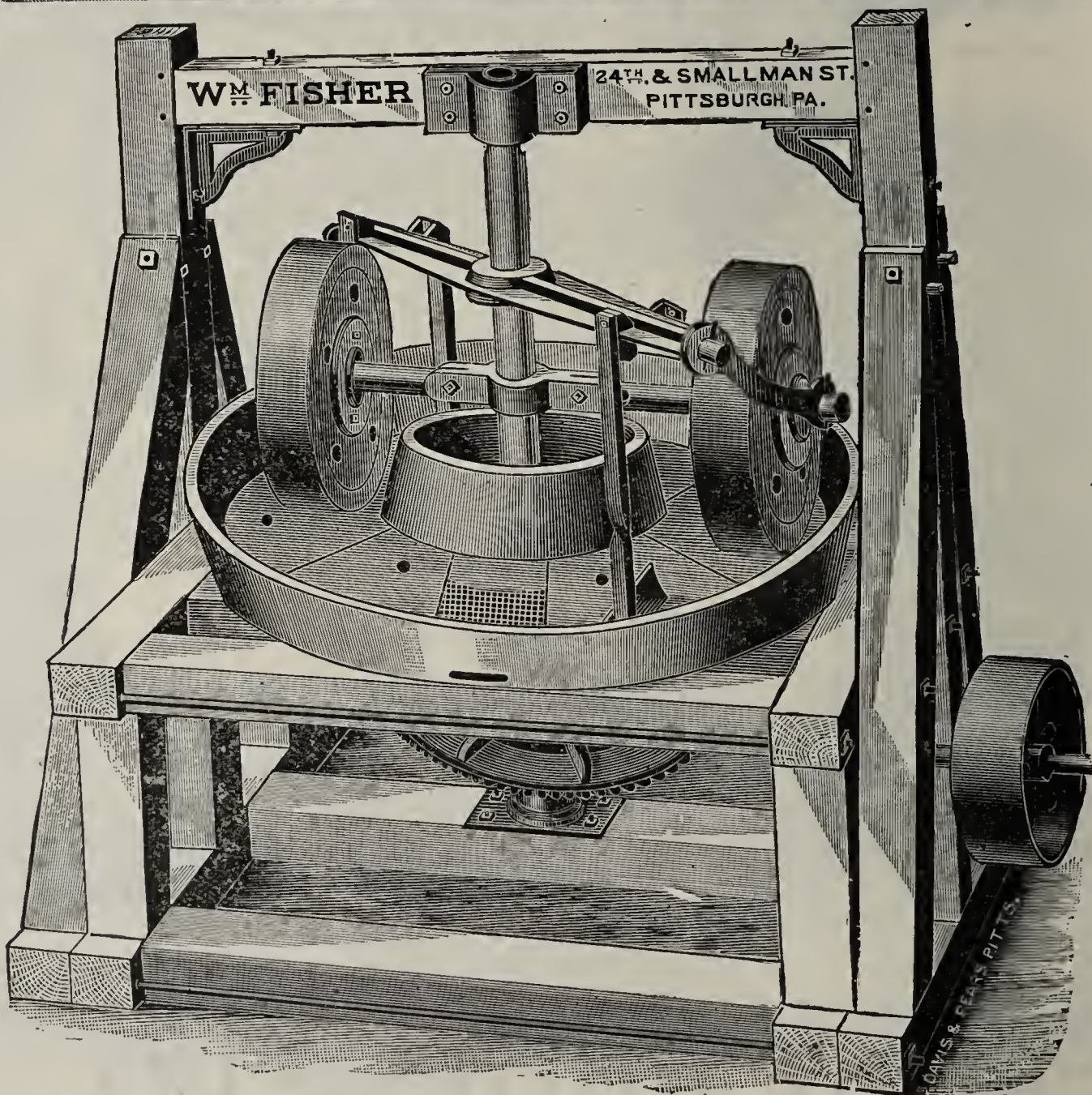
. STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.

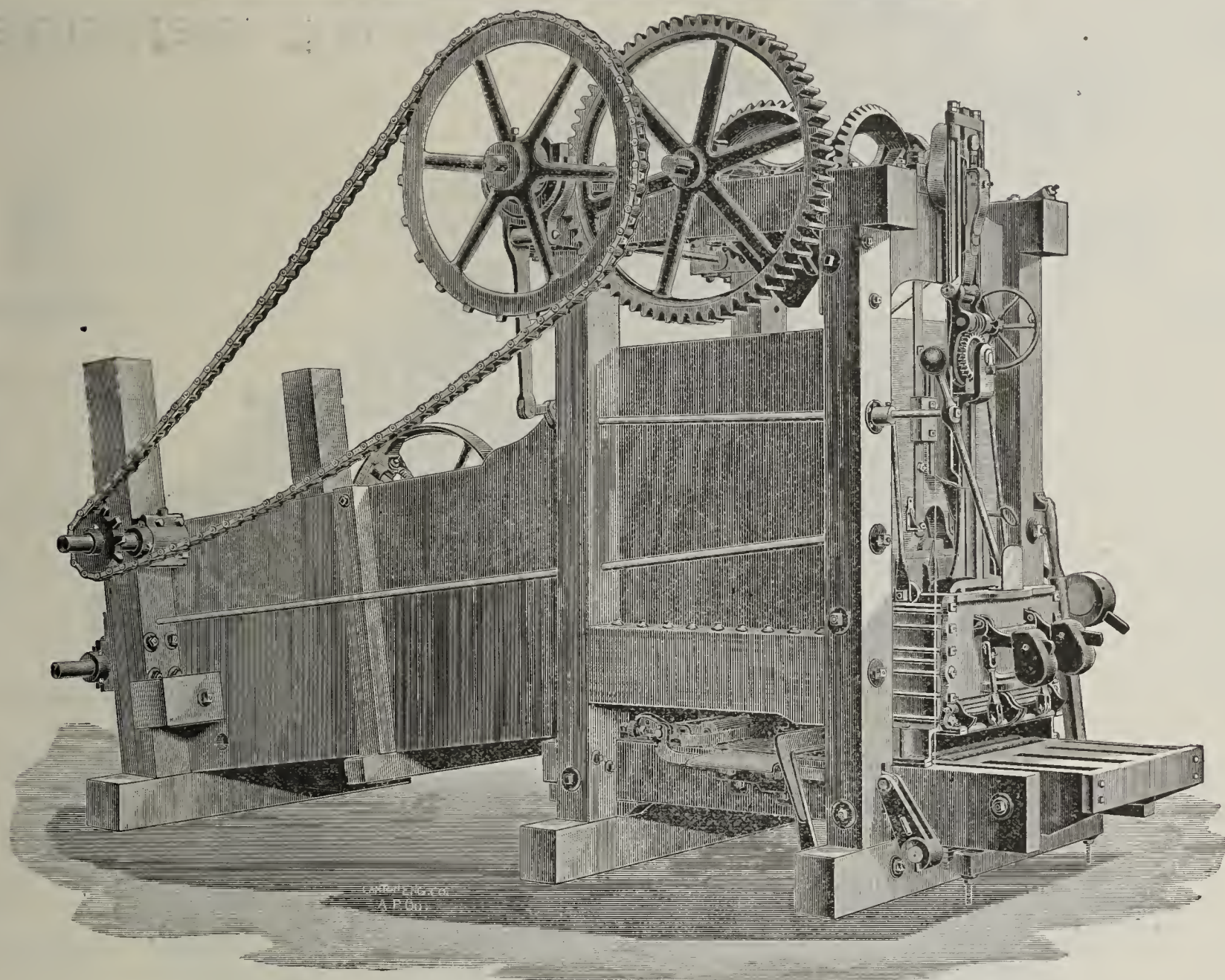


When writing for prices, state kind of material and capacity required.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



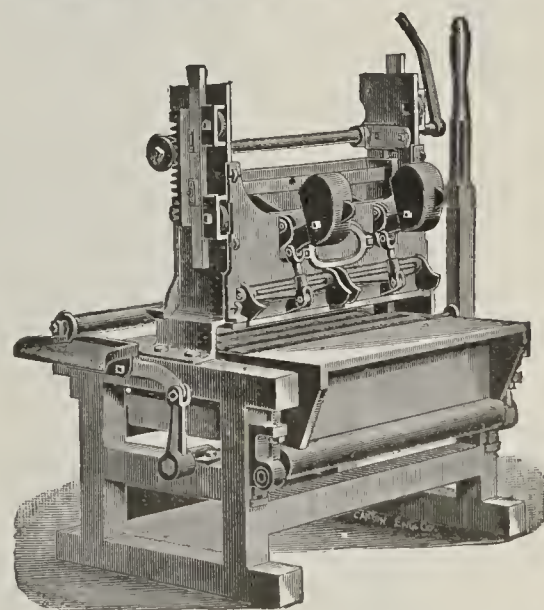
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



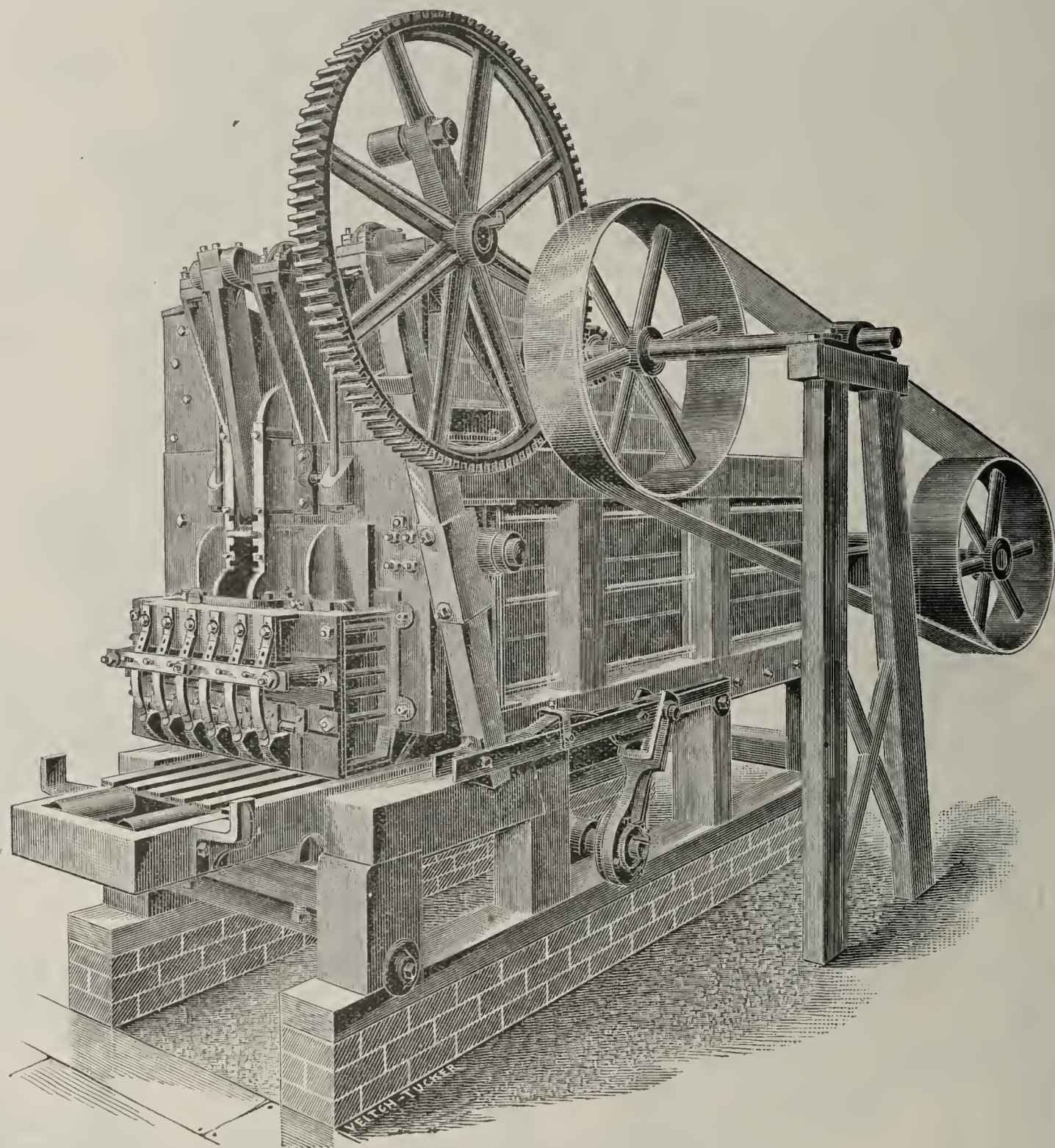
MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# 5,000,000 MADE

The Second Year.

✦ NO ✦ SHUTTING ✦ DOWN ✦ FOR ✦ REPAIRS. ✦



WEIGHT 15,500 POUNDS.

ERIE, PA., Dec. 3, 1892.

THE McLAGON FOUNDRY CO.:

GENTS—Your letter dated December 1, 1892, asking me how I liked my brick machine (the "New Haven,") at hand. I will say it gave me the best of satisfaction. I have turned out 5,000,000 brick this season. We could have made more but I am satisfied. I use but one sander and one dumper. No shutting down for repairs.

Yours, etc.,

H. C. DUNN,

For More Such Evidence, Write to

THE McLAGON FOUNDRY CO., New Haven, Conn.



# **"MARTIN" BRICK MACHINERY.**

DIFFERENT STYLES. DIFFERENT SIZES.....  
BUILT FOR STRENGTH AND DURABILITY.

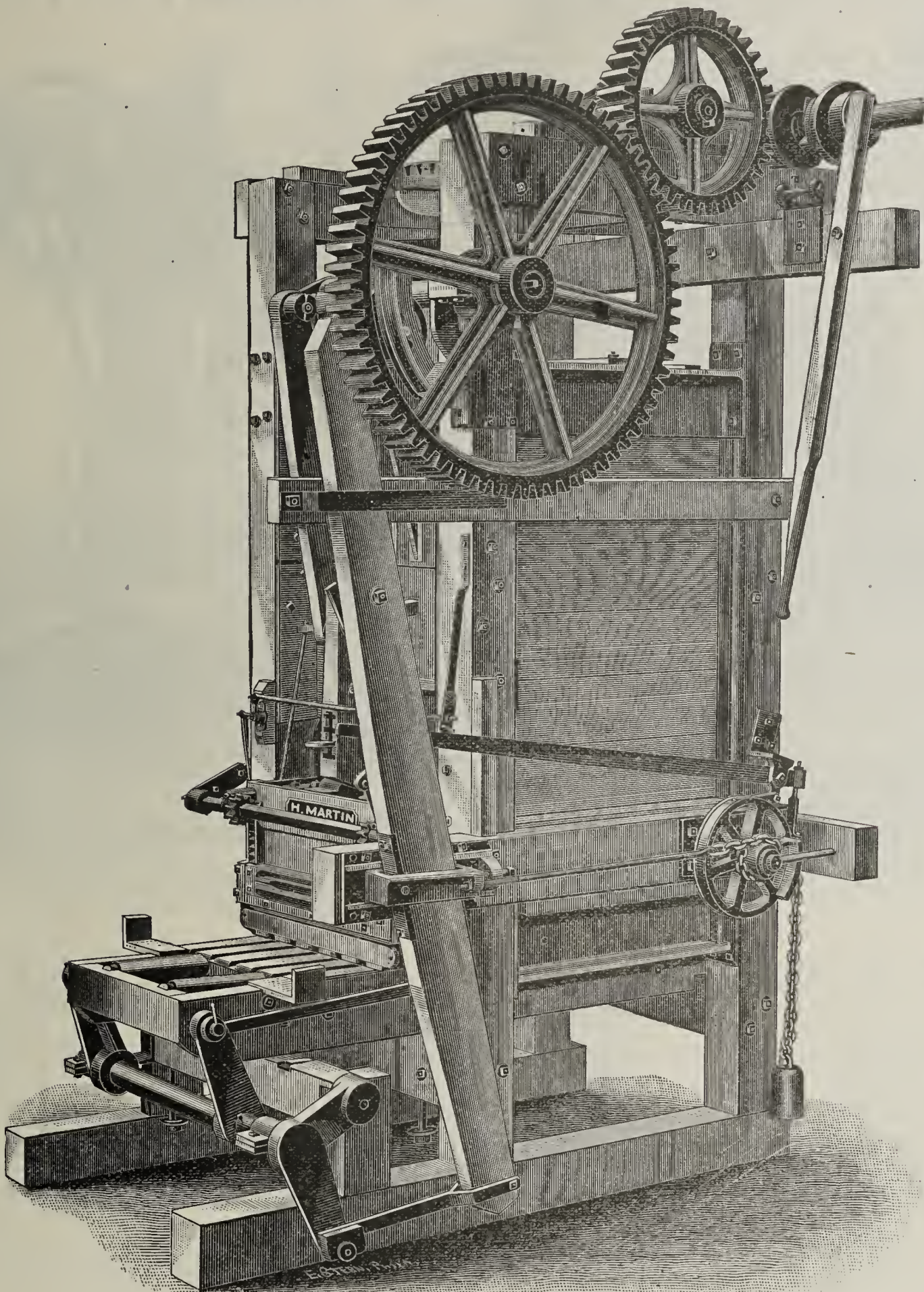


Plans  
and  
Specifica-  
tions  
of  
Complete  
Plants  
Furnished  
Upon  
Application.



Clay  
Tested  
and  
Reports  
Furnished.

Machines  
in  
Practical  
Operation  
at  
Our  
Works.



The Henry Martin Brick Machine Manufacturing Co. are so well commended to the  
brick interests of the United States that they are well and favorably known.....

## **THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,**

SEND FOR CATALOGUE.  
SOLE MANUFACTURERS OF "MARTIN" PATENTS.

LANCASTER, PA., U. S. A.

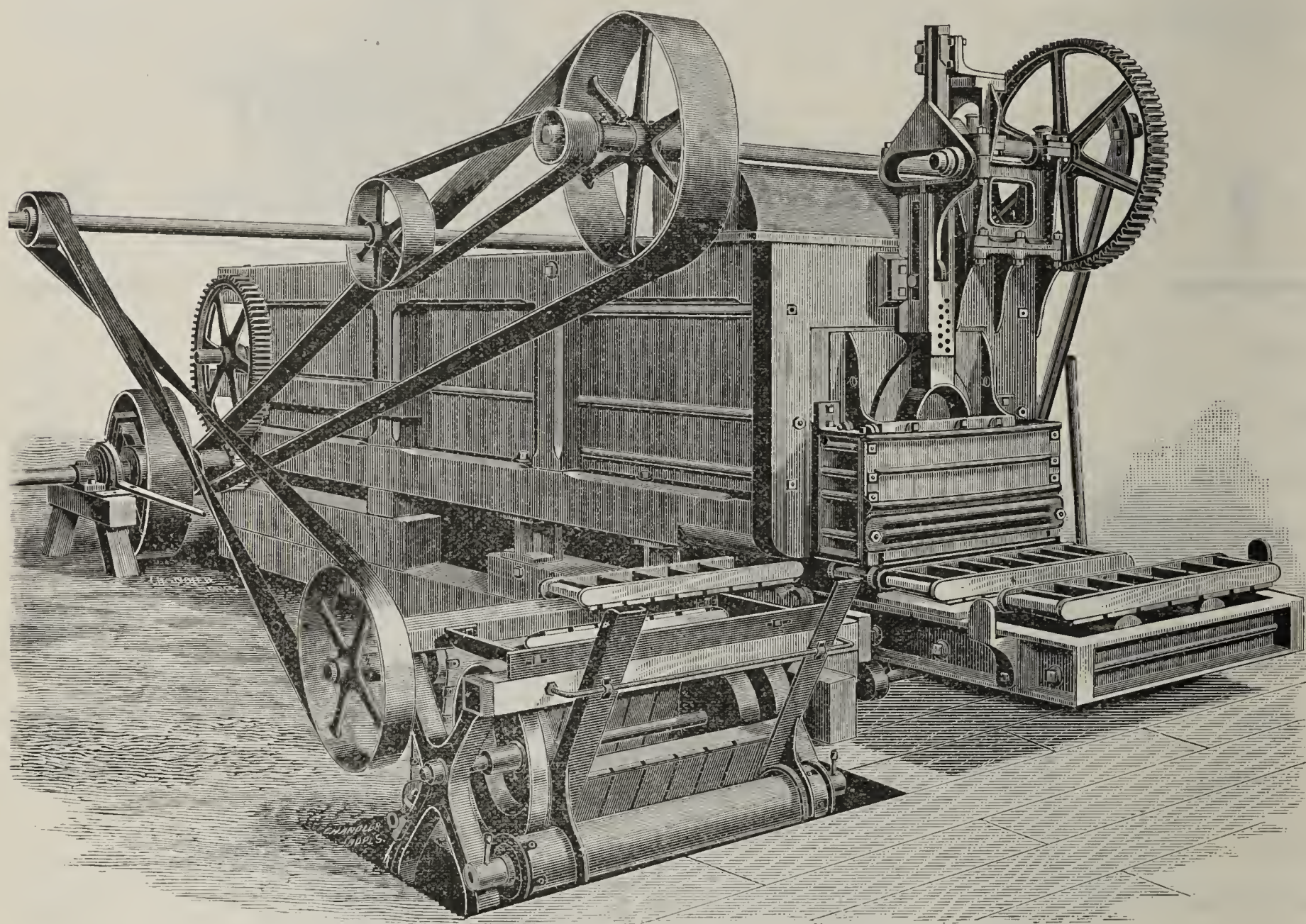


# THE POTTS

HORIZONTAL  
STOCK

---

BRICK MACHINE.



This is the largest and strongest machine made. It will work any clay direct from the bank without the use of an extra Pug Mill.

It has one-half more tempering capacity than any vertical machine and extra Pug Mill made.

The Brick made have clean **smooth surfaces** and **sharp corners**.

It has no equal for strength, durability, quantity and quality of Brick made.

We manufacture a complete line of clayworking machinery and are prepared to erect complete plants of any capacity.

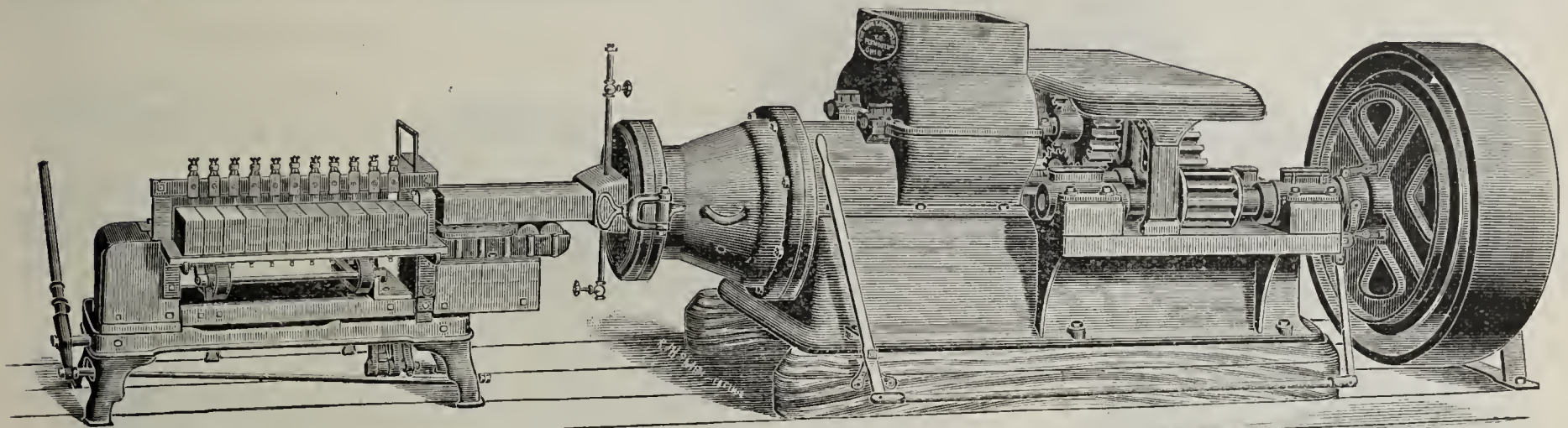
Write for prices.

## C. & A. POTTS & CO.,

INDIANAPOLIS, IND.



# SAVE YOUR MONEY BY BUYING THE BEST.

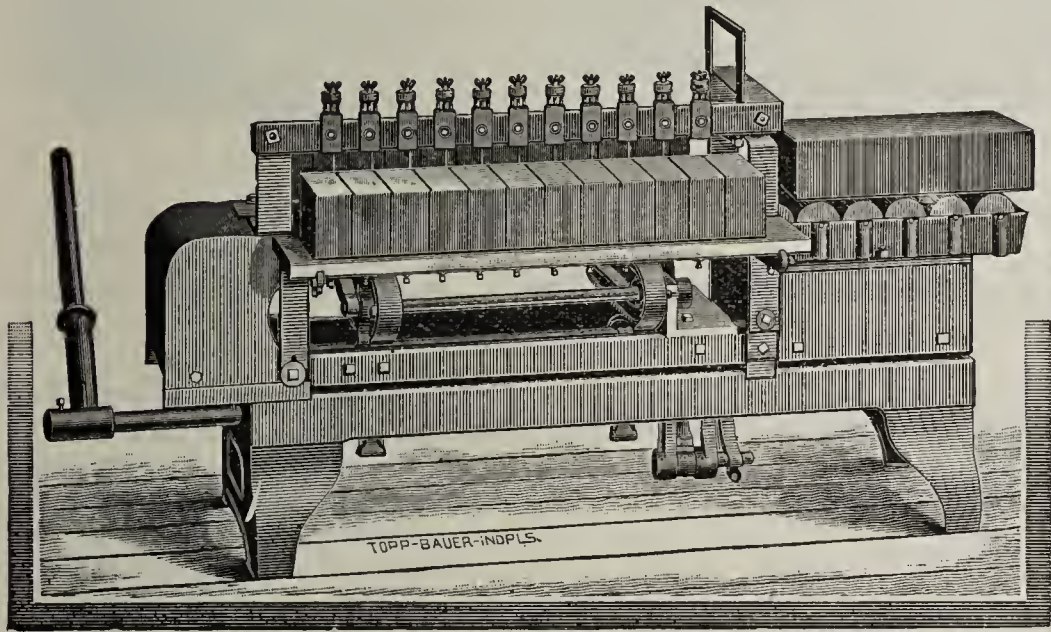


## THE "PLYMOUTH"

Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and pugging device.

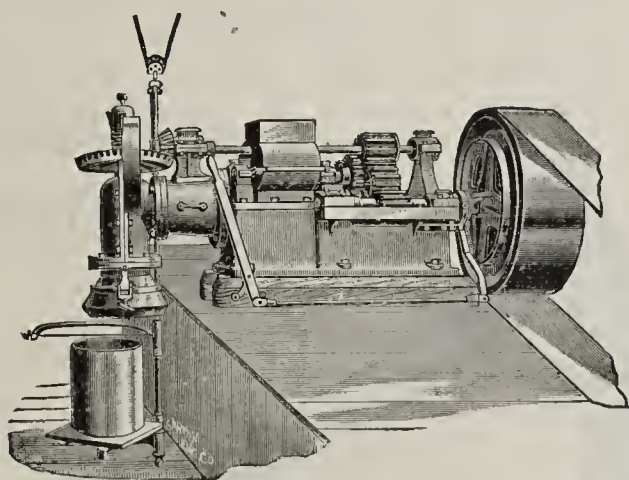


We build our Machines  
for

STRENGTH

... and ...

DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

It will Tell You  
All About It.

# The Fate-Gunsaulus Co.,

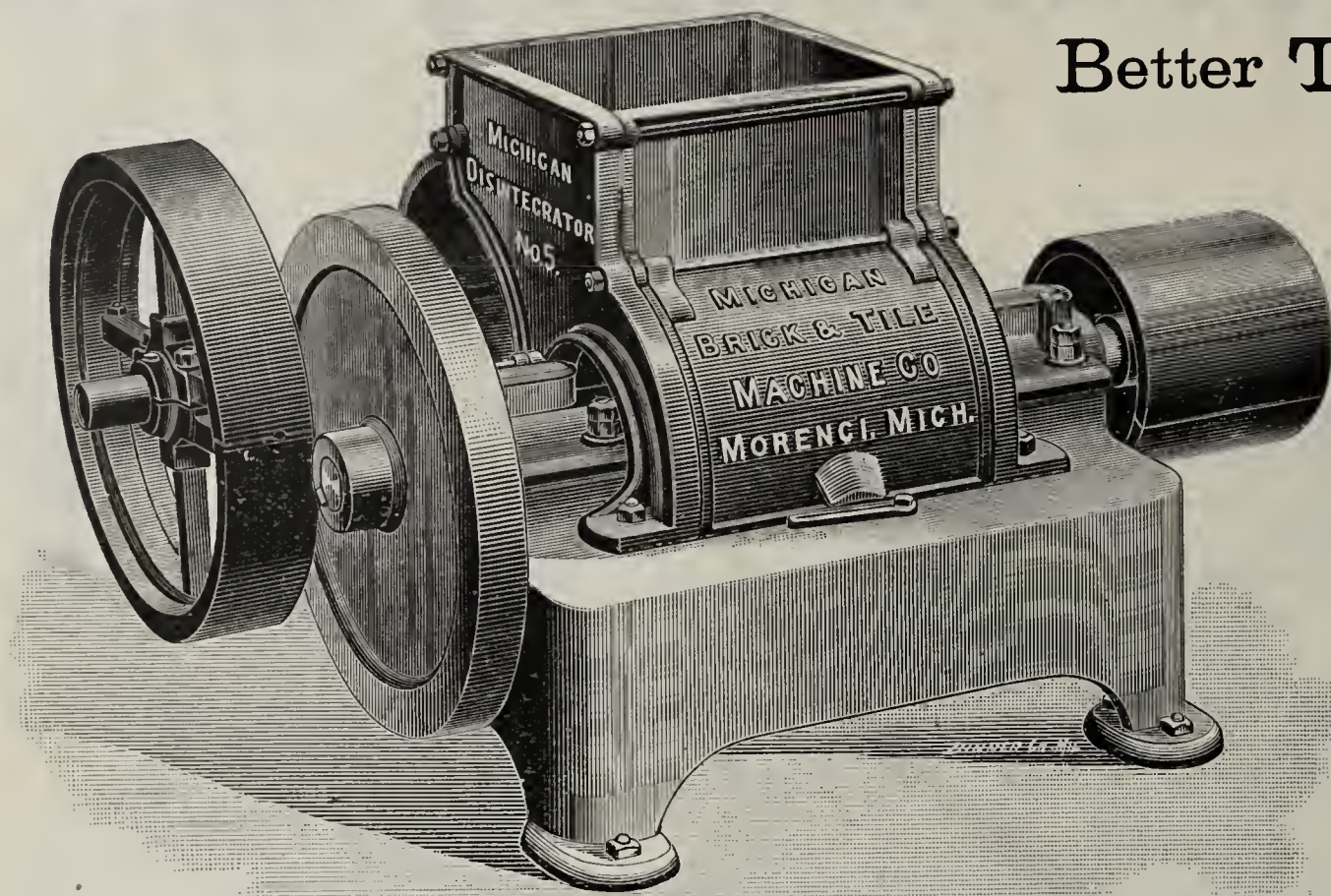
PLYMOUTH, OHIO.

[Mention the Clay-Worker.]



# MICHIGAN DISINTEGRATOR,

Better Than the Best.



## POINTERS:

Main Frame with bearings for Fast Roll cast solid. Speed of Fast Roll, 1,000.

Knives of the best, tempered steel and very large, held in planed recess by planed and bolted key, running the entire length of knives.

All bearings extra long. Outer bearing to Fast Roll at Pulley end.

Made in sizes with capacity up to 100,000 per day.

The strongest, most durable, and with the high speed of the Fast Roll does better and more work than any other on the market.

G. S. DORNEY.

**DORNEY & HARRIS,**

MANUFACTURERS OF

C. C. HARRIS.

Drain Tile and Large Pipe, Fire Brick, Common Brick,  
Flue Lining, Etc.

OFFICE: { Opposite Court House.  
City Office Phone 135.  
Factory Phone 197.

WORKS ON T. C. & C. R. R.

FINDLAY, OHIO, Dec. 24, 1892.

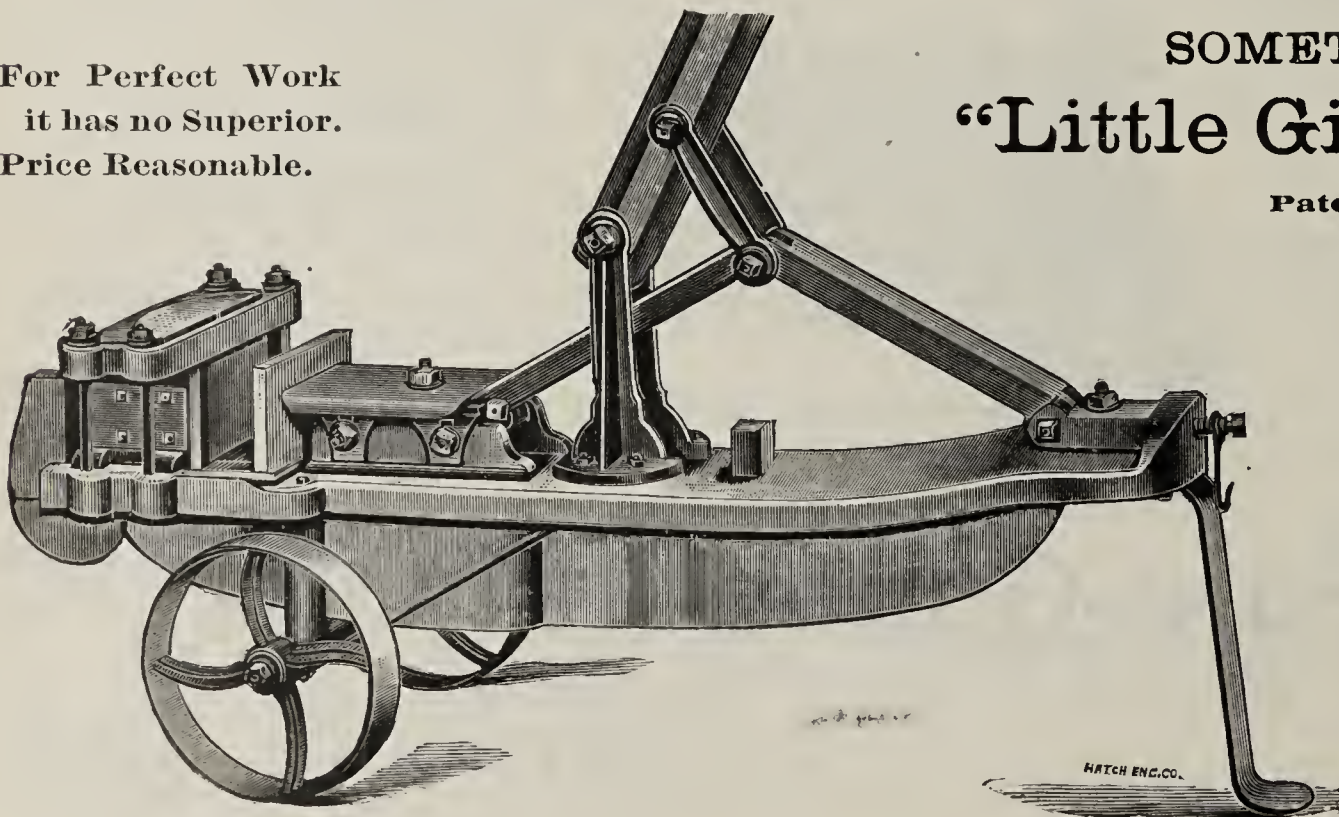
MICHIGAN BRICK & TILE MACHINE Co., Morenci, Mich.

DEAR SIR:—In reply to yours of the 23rd, inquiring as to how we are getting along with the No. 5 Disintegrator we purchased of you some time ago, will say we have been doing our work with it, very satisfactorily and we figure that we make enough better quality of goods to pay the price you ask, once a month over the smooth Roll Crusher we have been running. We have been running frozen lumps through it for several days past and have been making 15,000 4-inch tile for a day's work, and it seems to do the work with scarcely any effort on its part and runs very light and steady, and we see nothing to get out of repair. Trusting you will have a good trade, we remain

Truly yours,

DORNEY & HARRIS.

For Perfect Work  
it has no Superior.  
Price Reasonable.



SOMETHING OLD.

"Little Giant" Re-press

Patented 1870.

We have been making this Press for twenty-two years and sell it now as during the past, FULLY GUARANTEED. Capacity, 6,000 brick per day.

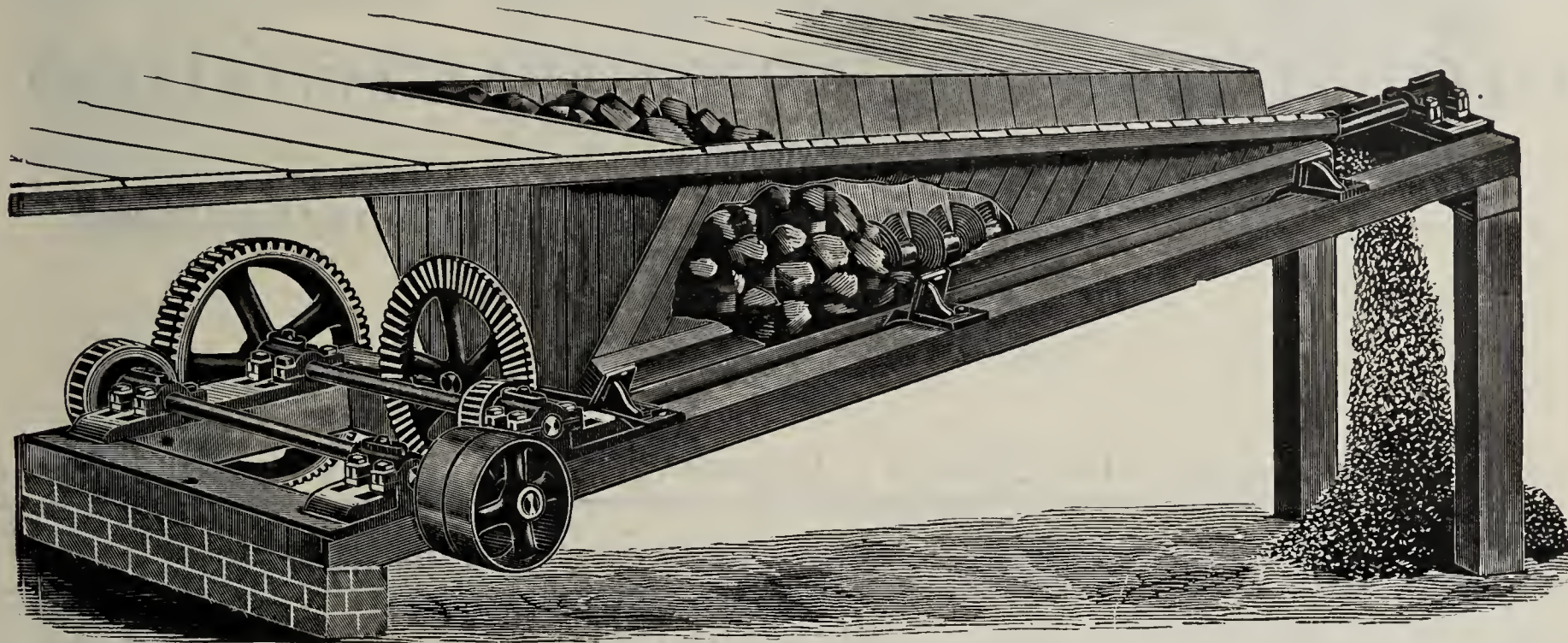
Send for Our New Catalogue and Price List.

**MICHIGAN  
BRICK & TILE  
MACHINE CO.,**

MORENCI, Lenawee Co.,  
MICHIGAN.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

## MUSKEGON, MICH.

Mention Clay-Worker.



✠ ED. H. CALLAWAY, ✠

CONSTRUCTING ENGINEER AND BRICK MANUFACTURING EXPERT,

— WITH —

PHŒNIX FOUNDRY & MACHINE CO.

Manufacturers of Brick Drying Cars, Transfer Cars, Turn Tables,

and full Dryer Equipments. Engines and Boilers and General Machinery.

SYRACUSE, NEW YORK.



General Agent for Sharer's Improved Brick Dryers and Calorific Kilns. Will construct Brick Manufacturing Plants Complete, furnishing all necessary Machinery. Plans and Estimates furnished. CLAYS TESTED. NO TROUBLE TO ANSWER INQUIRIES.

Ten years practical experience.

PAVING BRICK PLANTS A SPECIALTY.

We are wedded to no particular Brick Machine or system of manufacturing bricks, but will examine your clay, location and all conditions, and put in the machinery on system best adapted to your clay and locality. We will build the plant and turn it over to you and guarantee it to make first-class bricks, as economically as they can be produced in that particular section.

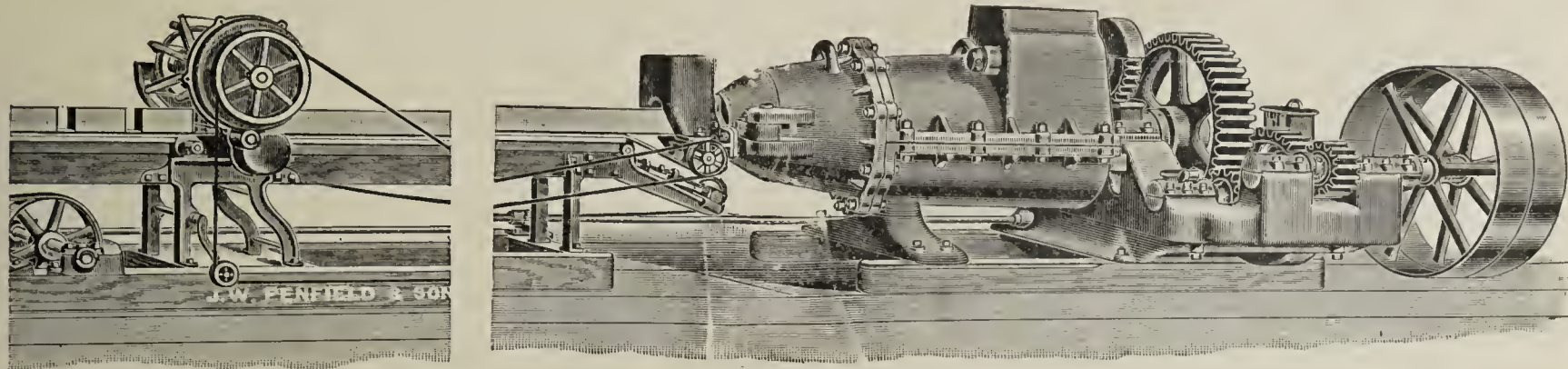
WE TAKE ALL THE RISK.

New beginners should not fail to consult us before erecting a plant. And "old timers" might get some good points from us. Correspondence solicited.

500 EAST WATER STREET,

SYRACUSE, N. Y.





PENFIELD No. 15 AUGER BRICK MACHINE, AUTOMATIC CUTTER, ETC.

## "April Showers Bring May Flowers;"

The balmy breath of spring is again upon us; renewed activity in nature's realm visibly affects the industries of man, and the voice of the busy brickmaker is again heard in the land. Just a few words before we plunge unreservedly into the enterprises of this year; as we start the busy season let us plan wisely.

## Want to Make Money This Year?

Then you must be thoroughly equipped for effective, continuous and profitable work.

## That Old Machine

That you have had so many years can be profitably replaced by one of those New Penfield Machines with modern fixtures, placing you in a position to secure better results at less expense, and to produce a quality of ware that should largely increase your sales and profits.

And, while you are about it, better get a machine with a surplus of capacity, so that your output need only be limited by your sales, rather than to have your sales limited by your output.

## Perhaps Your Brick Machine is All Right,

But you need a disintegrator, crusher, pug mill, elevator, or other fixtures to make your equipment more effective and complete?

## Drop Us a Card, Anyway.

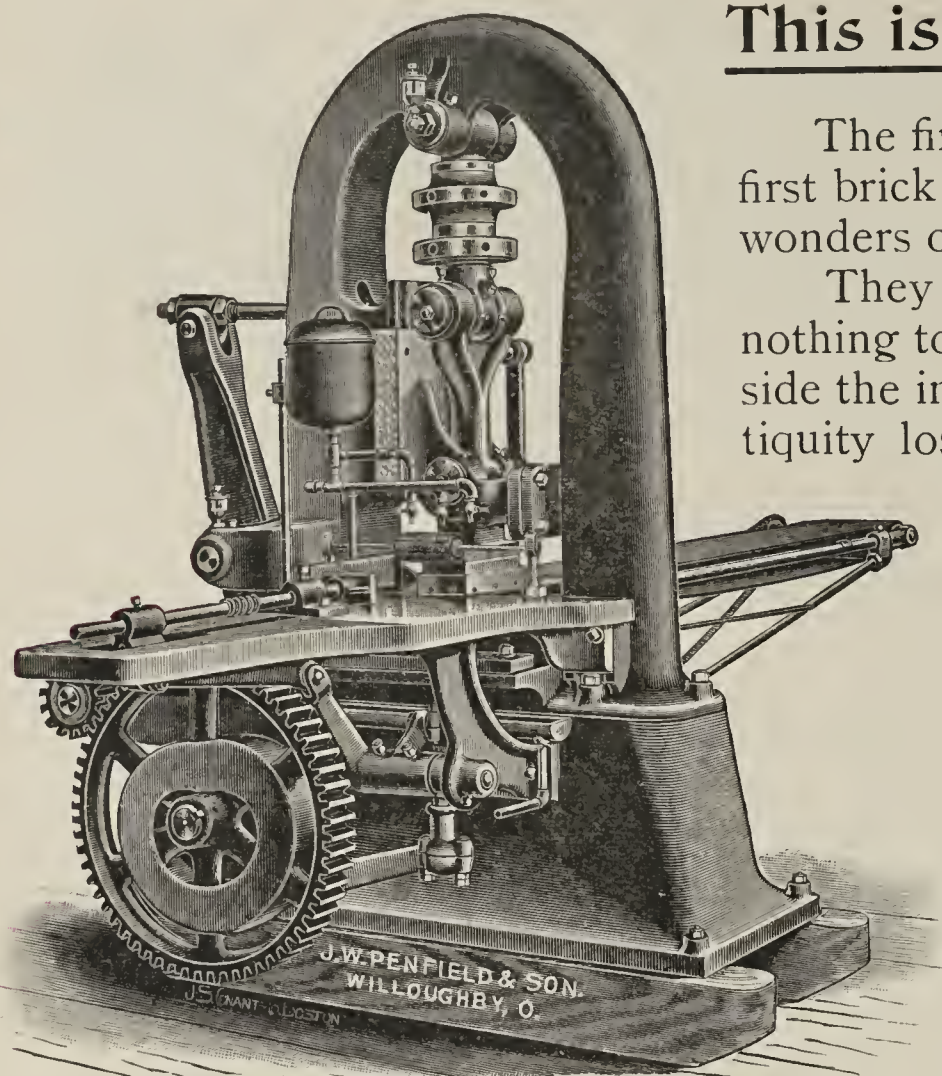
We should like to figure on your wants whether you need much or little, and will give your inquiries prompt attention.

**J. W. PENFIELD & SON,**

Brick and Sewer Pipe Machinery Makers,

WILLOUGHBY, OHIO, U. S. A.





PENFIELD No. 2 POWER REPRESS.

Its claim of superiority is based upon actual and valuable advantages in construction and operation.

## This is an Age of Progress.

The first printing press, the first locomotive, the first brick machine, the first brick repress, were all wonders once, because they **were** the first.

They were good enough **then**, for there was nothing to compare them with. But, place them beside the improved devices of to-day and their antiquity loses its charm. They would make good curiosities for the World's Fair, but their day of practical usefulness is past.

And yet some purchasers actually select certain machines or appliances solely because they were first on the market.

## The Penfield Power Repress

Bears none of the earmarks of antiquity, but is distinctively a modern machine for modern users. It is purely and simply a **Power** repress, first, last and all the time—never was designed for anything else.

## It Runs Easy;

Presses brick as fast as you can handle them and as well as any press made—and better than some. It is the strongest, heaviest and least complicated. The pressure is rigid, uniform on each brick, and downward, obviating constant lifting of die table; the pressing toggle is up out of the grit and dirt; the toggle, itself, don't wear at all—only the renewable hard metal bushings and pins. The counterbalance spring secures steady, jarless operation.

Our pamphlet, "Brick Repressing and Represses" tells you all about it. Its record is a record of to-day.

THE RECORDS OF TO-DAY  
ARE WHAT COUNT.

J. W. PENFIELD & SON,

BRICK AND SEWER PIPE MACHINERY MAKERS,

WILLOUGHBY, OHIO, U. S. A.





# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

W. B. MERSHON & CO.,

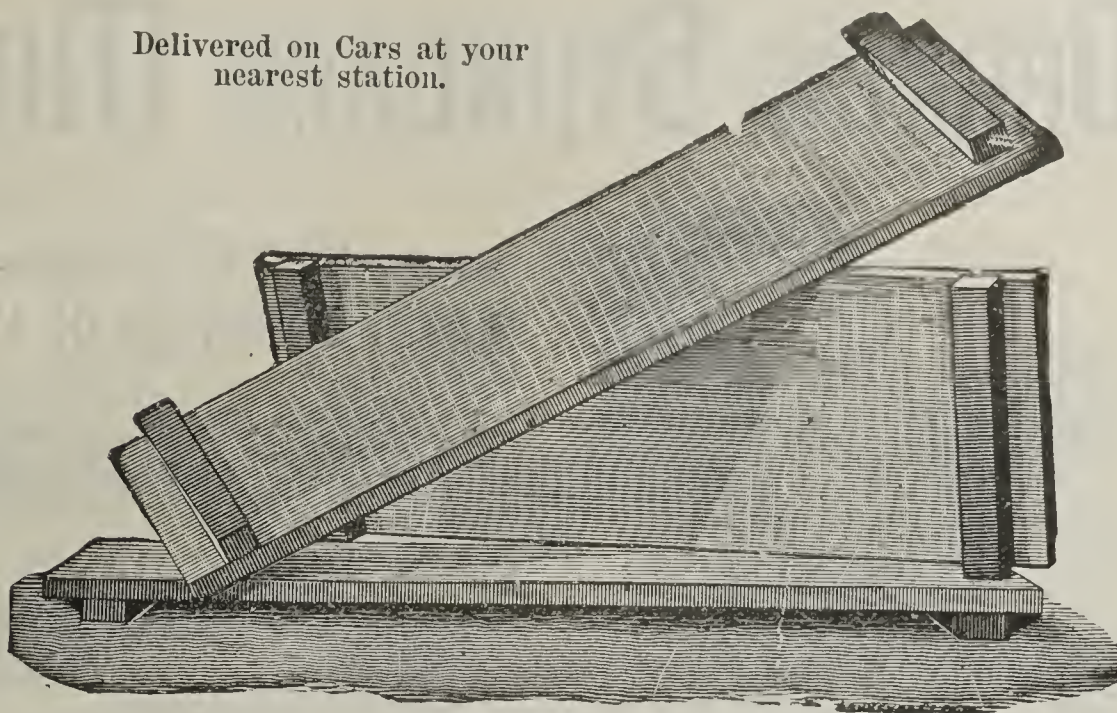
East Saginaw, Mich.

Write for circulars and prices.

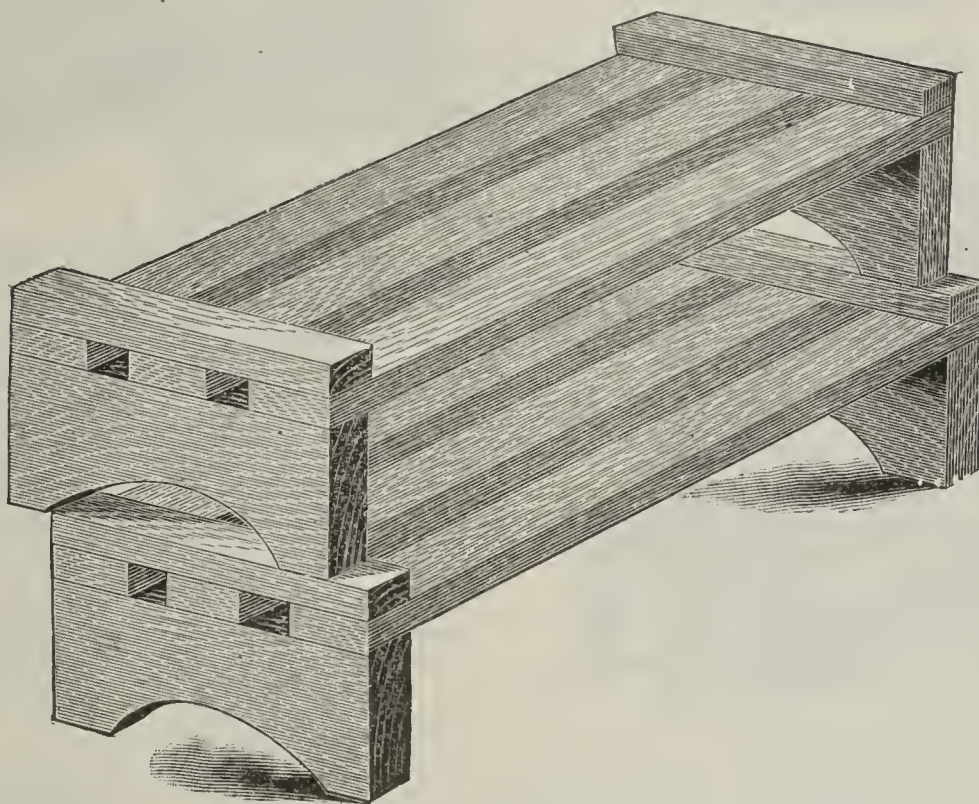
THE CLAY-WORKER.

551

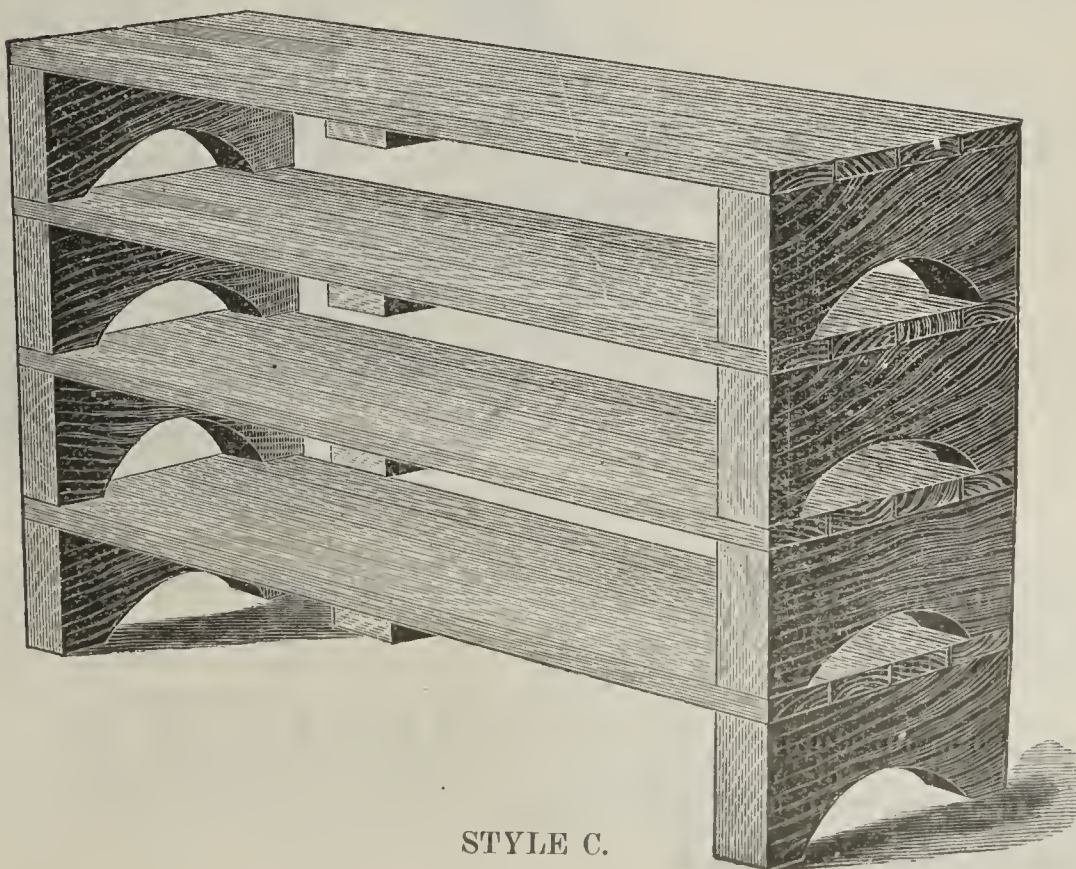
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.



STYLE C.

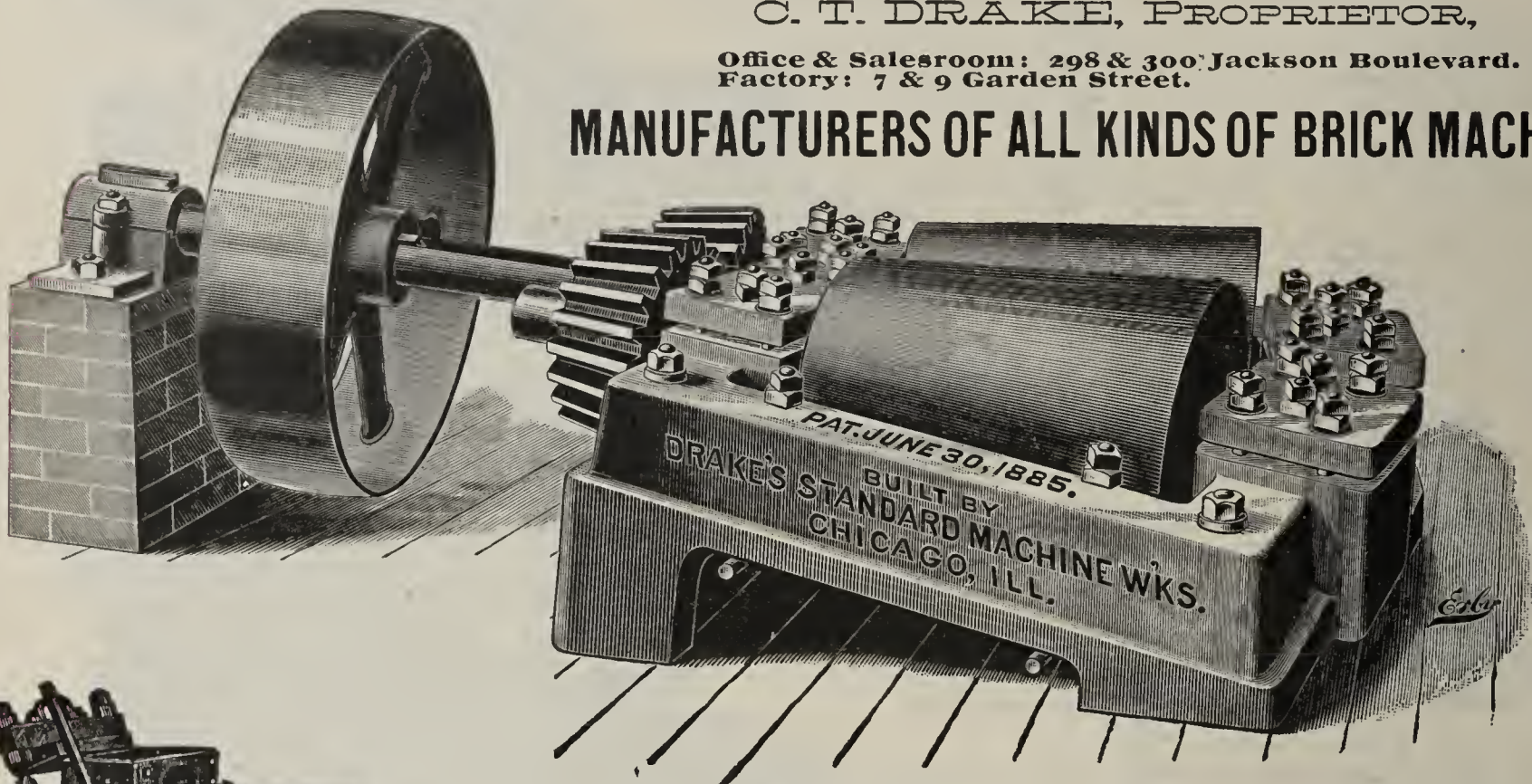


# Drake's Standard Machine Works,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY

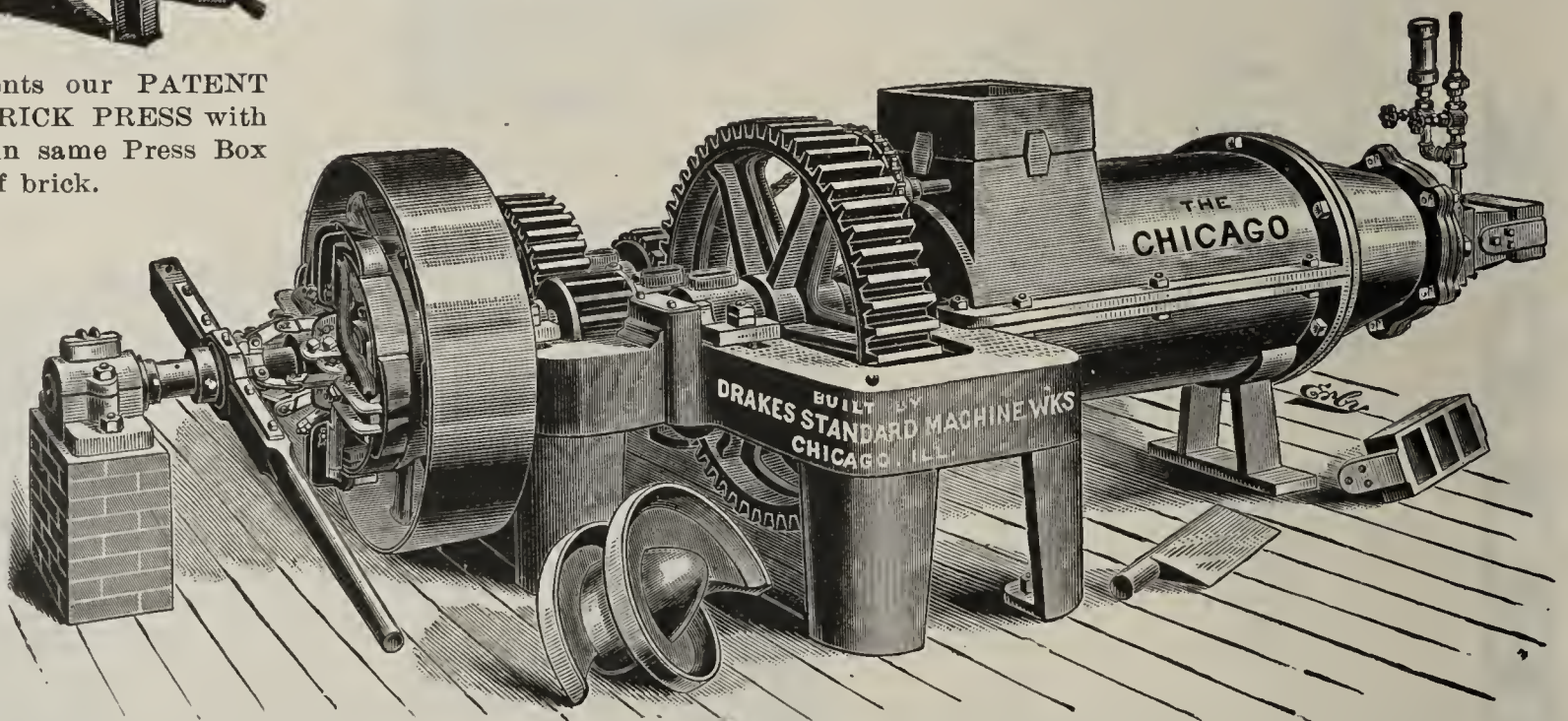


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 6 Crushers; Hayt & Alsip Co. is running 4 Crushers; Purington, Kimbell Brick Co. is running 8 Crushers; May, Purington & Bonner B. Co. is running 4 Crushers; J. B. Legnard is running 4 Crushers; Weckler Brick Co. is running 1 Crusher; Adam J. Weckler is running 1 Crusher; Weckler Prussing Brick Co. is running 1 Crusher; Chicago Brick Co. is running 3 Crushers; Union Brick Co. is running 2 Crushers; M. Myers is running 2 Crushers; Wahl Bros. is running 2 Crushers; Pullman Brick Co. is running 2 Crushers; Fred Zapel is running 1 Crusher; Myers & Toll is running 2 Crushers; Harms & Schlake Brick Co. is running 1 Crusher; L. Wehrheim & Son is running 1 Crusher; Alexander Burke is running 1 Crusher; John Sexton is running 1 Crusher; John Busse, Jr., & Co. is running 1 Crusher; Star Brick Co. is running 1 Crusher; John Busse is running 1 Crusher.

**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

This cut represents our PATENT RED and FIRE BRICK PRESS with change of liners in same Press Box for different style of brick.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 40,000 brick per day. Surpassed by none.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, ETC., ETC.

Send for circular of our GRANULATOR, it is the leader in Chicago, so says: Alsip Brick Co., Hayt & Alsip Co., May, Purington & Bonner Brick Co., Kimbell Brick Co., Purington-Kimbell Brick Co., and others.

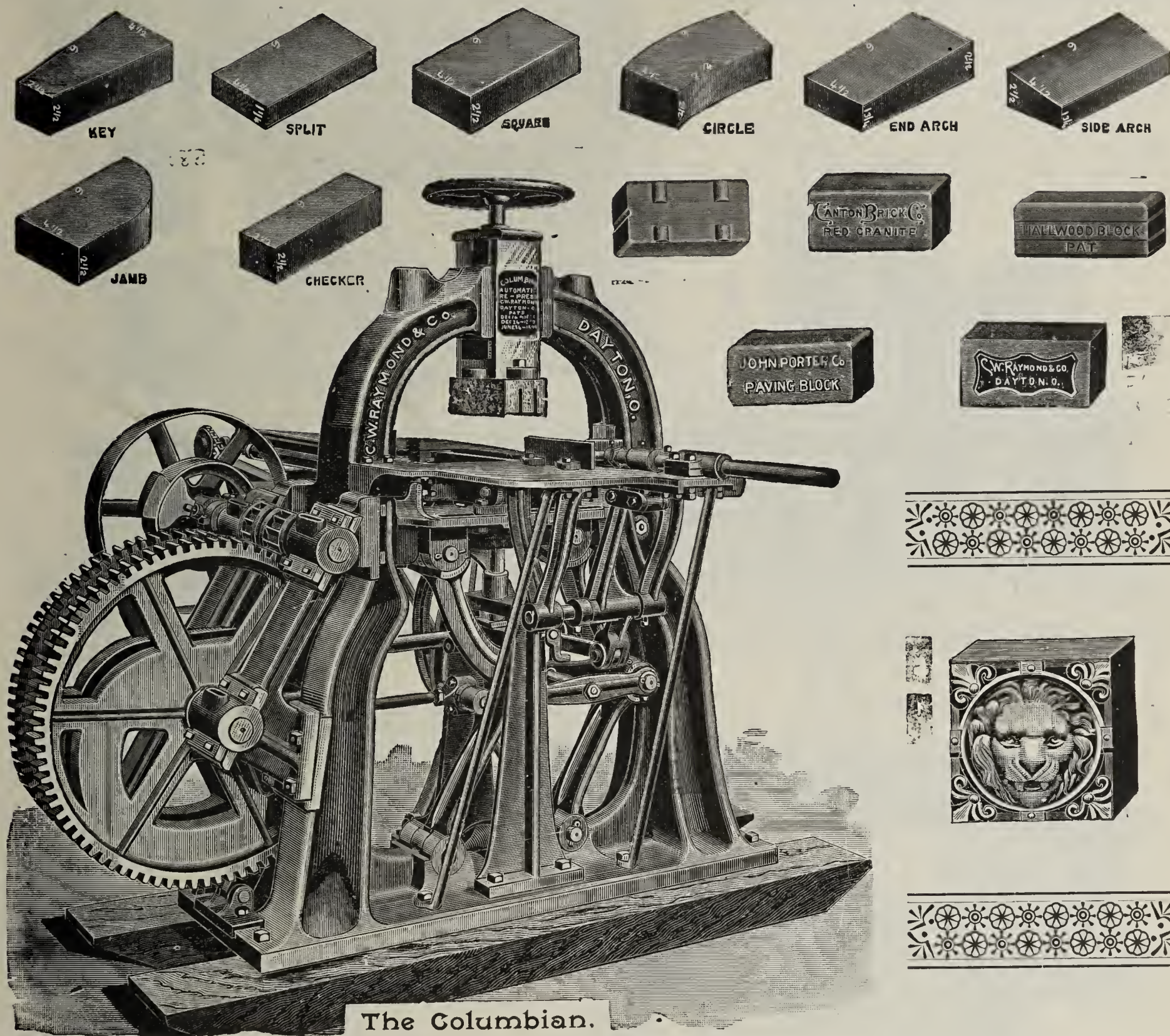
**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED.**



# The COLUMBIAN.

✂✂ The One Press Will Press Them All. ✂✂



The Columbian.

**"That Tired Feeling"** which a brickmaker experiences when he has invested \$600 in an experimental re-press and \$2,580.32 in repairs can be entirely obviated by purchasing

**A COLUMBIAN,**

The only press that made a record of its own, hence, the only one that offers a secure investment for a practical brickmaker.

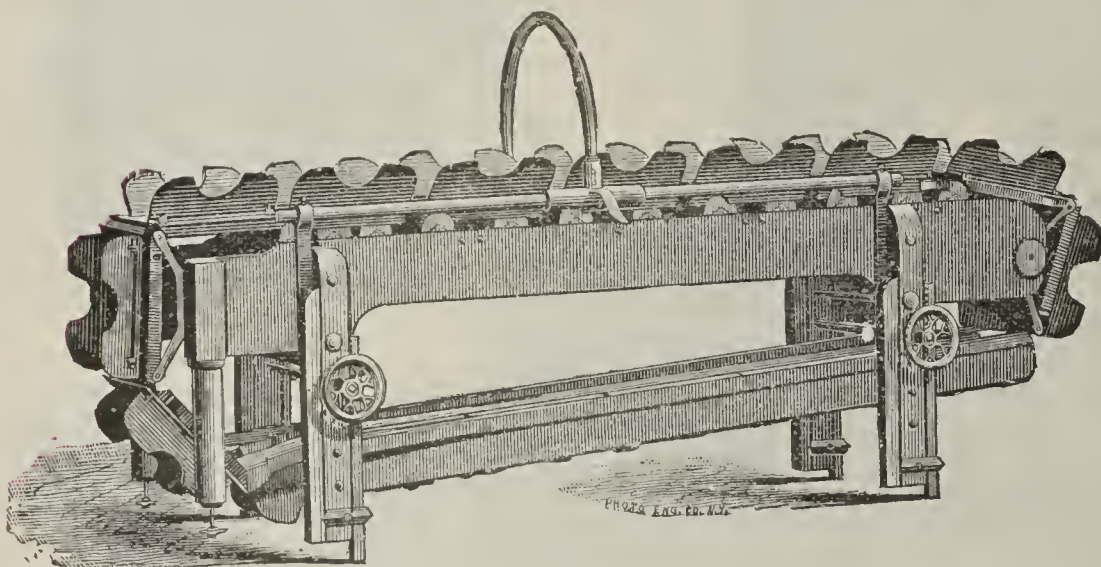
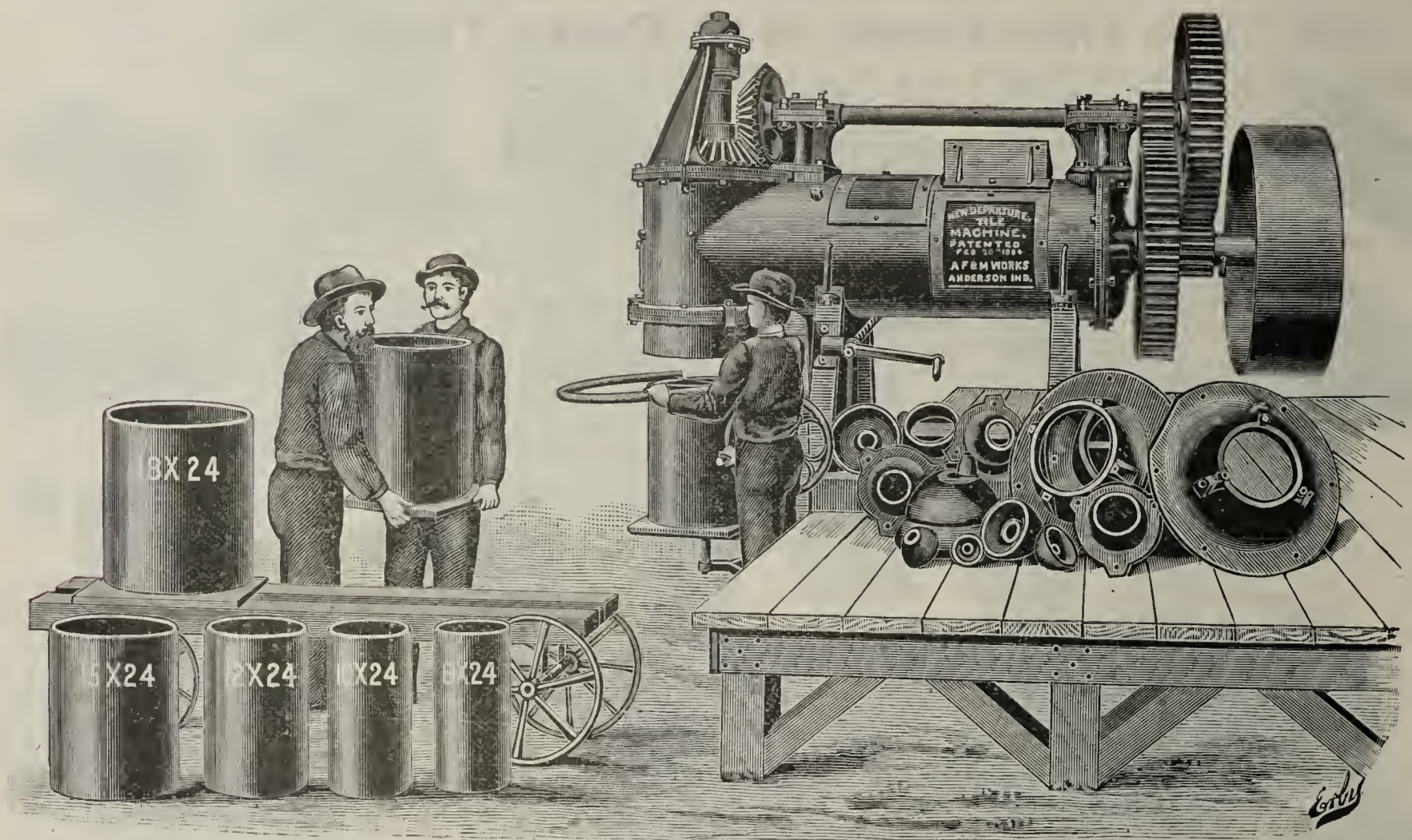
**Manufactured by C. W. Raymond & Co.,**  
Dayton, Ohio.

[Mention the Clay-Worker.]



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

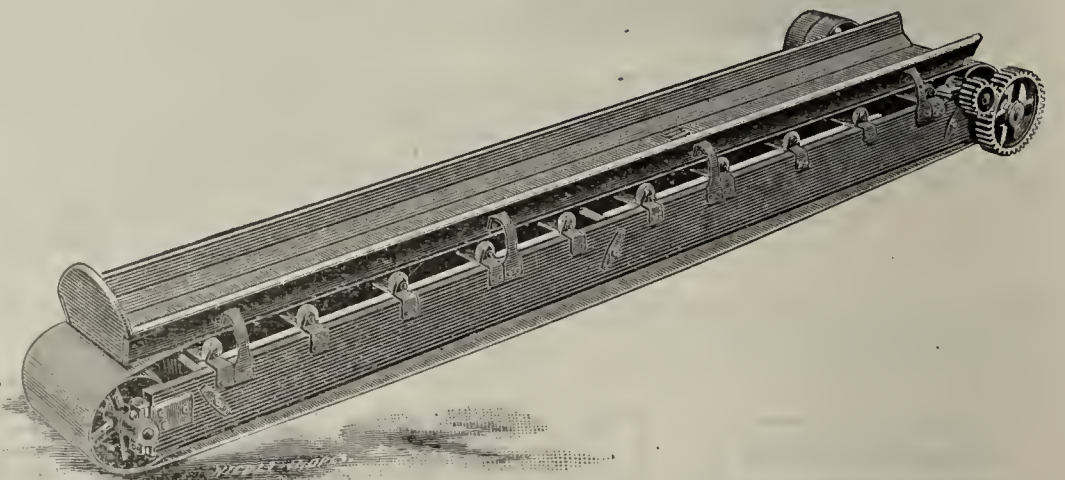
[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

**Down Delivery for Large Tile.**

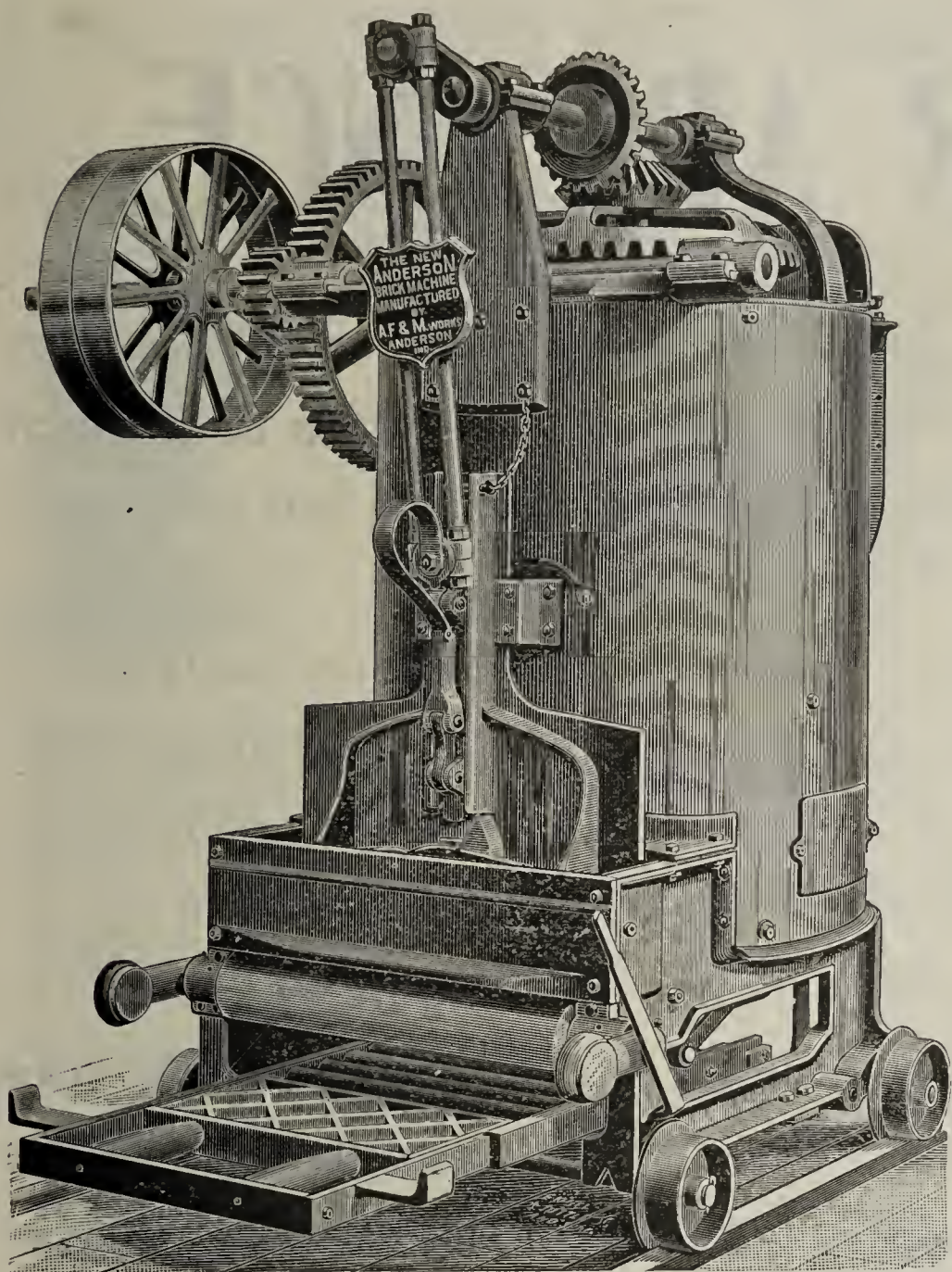
**Side Delivery for Small Tile.**

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**



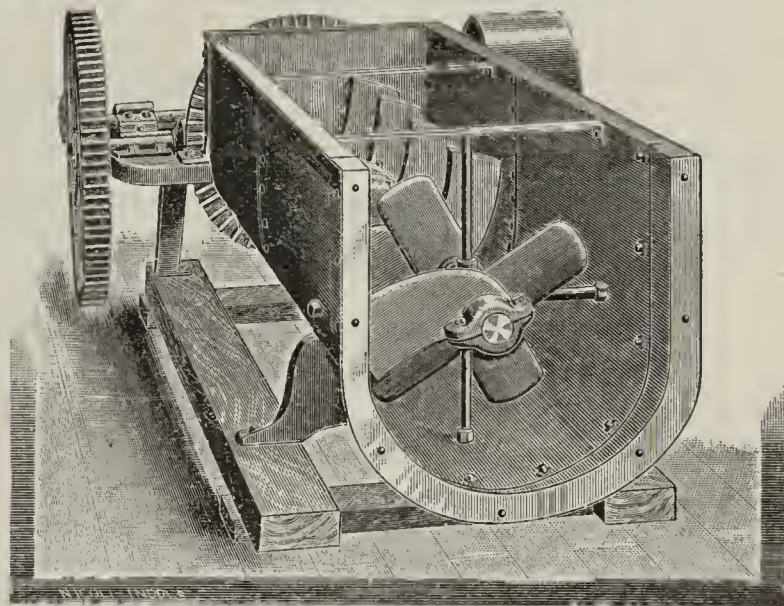


## THE New Anderson Brick Machine

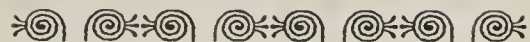
MANUFACTURED BY

THE Anderson Foundry & Machine Works  
ANDERSON, IND.

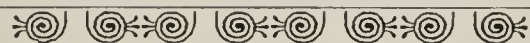
THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



End View of Pug Mill.



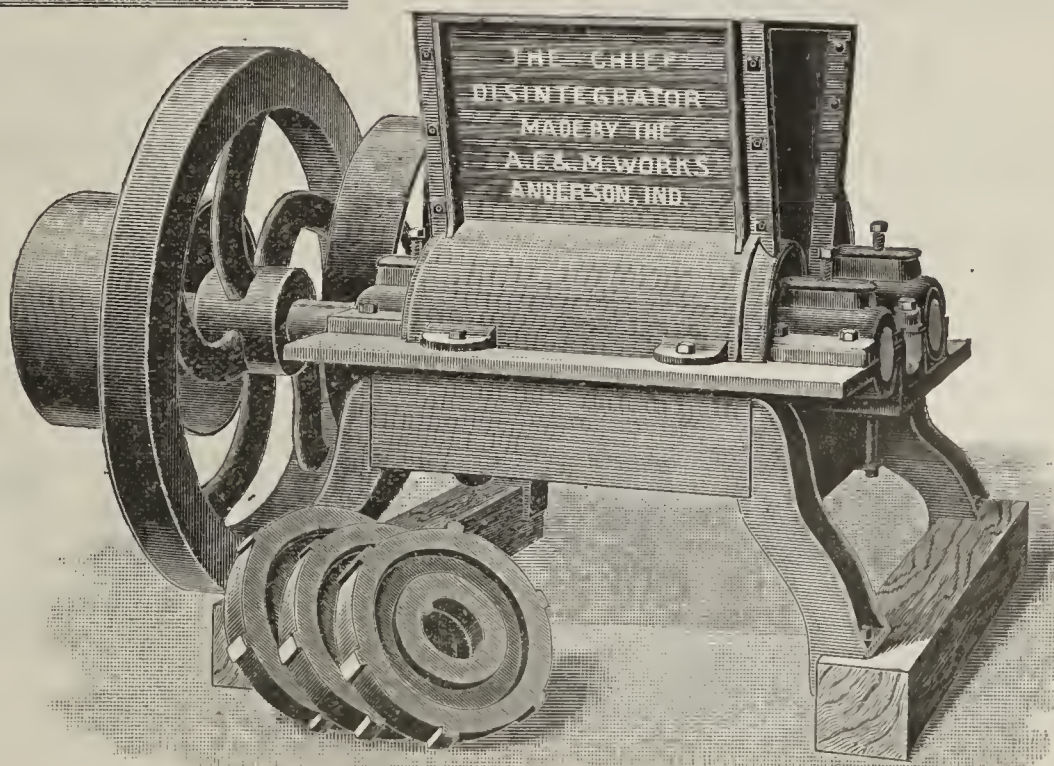
We also manufacture the  
**NEW IMPROVED CHIEF BRICK MACHINE.**



## The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 1/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

**PUG MILLS,  
DISINTEGRATORS,  
TRUCKS, BARROWS  
And All Brickyard Supplies.**



[Mention the Clay-Worker.]

Correspondence Solicited.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

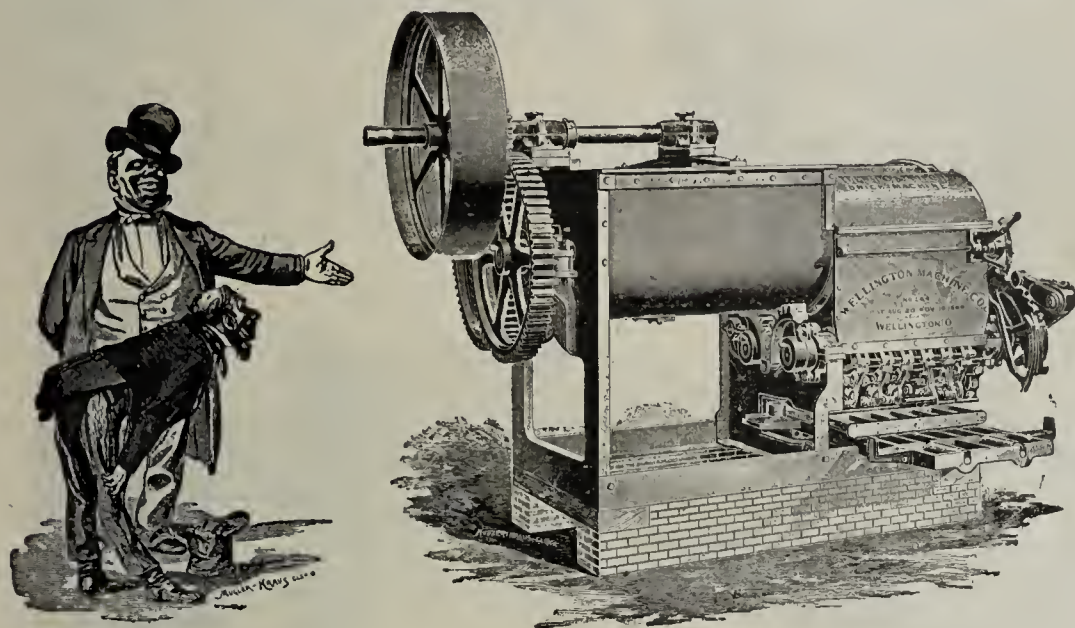
## The Wellington Machine Co.,

WELLINGTON, OHIO.

[Mention the Clay-Worker.]



## A Brick Yard Conversation Where a "Monarch" is Used



OWNER TO VISITOR:—"There it is! You did well to come and SEE it, for that is the only way its advantages are fully appreciated. When first I read the description of it, I had a kind of a hazy, dreamy impression that it contained some vital improvements, but like yourself I did not realize the immense money value to the user until I actually saw it in operation."

Watch this page next month. Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y. January, from Utica, N. Y. February, from Pittsburg, Pa. March from Toledo, Ohio.

### Office of THE AKRON FIRE BRICK CO

AKRON, OHIO, March 27th, 1893.

C. McDERMOTT, Esq.,  
Sec'y THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO.

DEAR SIR:

Replying to yours of the 25th asking what "shapes" we make, would say, we make Arch, Half Arch, End Wedge, Bull Heads, Key, Split and Circle brick on the "Monarch," also Side and End Skew-Backs, all with the die that came with the machine, and we make them successfully.

I have entirely abandoned my Wire-Cut Machine, and shall probably never make another brick on it. I don't like it. The brick are not good. Give me the "Monarch" every time. IT IS THE BEST SOFT MUD MACHINE MADE. I am

Very Truly Yours,

B. M. ALLISON, Sec'y.

**NOTE:**—This Machine was the first iron machine we built having the new principle of "Monarch" Press in it. It was used one season making red brick, and these parties have used it now nearly three years without our having furnished a repair for it, and fire clay is a "terror" to machines,—hard to temper, difficult to fill out, and VERY wearing on the Machine. Do you remember that the "Monarch" is constructed so that the VITAL parts of the Machine can NEVER wear out? If it is good for 25 days, it is good for 25 years. Fact. We know you don't believe it now, but you will if you SEE it, and study its construction.

## The Burden of Our Song

is "Go and SEE the Machine." We find that brickmakers actually expect every machine-maker to claim his machine to be the best. So that seed falls on barren ground. But, we find when they SEE our Machine in operation, then THEY say it. They know what they want, and the only way to tell for sure is to see the Machine at work. There are three "Monarchs" at work on winter yards this month as follows: McGraw Bros., Pittsburgh, Pa.; Rowland, Mulcahy & Carmichael, Mansfield, O.; and Simon Kline, Reading, Pa. But as soon as the season opens, there will be nearly 50 we can send you to see. Pennsylvania alone will have 12 going, and all sold short distances from those at work last year. Don't that tell the story?

## The Wellington Machine Co.,

Wellington, Ohio.

"The procession is passing by." Get in it.



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

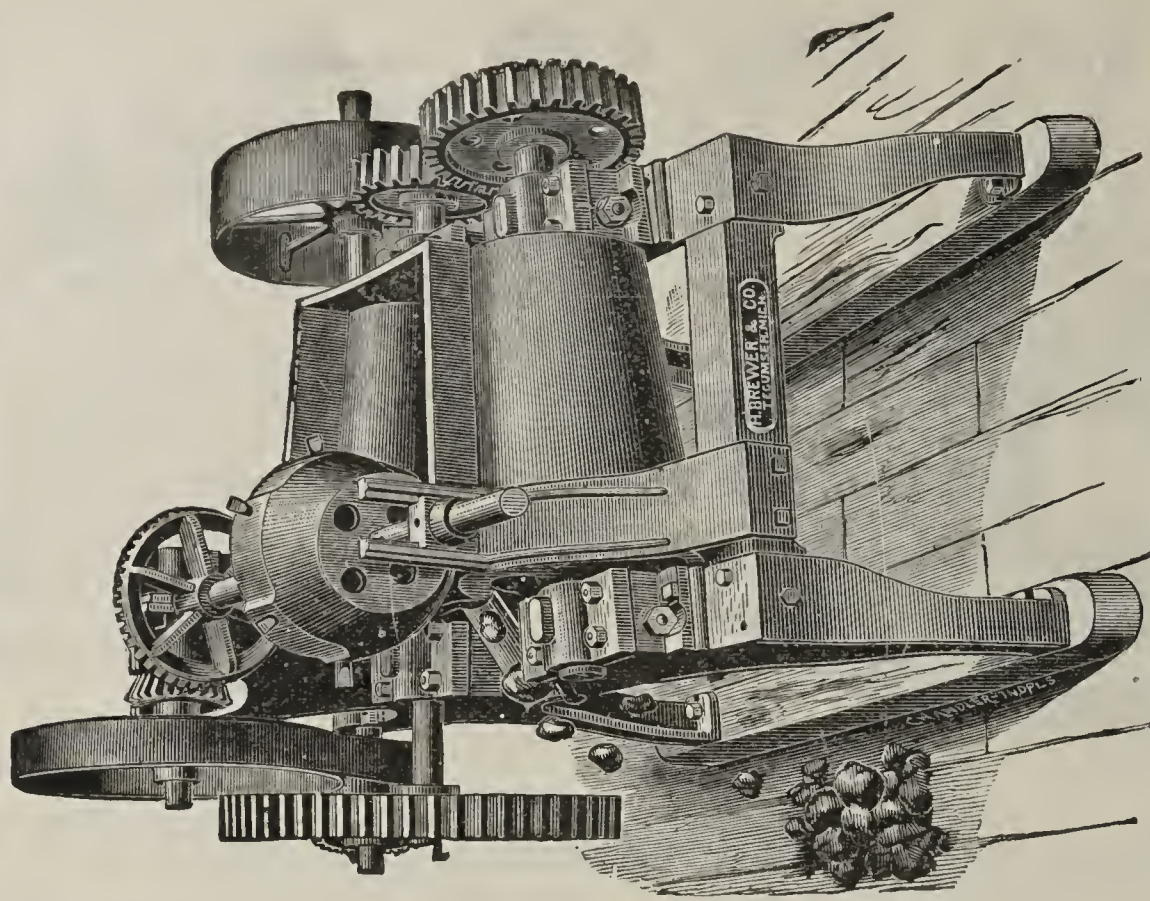
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

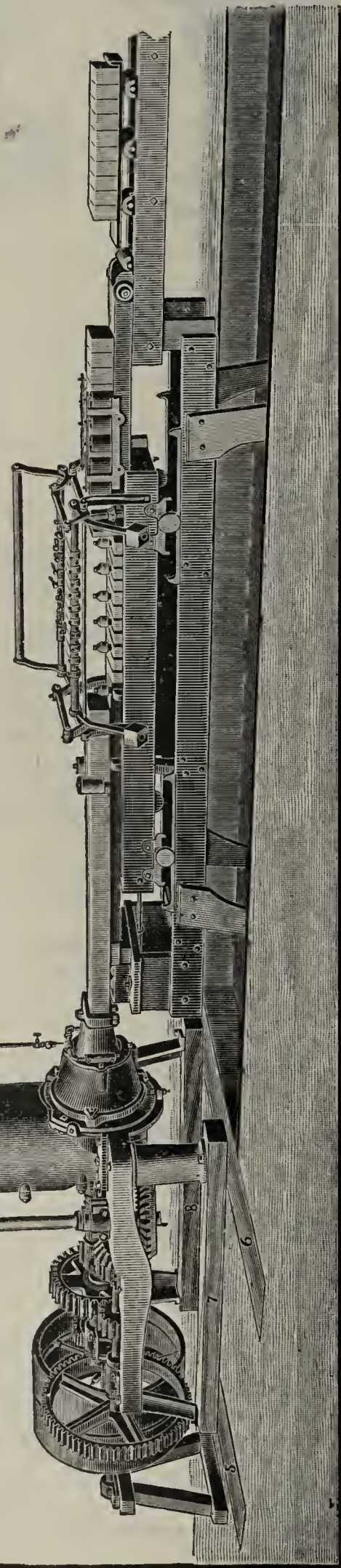
For full information address

**H. BREWER & CO.,**  
**Tecumseh, Mich.**

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.



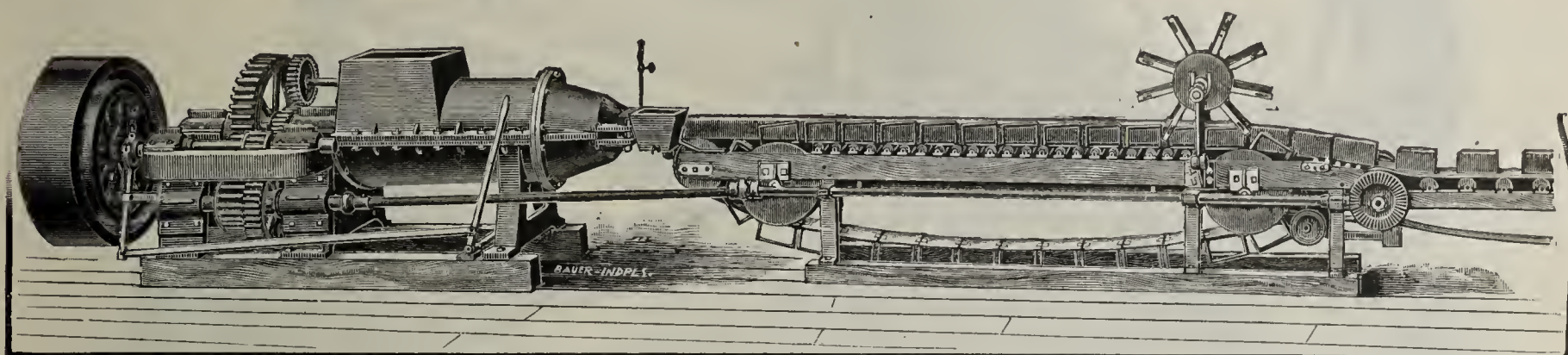
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



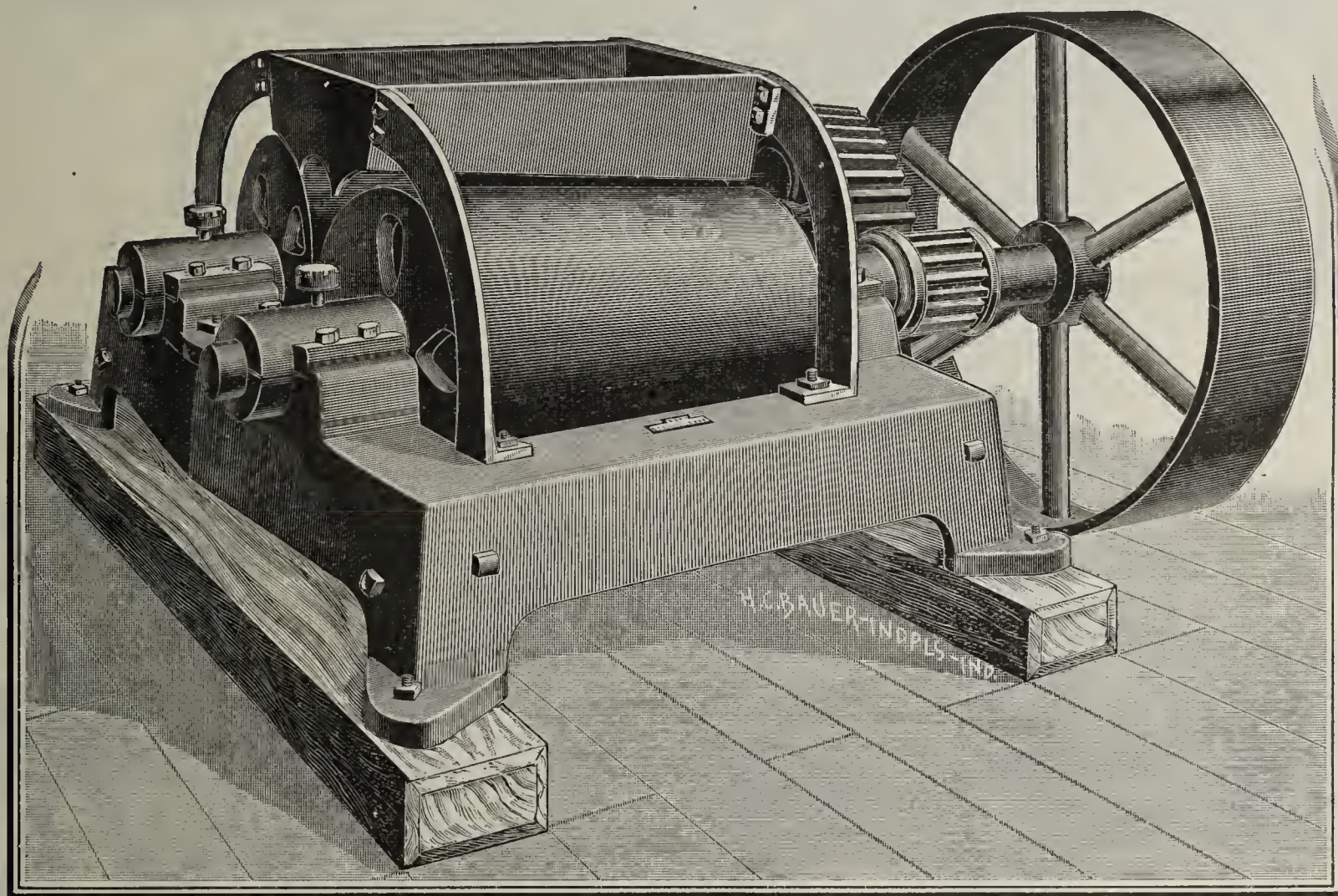
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

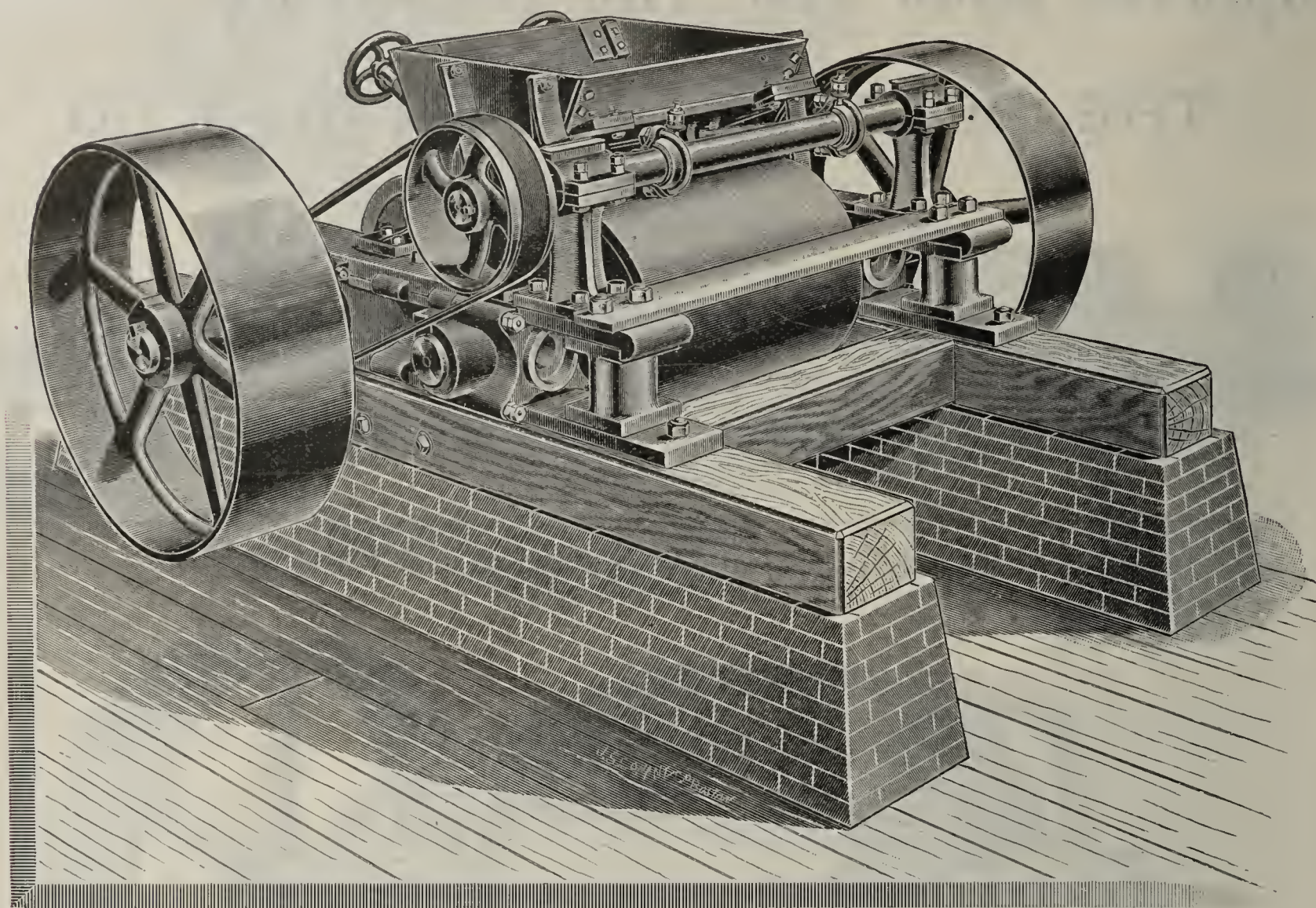
THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]

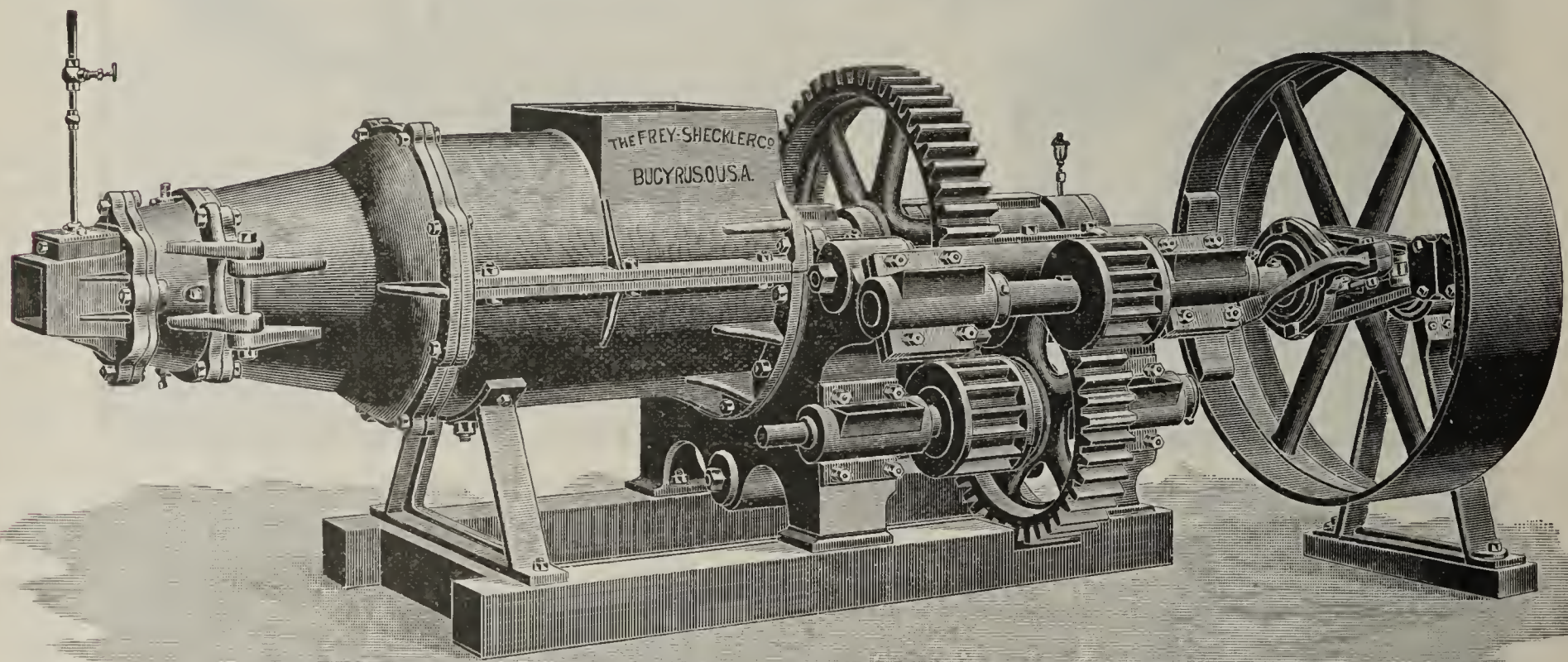


# THE FREY-SHECKLER COMPANY.



No. 12 IMPROVED TAILINGS CRUSHER.

This machine is used largely in place of screens, reducing the dry-pan output to the fineness of flour.



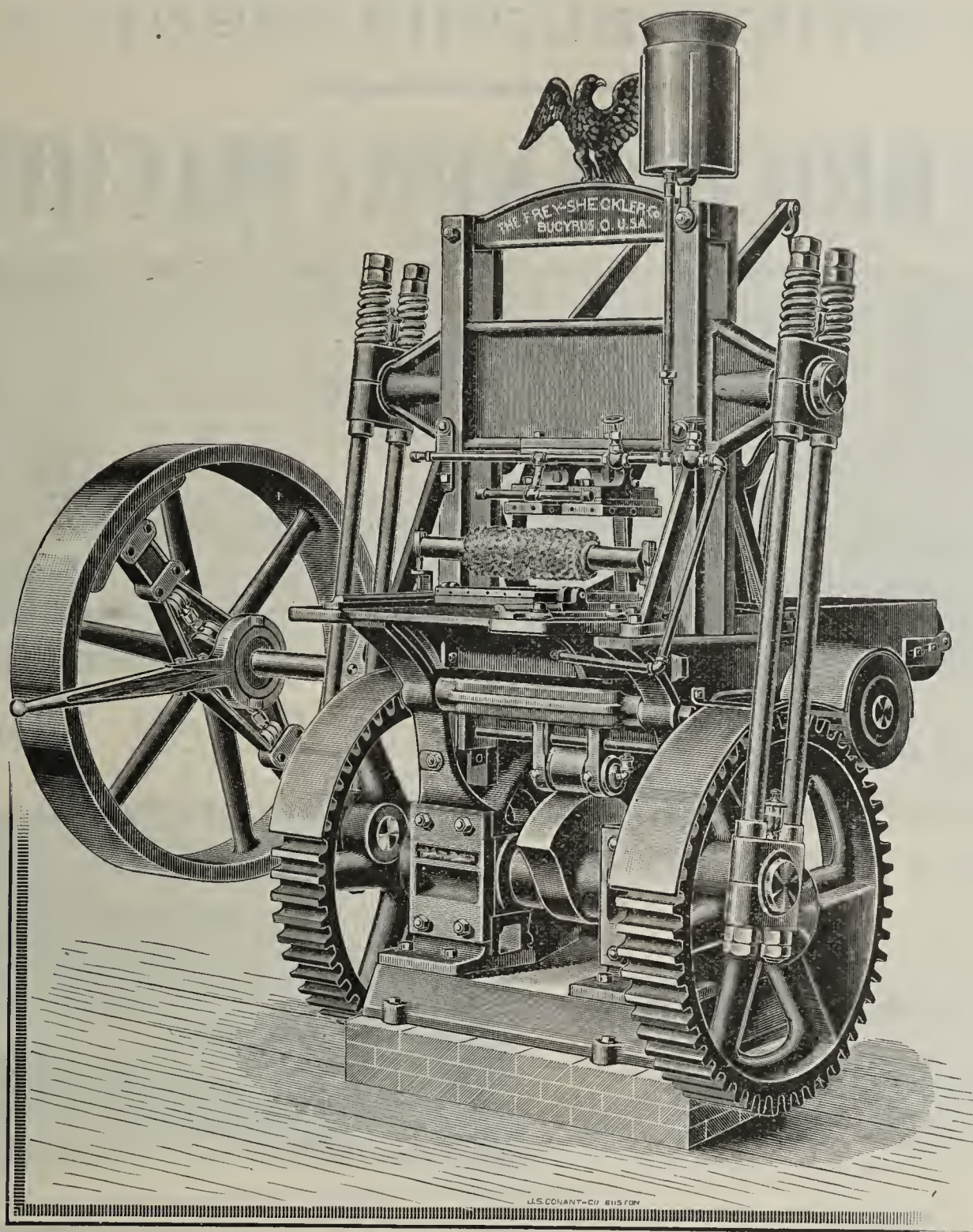
No. 2. BUCYRUS GIANT BRICK MACHINE.

For factories of from 30,000 to 40,000 brick per day. A No. 1 machine for plants of this capacity.

THE FREY-SHECKLER CO., Bucyrus, Ohio, U. S. A.



# Ne Plus Ultra. ~



A re-press without an objectionable feature is ours. We are daily replacing machines of other makes, with ours. Its rapidity, simplicity and effectiveness, are its commendable peculiarities.

Do not waste time and money on experiments, but buy one which is time tried.

## The Frey-Sheckler Co.,

Mention CLAY-WORKER.

~ Bucyrus, Ohio, U. S. A.

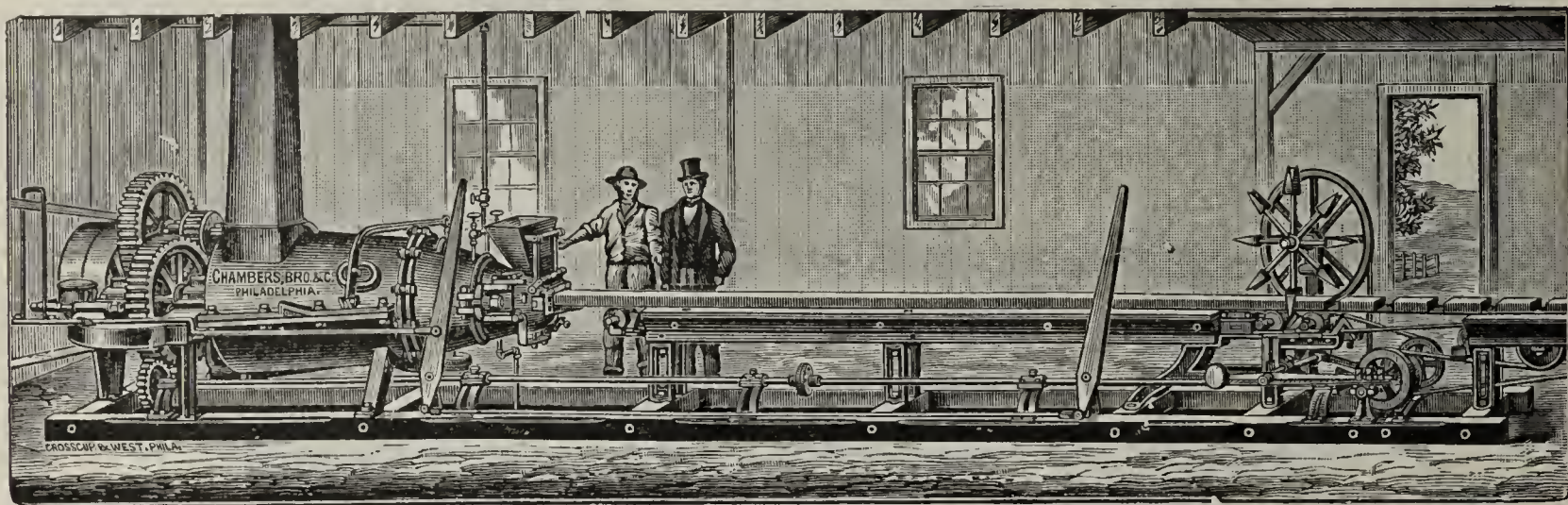


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



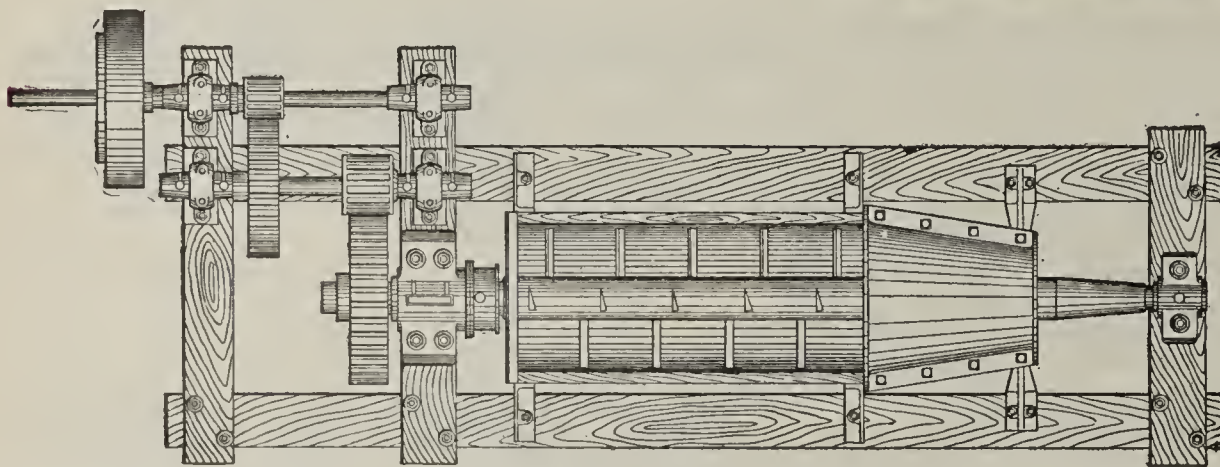
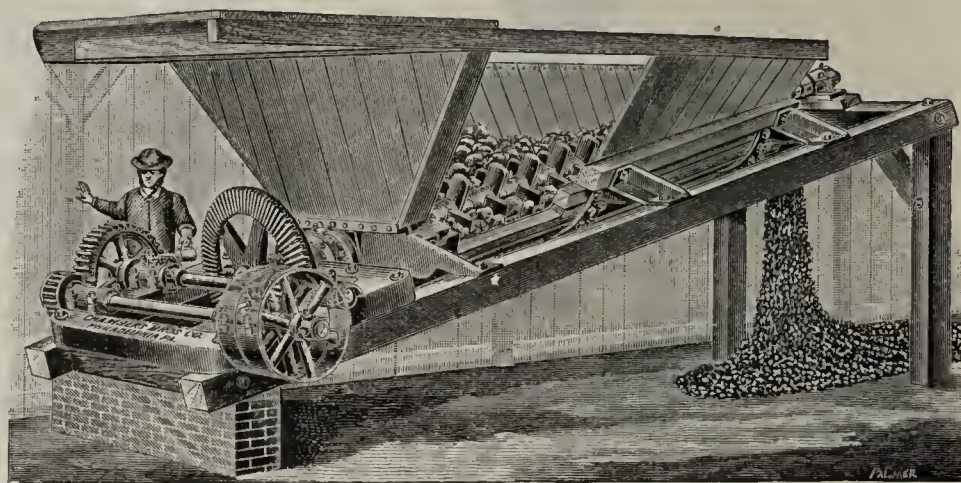
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

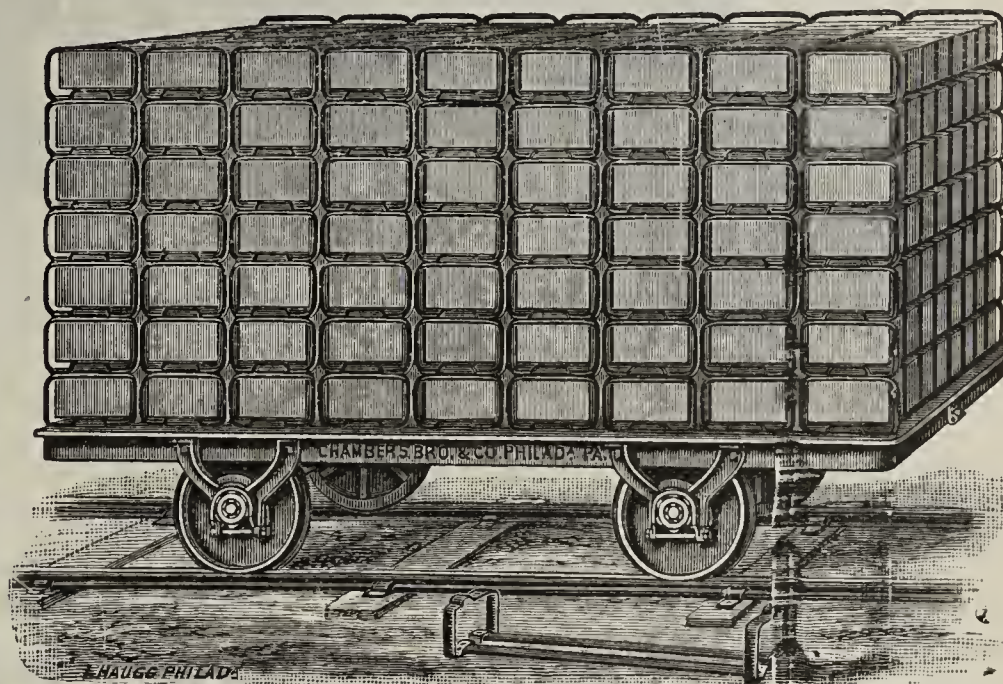
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

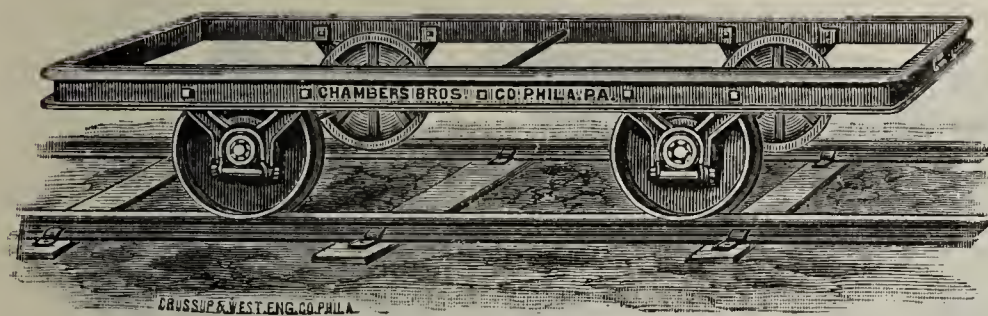
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

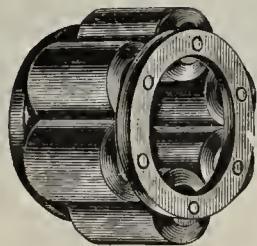


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

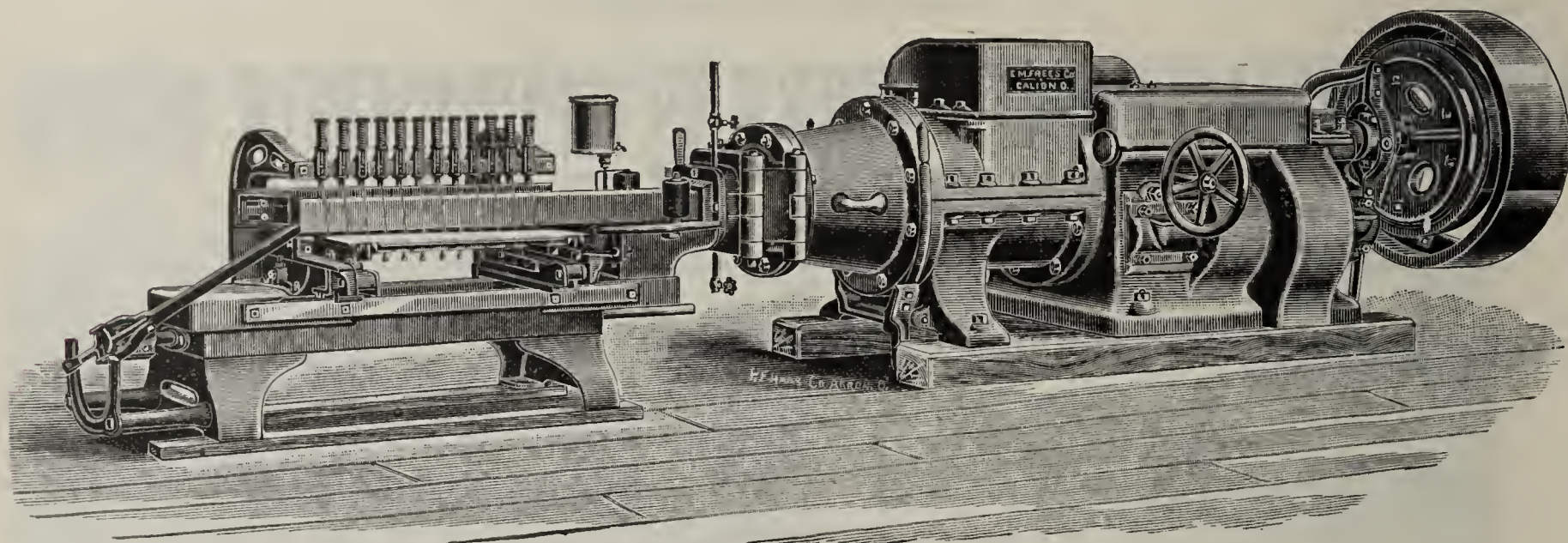
See ad. on front cover page.

[Mention the Clay Worker



# IMPROVED BRICK MACHINERY.

WE recognize the fact that the trade grows more exacting, and the demand is for better brick and better machinery. Our business is to supply the latest and most improved machinery which will produce the **best** quality of brick at the **lowest** cost.

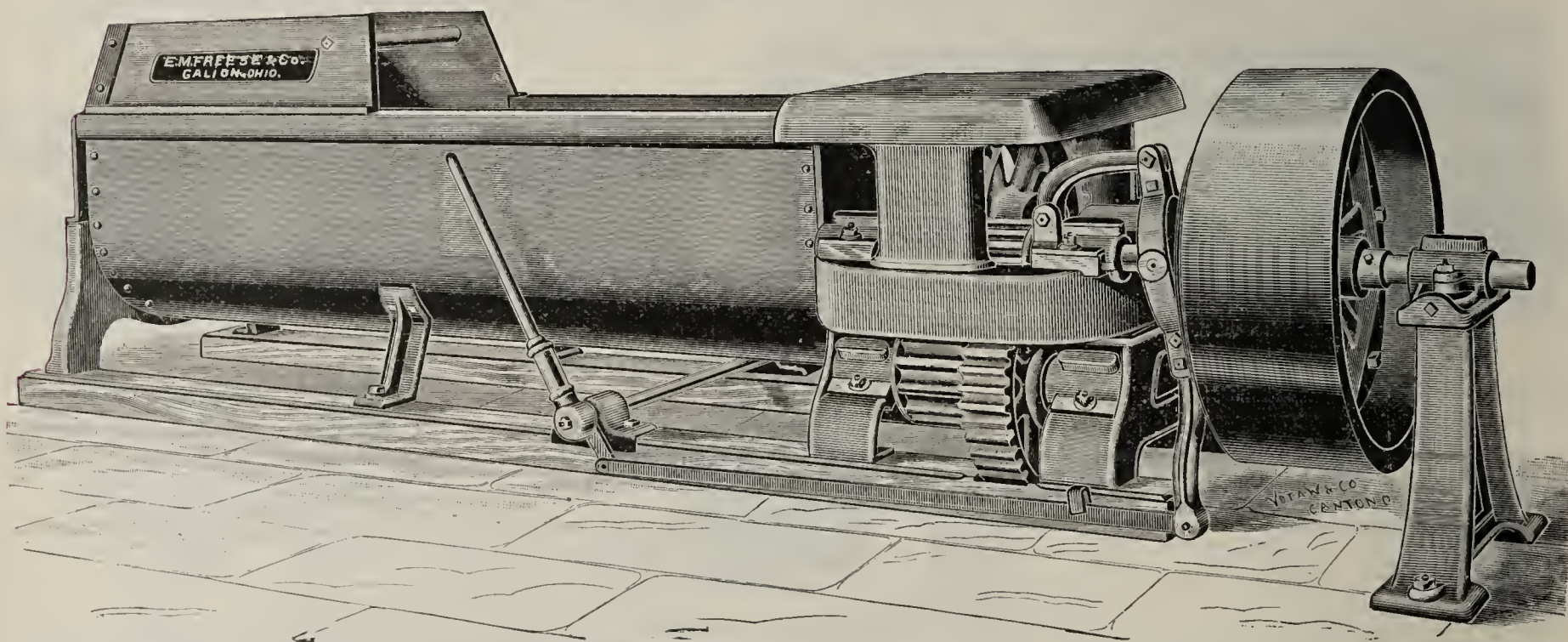


"MAMMOTH JUNIOR" OHIO BRICK MACHINE.

This machine is compact, simple, self-contained, dust proof, has rotary force feed, improved thrust Bearing, safety front, friction clutch pulley, and lubricating brick die.

All of the few parts this machine has are very heavy, and none of them will cause you trouble. Write for particulars.

## • ANOTHER • PUG • MILL. •



Our Pug Mills are made of all sizes and capacities. They have new and valuable features. They give universal satisfaction. Why not get a Pug Mill that will PUG your clay, not one that simply conveys the clay from one end to the other. **WHY?**

IT WILL PAY YOU TO LOOK US UP.

ADDRESS **E. M. FREESE & CO.,**  
GALION, OHIO.



# ✠ AND STILL THEY COME! ✠

HORNELLSVILLE, N. Y., May 27, 1892.

MESSRS. E. M. FREESE & Co., Galion, Ohio.

*Gentlemen:*—Yours of the 25th inst., is at hand, and in reply would say, that we are manufacturing paving brick from shale rock on the machine we purchased of you in March last. The machine is strong and well suited for making this class of brick, doing the work easily. We require a very stiff column of clay, and we are pleased to say that this machine produces the kind of brick we want.

Very truly,  
HORNELLSVILLE BRICK, TILE & T. C. CO.



CALIFORNIA, WASHINGTON Co., PA. }  
May 30, 1892. }

E. M. FREESE & Co., Galion, Ohio.

*Sirs:*—The machine is doing first-class work—the best I ever saw. I am not prepared to say just what the capacity of the machine is. I have made at the rate of 4,500 per hour, and know that it is not near what it will do.

Yours respectfully,

F. H. MARTIN.



FAIRMOUNT, W. VA., October 25, 1892.

E. M. FREESE & Co., Galion, Ohio.

*Gentlemen:*—Your favor of October 22nd received. We are glad to furnish you our testimonial with reference to our experience with the Ohio Brick Machine. We commenced to make brick about the first of last April. The machine works like a charm. The machine is very strong and durable, and works beautifully and makes a perfect brick.

Truly yours,

J. H. & M. N. BARNES.

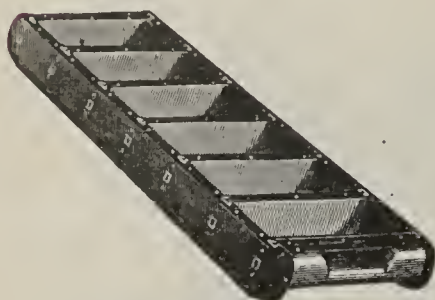


FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

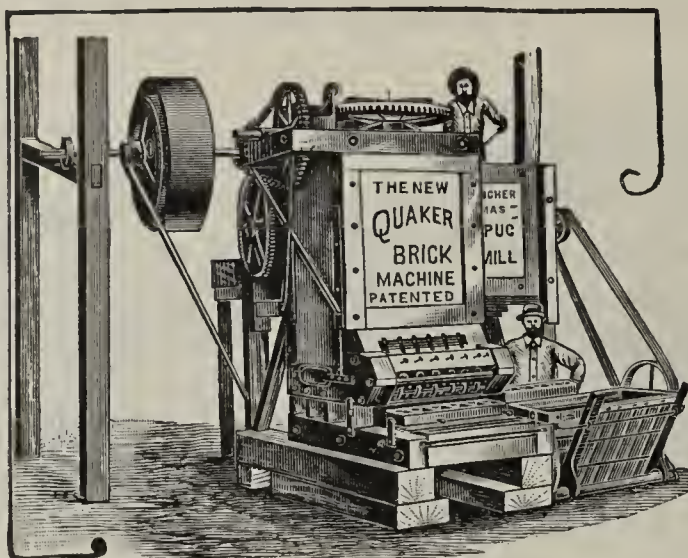
MANUFACTURERS AND DEALERS IN

**Brick Machinery and Brickmakers' Supplies.**

Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

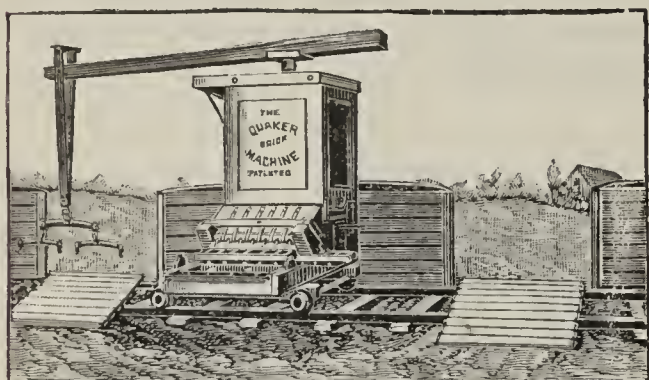


Hand Molds.



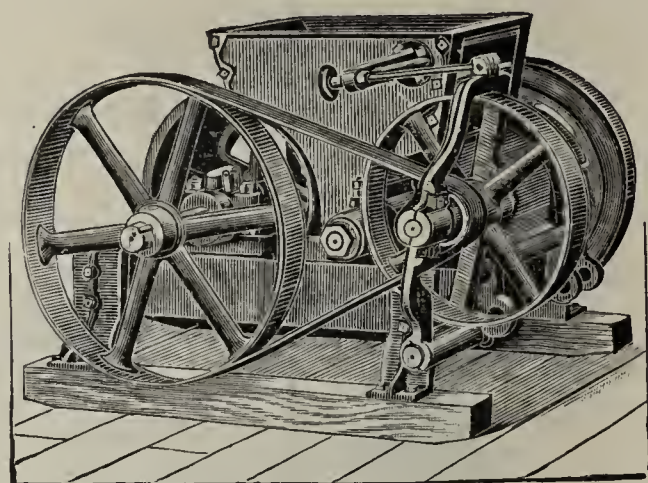
Made of Best Cherry.  
Three Brick Molds.  
Four " "  
Six " "

**THE EXTRA HEAVY QUAKER BRICK MACHINE,** FLETCHER & THOMAS SPIRAL PUG MILL and MOLD SANDER Combined, makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.

**THE NEW QUAKER**

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.

**DISINTEGRATORS.**

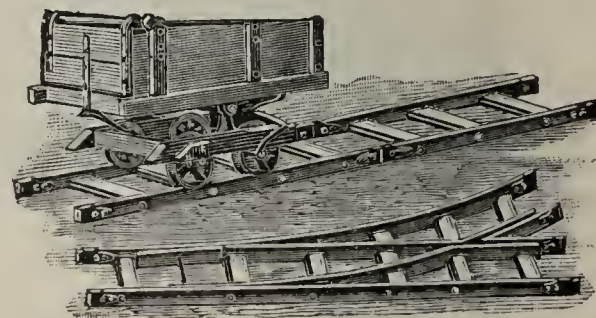
The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks, Etc., Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

**FLETCHER & THOMAS, Indianapolis, Ind.**



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

The  
PERFECTION  
HYDRAULIC  
BRICK PRESS  
and....  
ANDRUS IMPROVED  
DOUBLE PRESSURE  
BRICK PRESS

Are the best Presses in  
the market.



The  
GRATH DOUBLE  
DOWN DRAFT KILN,  
PERFECTION CLAY  
DISINTEGRATOR  
....and  
QUINCY CLAY  
GATHERER.

Write for Circulars and  
Prices.

ALL of the above appliances are in use at the yards of the American Hydraulic Press Brick Co., Collinsville, Ill., who are producing the finest quality Press Brick in the country, free from granulation.

We solicit an inspection of our works.

## ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.

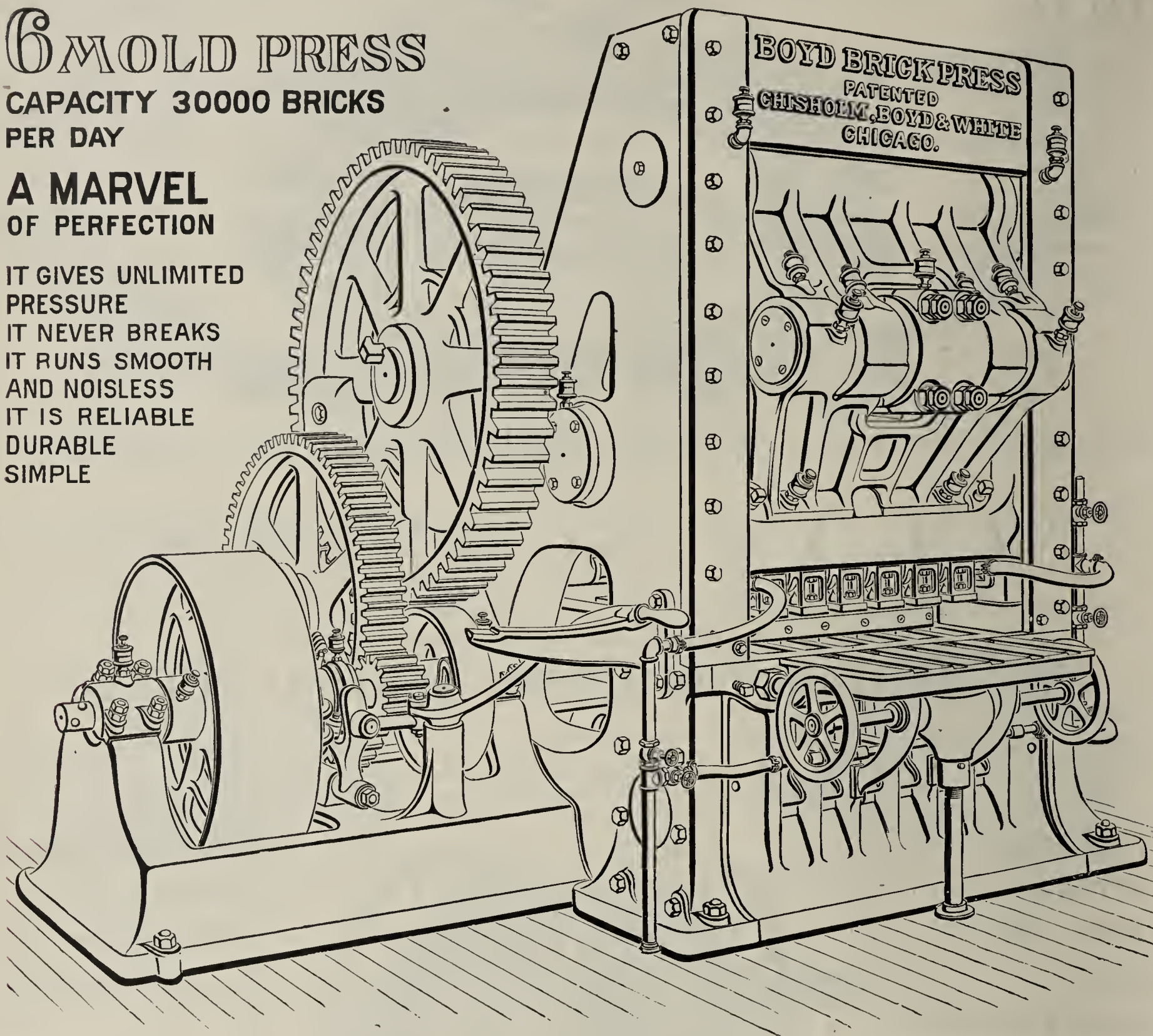


# 6 MOLD PRESS

CAPACITY 30000 BRICKS  
PER DAY

## A MARVEL OF PERFECTION

IT GIVES UNLIMITED  
PRESSURE  
IT NEVER BREAKS  
IT RUNS SMOOTH  
AND NOISLESS  
IT IS RELIABLE  
DURABLE  
SIMPLE



MILLIONS of Beautiful Pressed Brick

are being made **DAILY** on **BOYD BRICK PRESSES**,  
at lowest cost, and bringing the highest price per M.

**THE ONLY PRESS** which can be quickly changed to make  
POMPEIAN BRICK, STANDARD BRICK, FIRE BRICK,  
PAVING BRICK, ORNAMENTAL BRICK.

**CHISHOLM, BOYD & WHITE,**

MONON BLOCK,  
324 DEARBORN STREET.

CHICAGO.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing the Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be our own in case of failure. Why experiment when you can have a sure thing.

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

CHICAGO.



# THE U. S. BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

This Press is specially designed to meet the requirements of the modern Brick Plant, inasmuch as it is a representative of **STRENGTH, DURABILITY,** and above all of **SIMPLE CONSTRUCTION.**

The U. S. Brick Press is to-day turning out thousands of the finest brick in the country.

**OFFICE;**  
Room 1, III, 79 Dearborn, St. CHICAGO, ILL.

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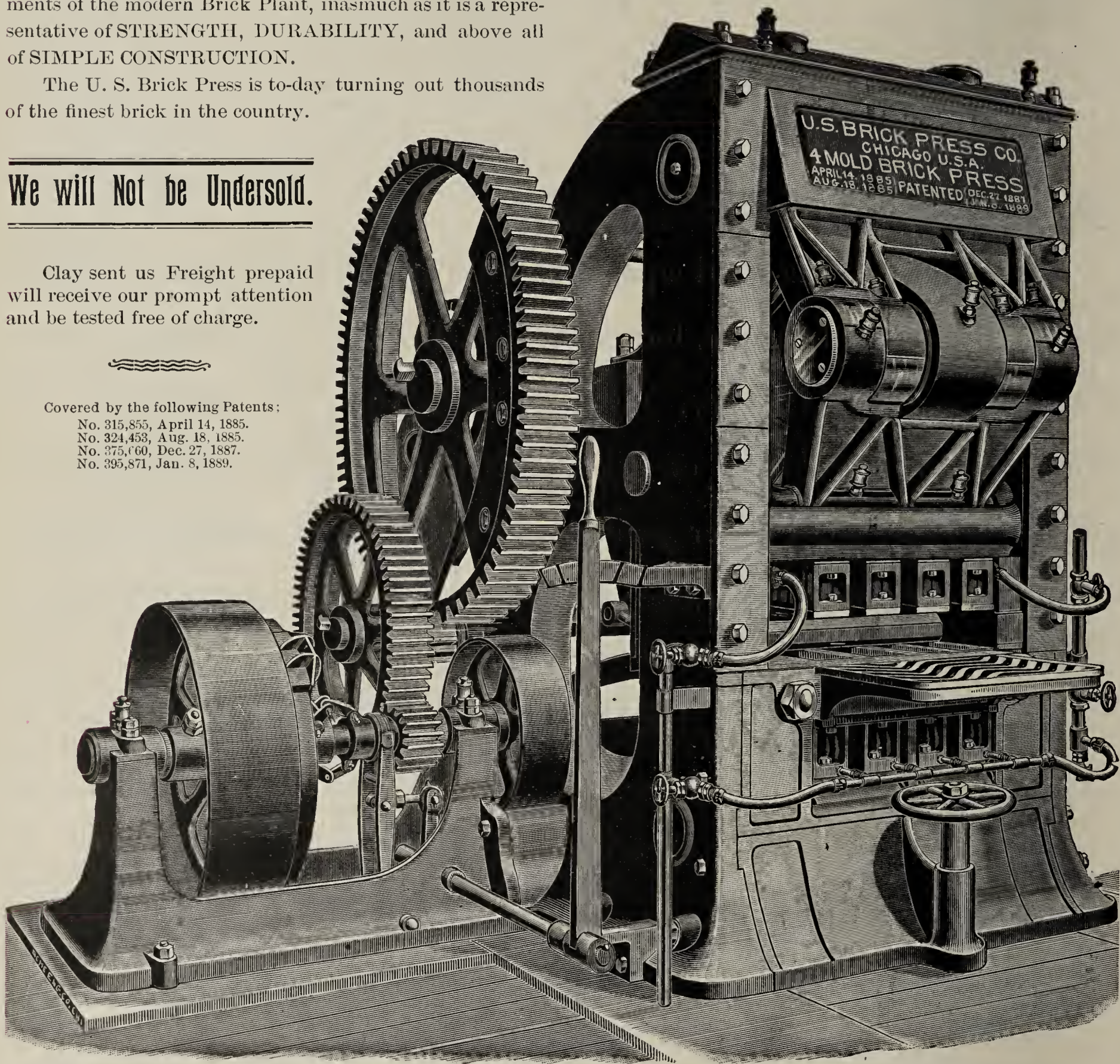
**We will Not be Undersold.**

---

Clay sent us Freight prepaid will receive our prompt attention and be tested free of charge.

Covered by the following Patents:

No. 315,855, April 14, 1885.  
No. 324,453, Aug. 18, 1885.  
No. 375,660, Dec. 27, 1887.  
No. 395,871, Jan. 8, 1889.



**U. S. Dry Clay Brick Presses in use on the following yards:**

Colorado Fire Clay Manufacturing Co., Pueblo, Col., 4-Mold.

James McNeen, La Junta, Col., 2-Mold.

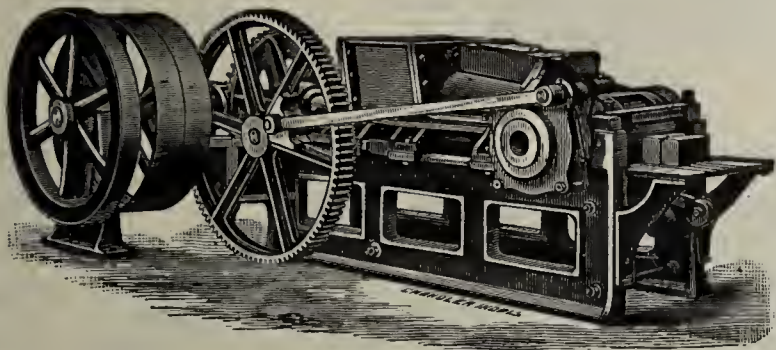
Worthorst Stone Co., Massillon, Ohio, 4-Mold.

Walter Collins, Columbus, Ohio, 4-Mold.

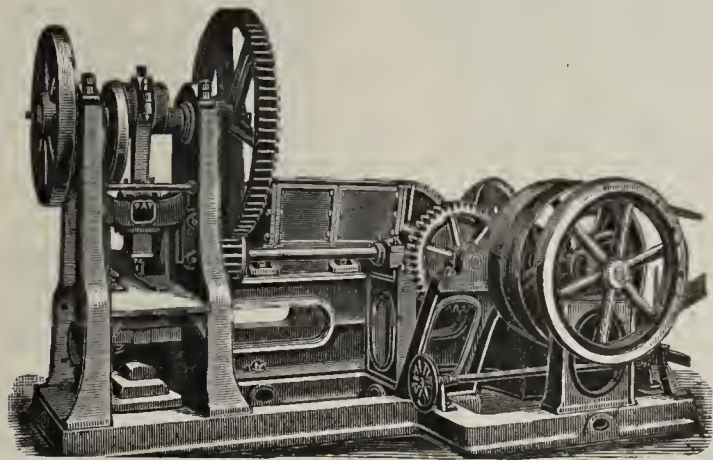
George Smith, Jacksonville, Ill., 2-Mold.

Mention the Clay-Worker.

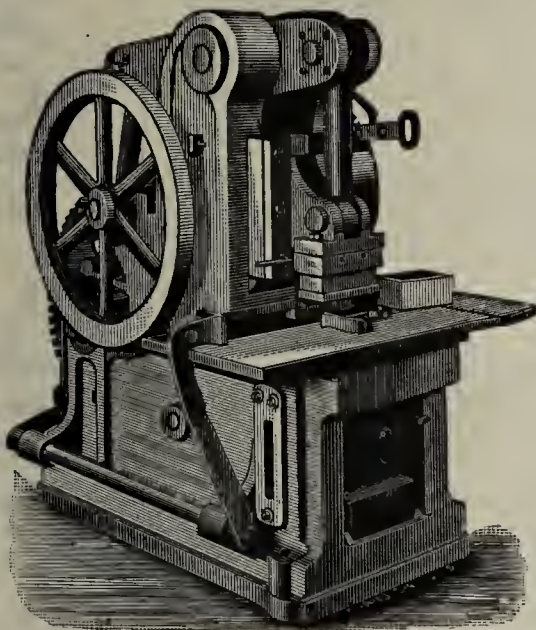




IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK & TILE PRESSING MACHINE

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building

# BRICK

and the best and most economical  
kiln in which to burn them.

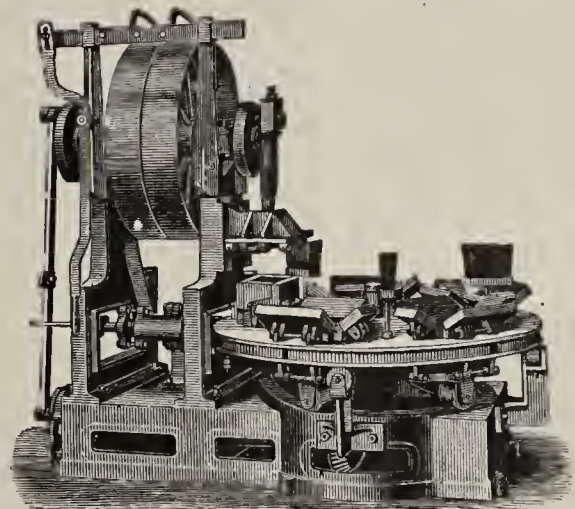
We are prepared to furnish complete  
equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

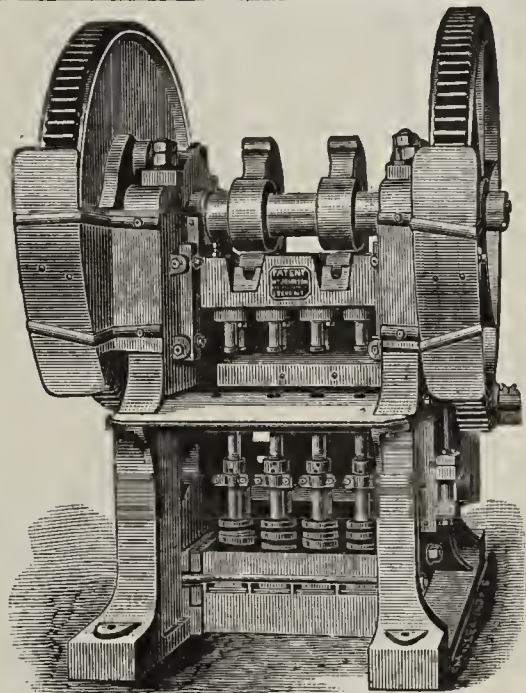
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

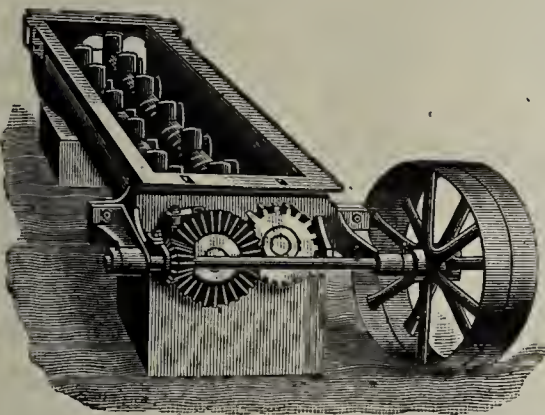
BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



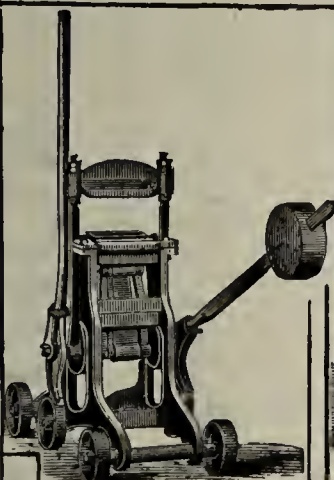
PAT. STEAM SAND-FACED PRESSING MACHINE



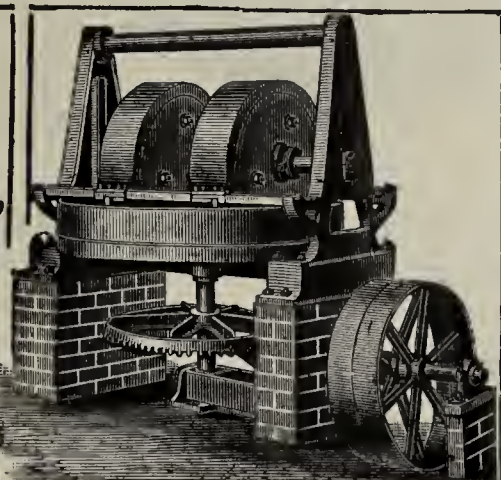
THE UNIVERSAL BRICK MACHINE



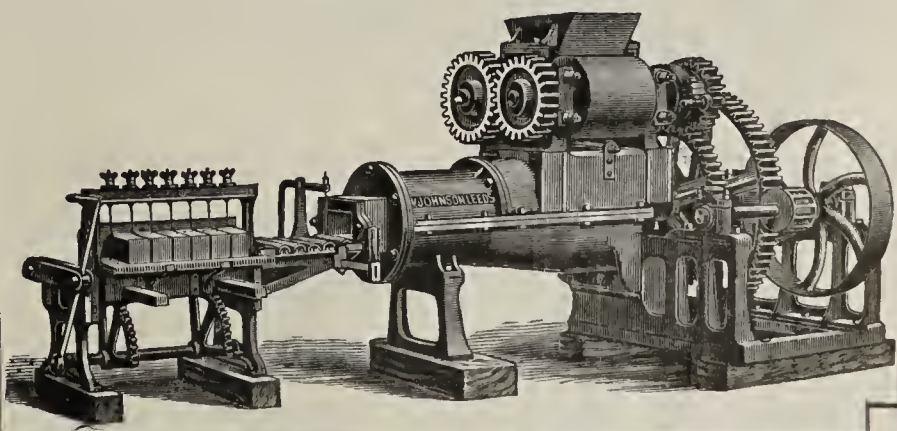
DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER



HAND LEVER BRICK PRESS



PERFORATED-EDGE RUNNER CLAY GRINDER



COMBINATION PUG MILL BRICK & TILE MACHINE



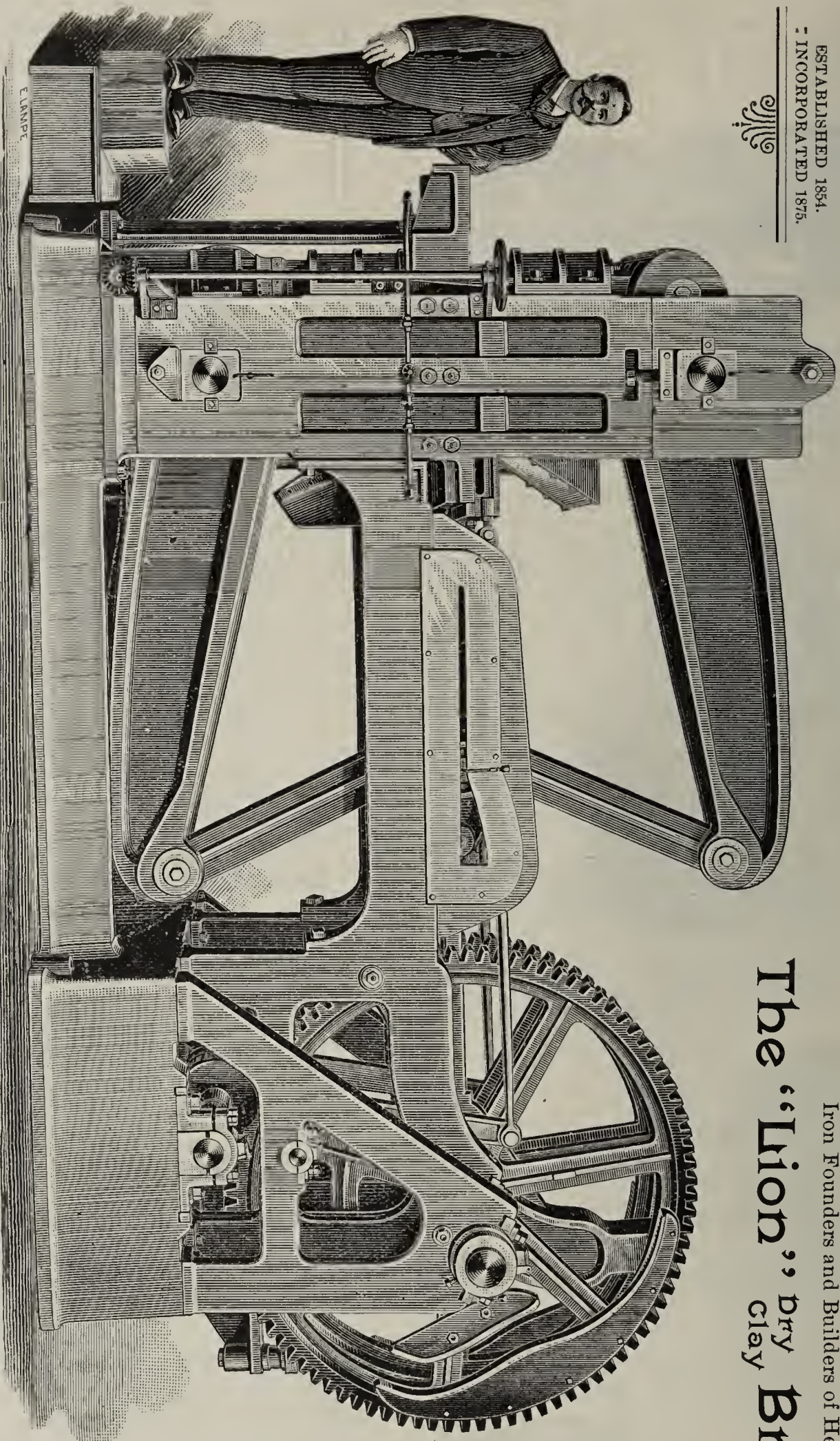
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1854.  
INCORPORATED 1875.



The "Lion" Dry Clay Brick Press.

Iron Founders and Builders of Heavy Machinery.



Weight, 44,000 pounds.

Capacity, 25,000 to  
30,000 pressed  
bricks per 10 hours

Pressure, 200 Tons on Five  
Bricks.



## WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

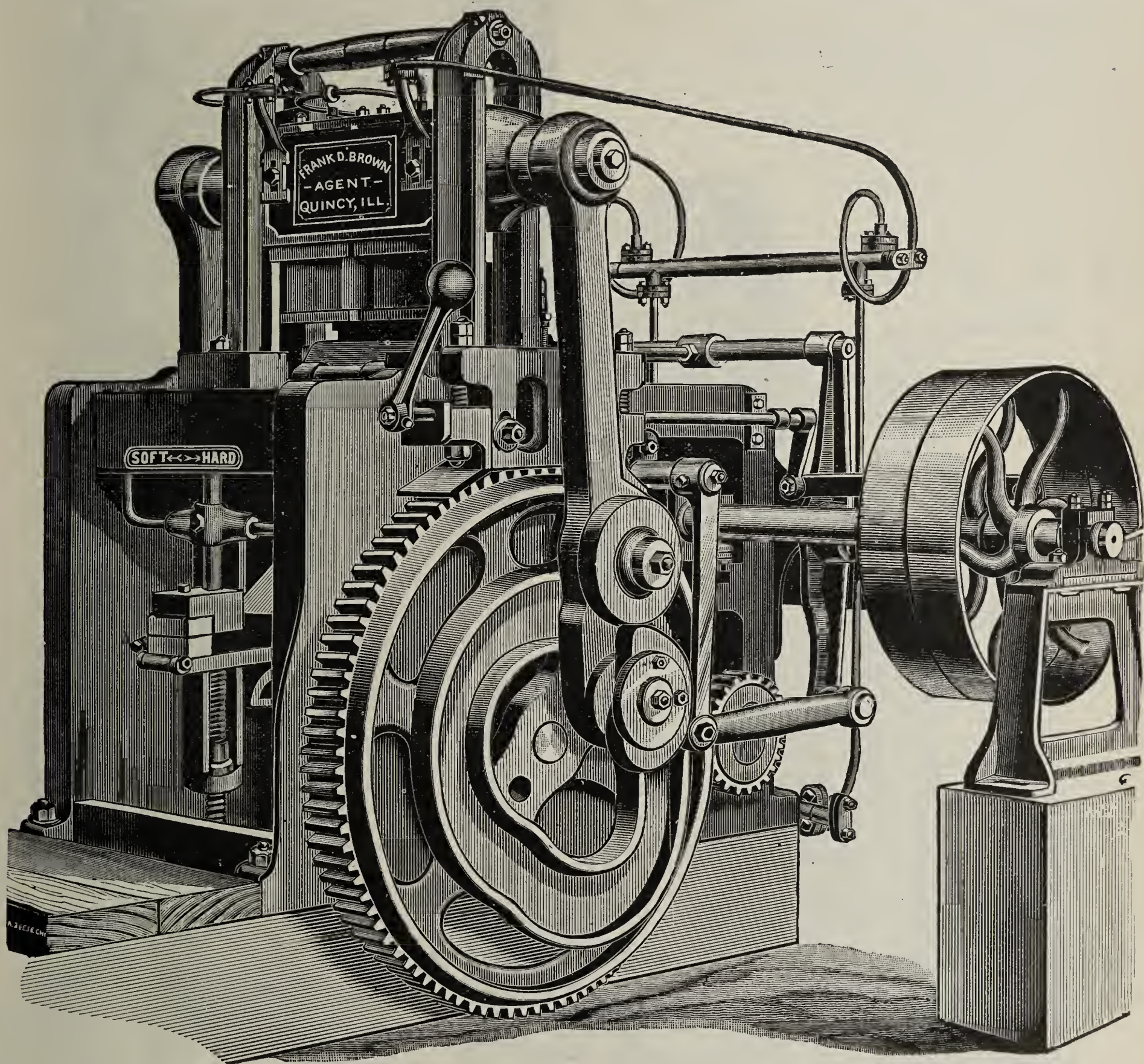
**ST. LOUIS IRON & MACHINE WORKS, Main Street and Chouteau Ave., St. Louis, Mo.**



# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN, Quincy, Ill.**



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

## Refer to . . .

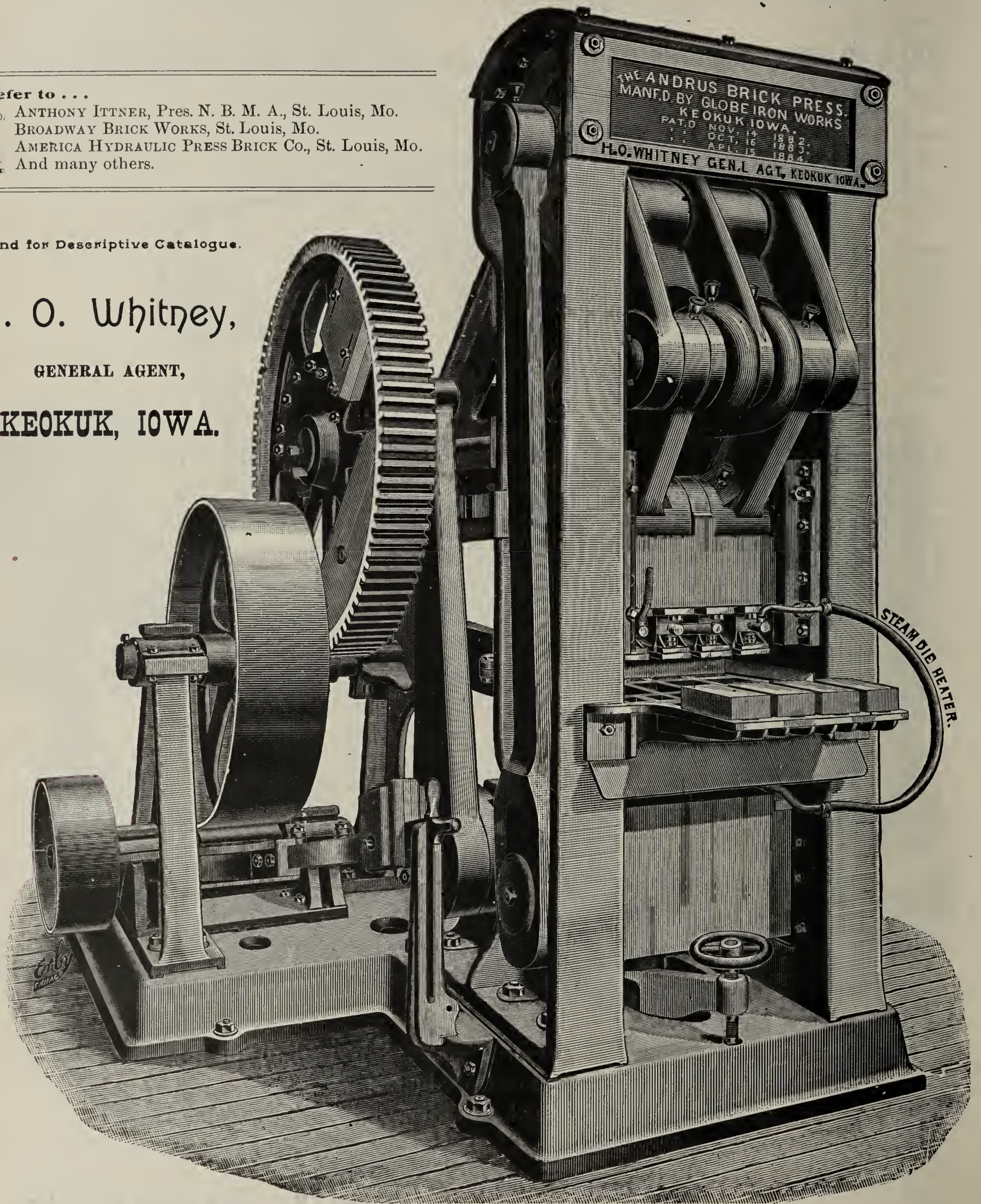
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
 BROADWAY BRICK WORKS, St. Louis, Mo.  
 AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
 And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.

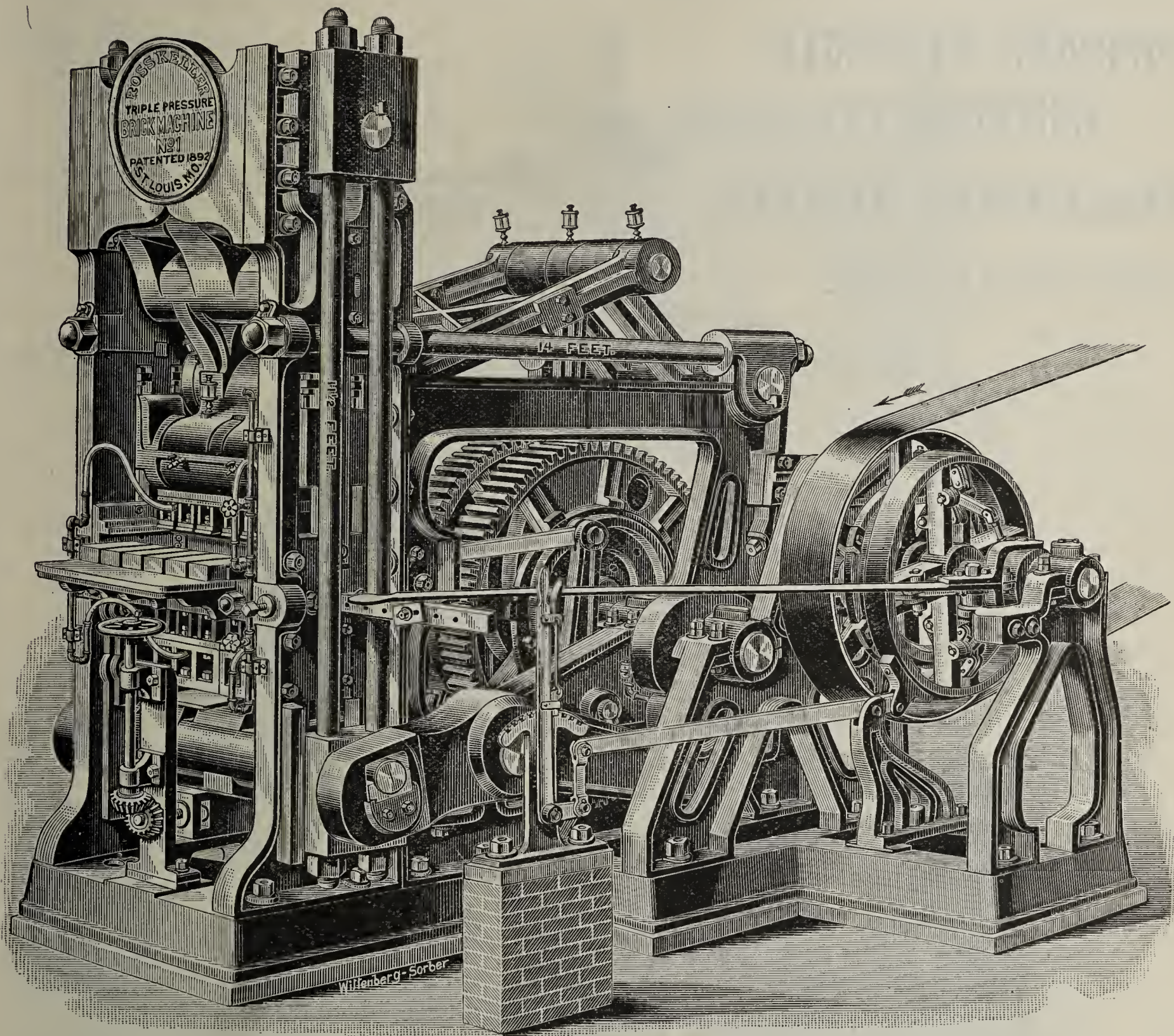




# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 75,000 pounds, Capacity 35,000 pressed brick per day.*



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**

Room 207 Laclede Building,

ST. Louis, MO., U. S. A.



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

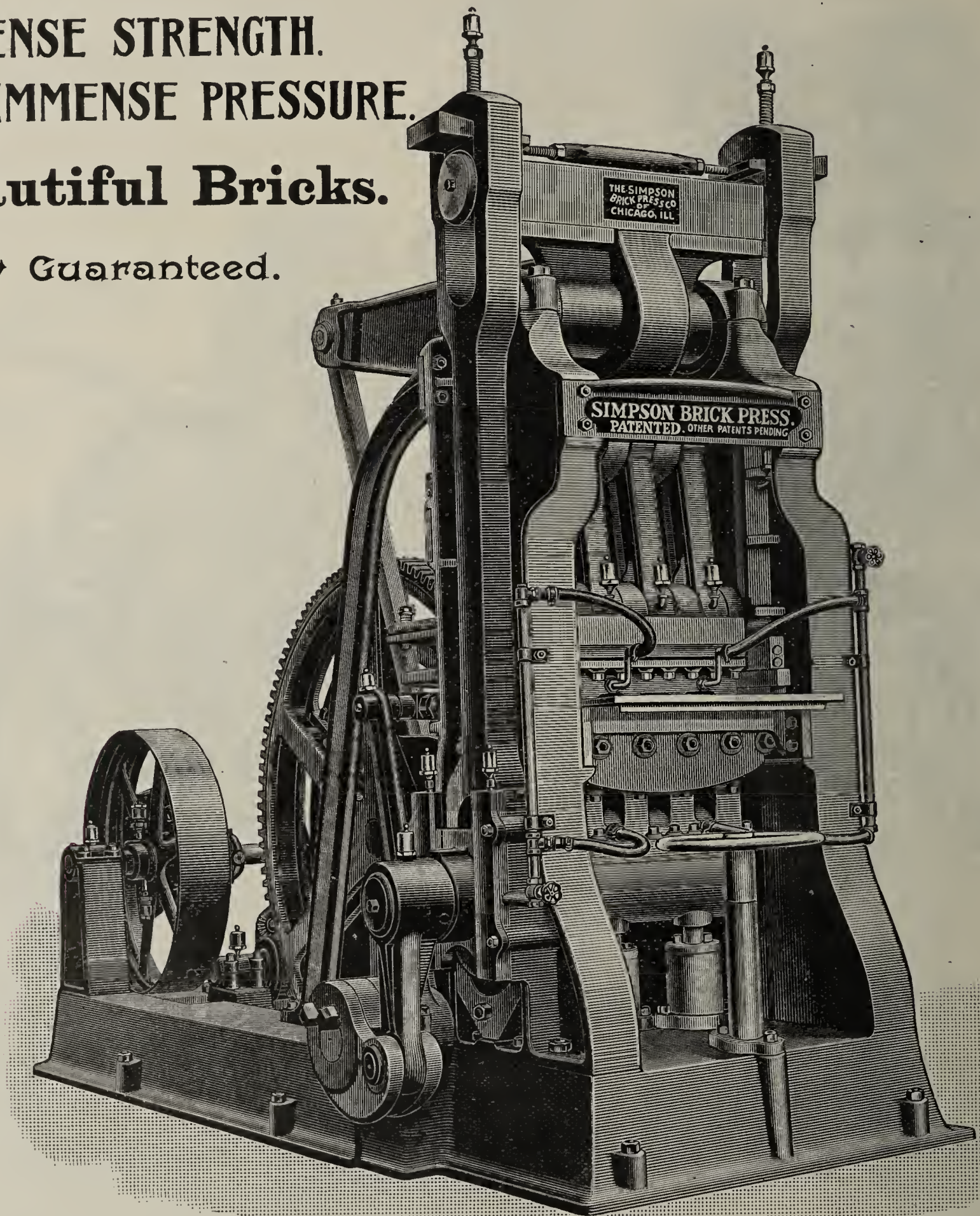
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

Beautiful Bricks.

Fully Guaranteed.



## THE SIMPSON BRICK PRESS CO.,

Agents for Canada:  
WATEROUS ENGINE WORKS CO., Brantford, Can.

Room 412, 87 and 89 Wash. St., CHICAGO, ILL.



# The SIMPSON 5-MOLD Brick Press.

—Apply to—

**THE SIMPSON**

**BRICK PRESS CO.,**

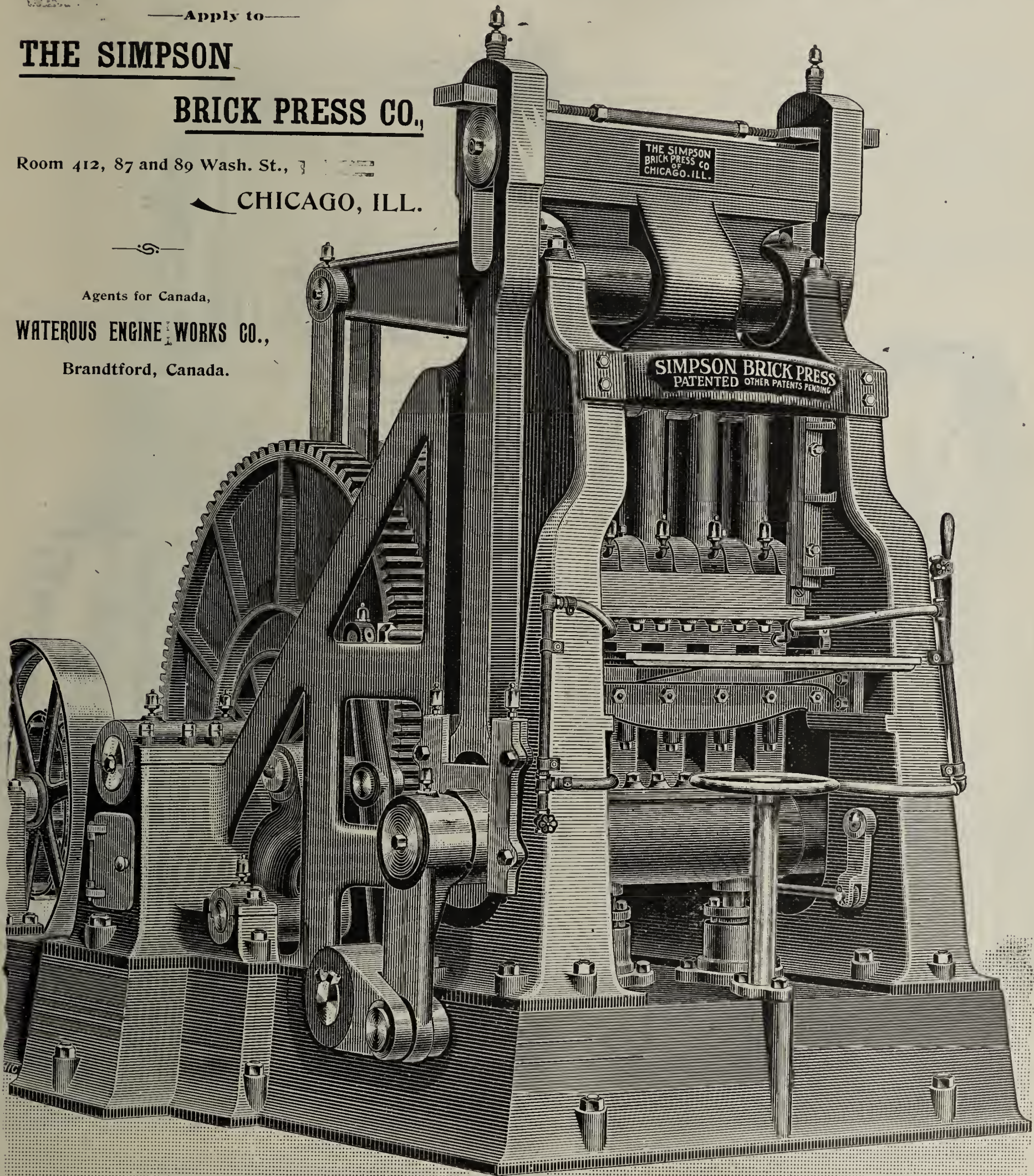
Room 412, 87 and 89 Wash. St.,

CHICAGO, ILL.

Agents for Canada,

**WATEROUS ENGINE WORKS CO.,**

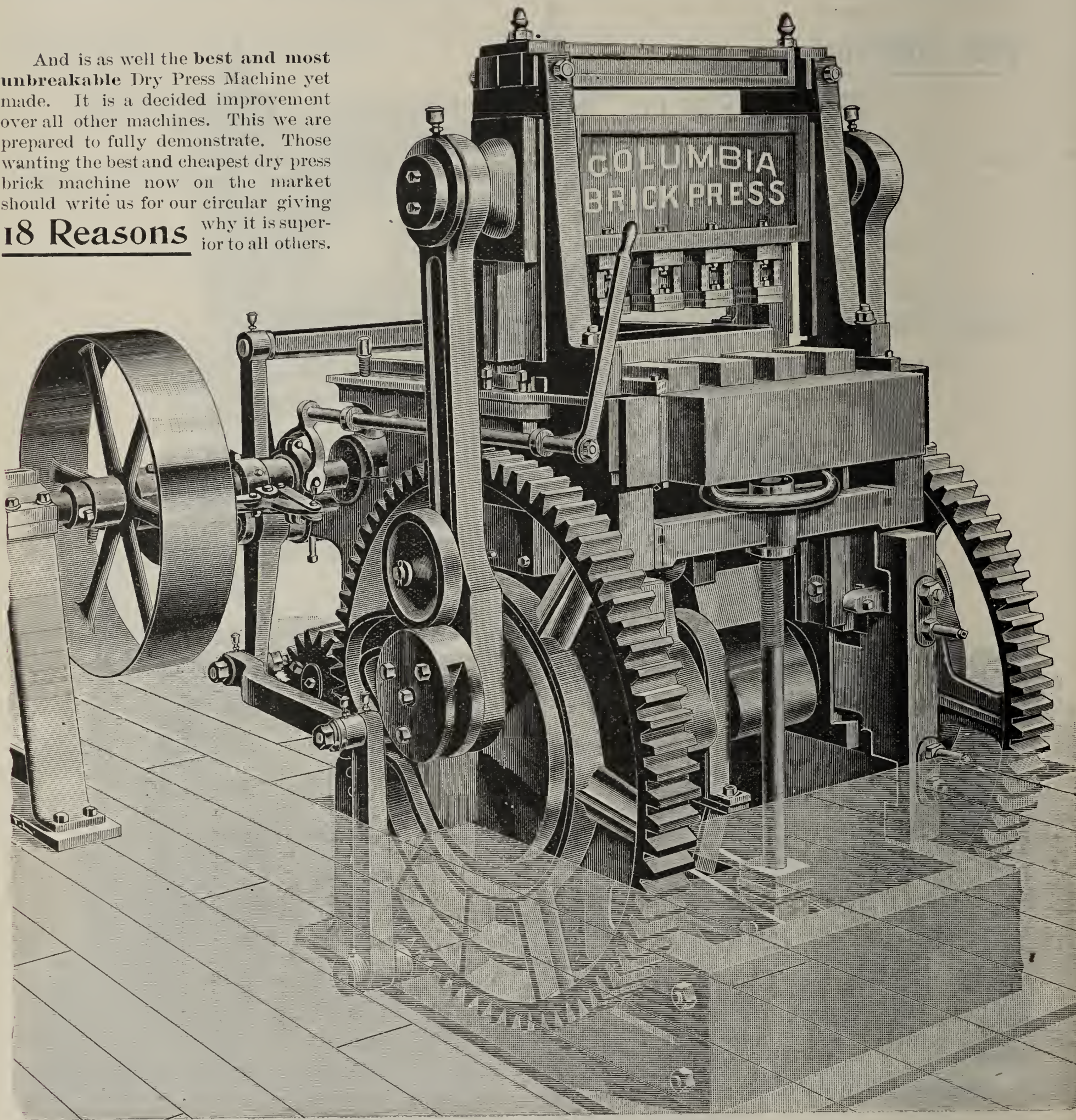
Brantford, Canada.





❖ THIS ❖ PRESS ❖  
 IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF  
 FINE ORNAMENTAL BRICK

And is as well the **best and most unbreakable** Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

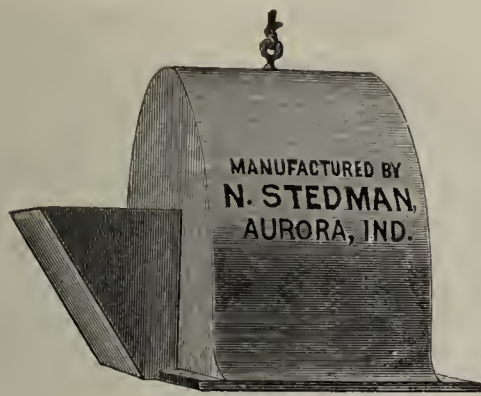
COLUMBIA MANUFACTURING CO.,

2119 N. Ninth St.,

ST. LOUIS, MO.



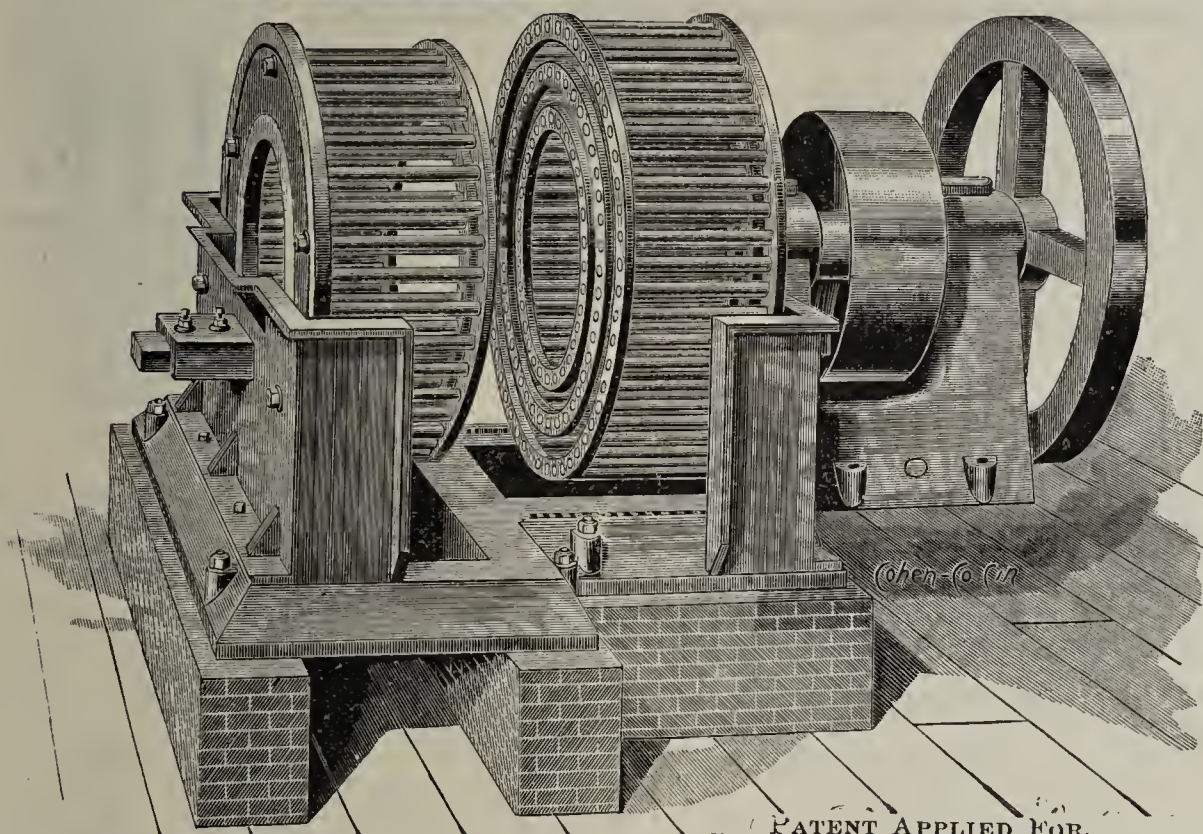
## Description.



This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

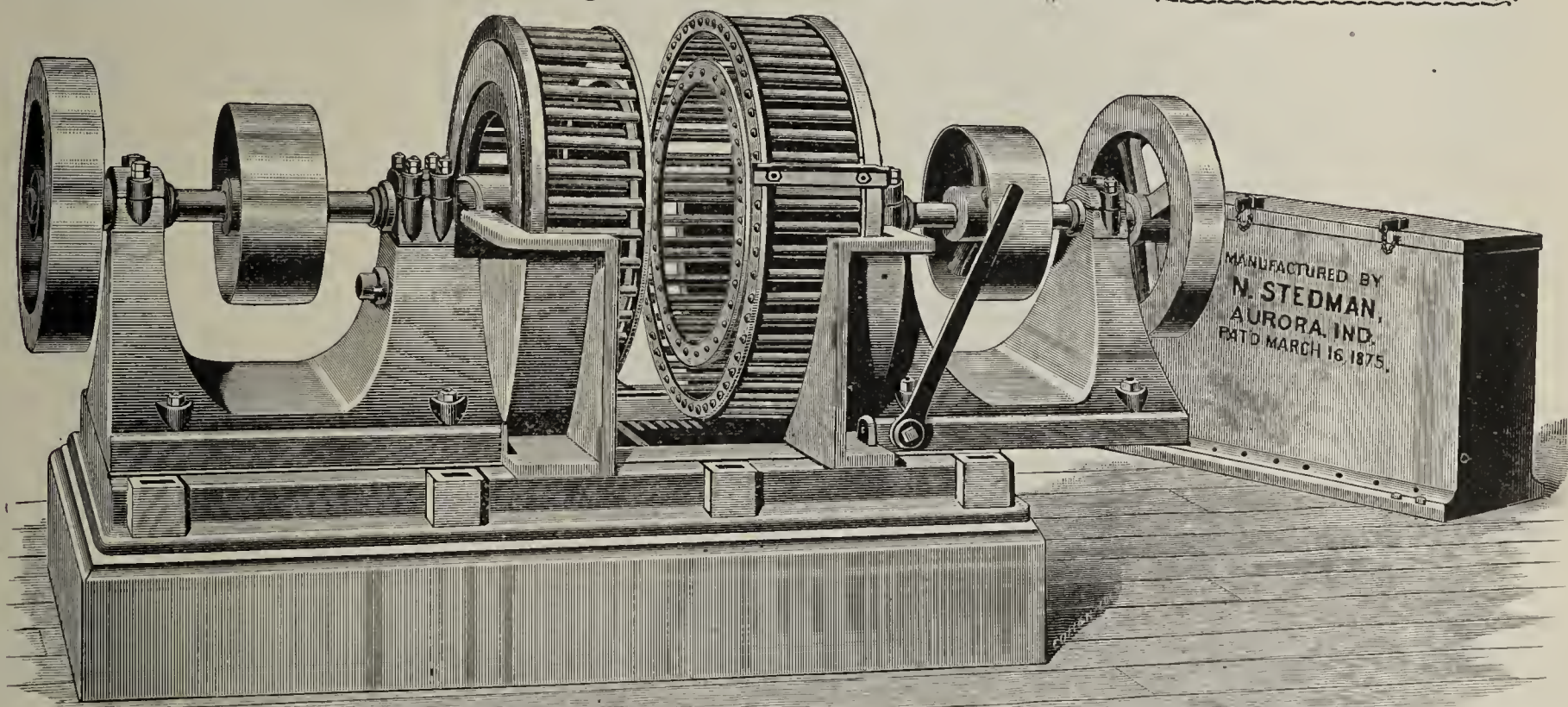
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



# Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



# Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

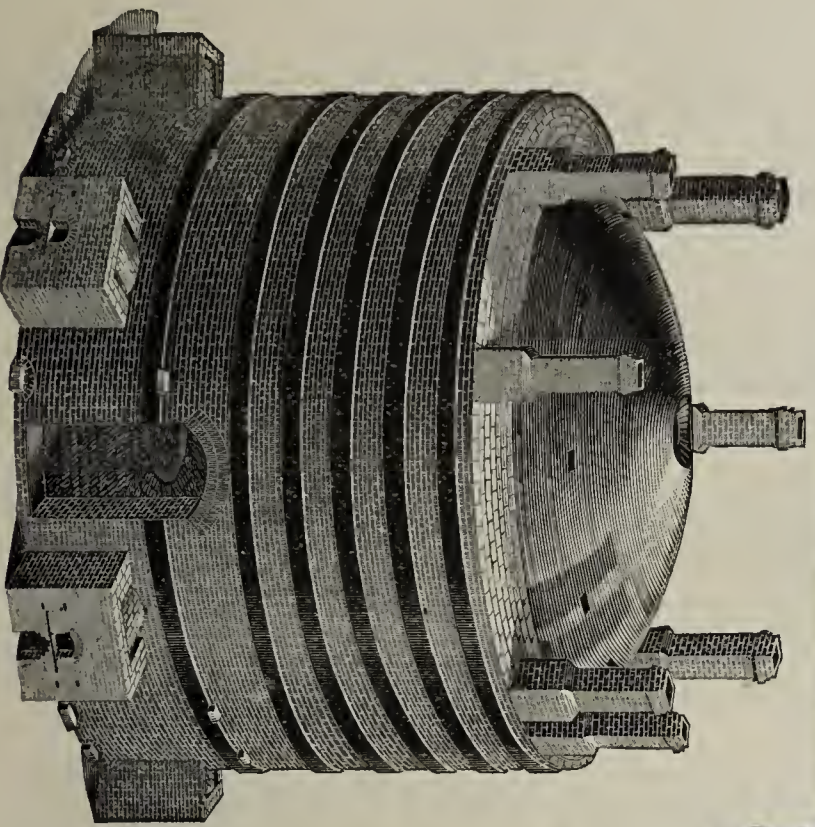
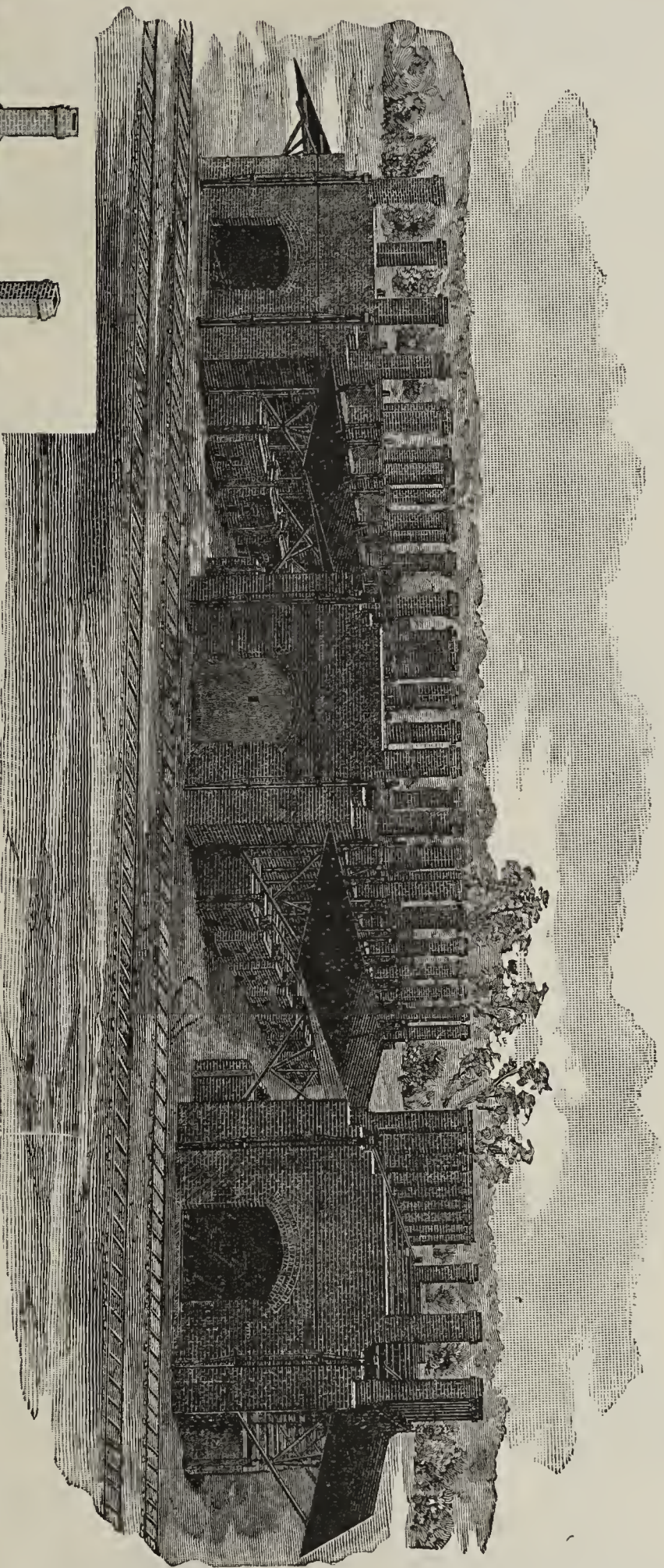
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of **large capacity** on account of **economy** in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of **small capacity**, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
**Cincinnati, Ohio.**



## • THE KILN OF THE PERIOD. •

## THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of Unbought English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To Messrs. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.  
 Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Ostrander Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



W. H. KELSO, President.

MAX A. TH. BOEHNCKE, Gen'l Manager,

PAUL BOEHNCKE, Sec'y and Treas.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

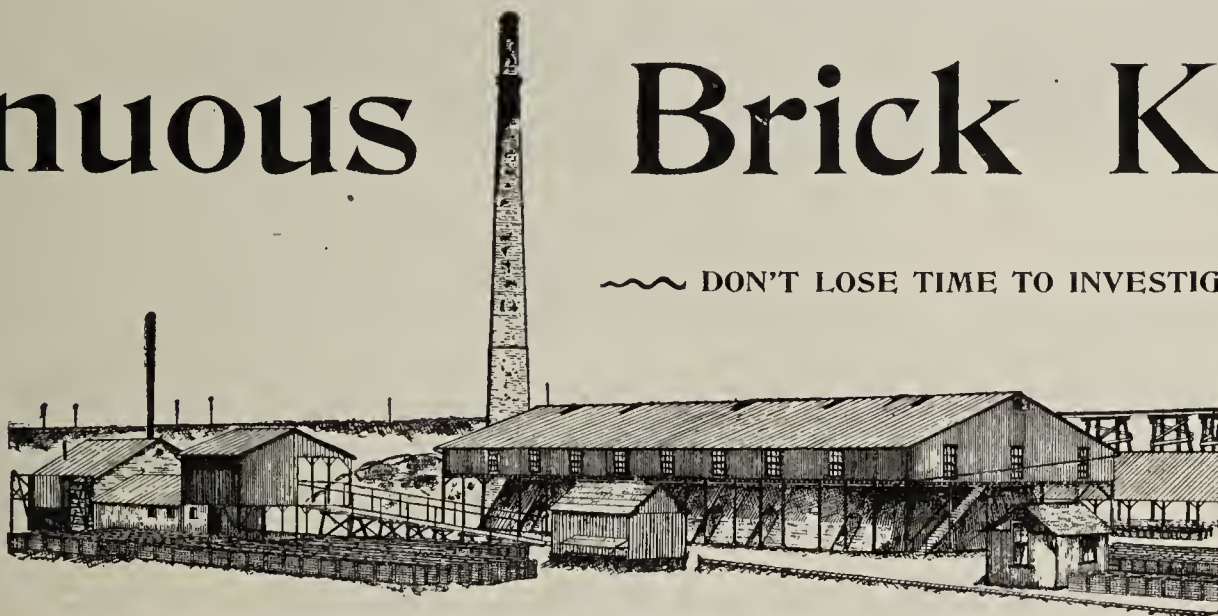
UP AND DOWN DRAFT

# Continuous Brick Kiln.

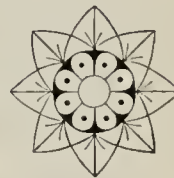
12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.

DON'T LOSE TIME TO INVESTIGATE.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

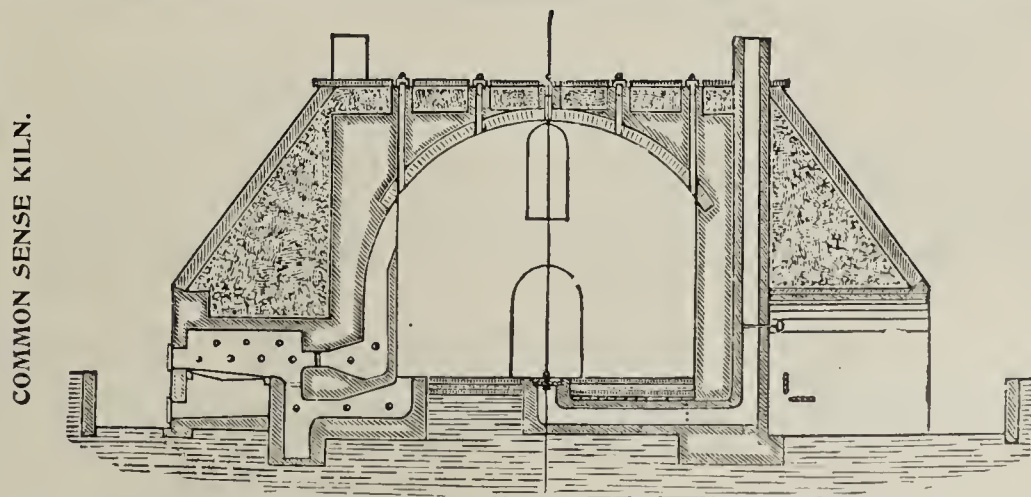


## ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,  
Box 35, Centinela, Cal.



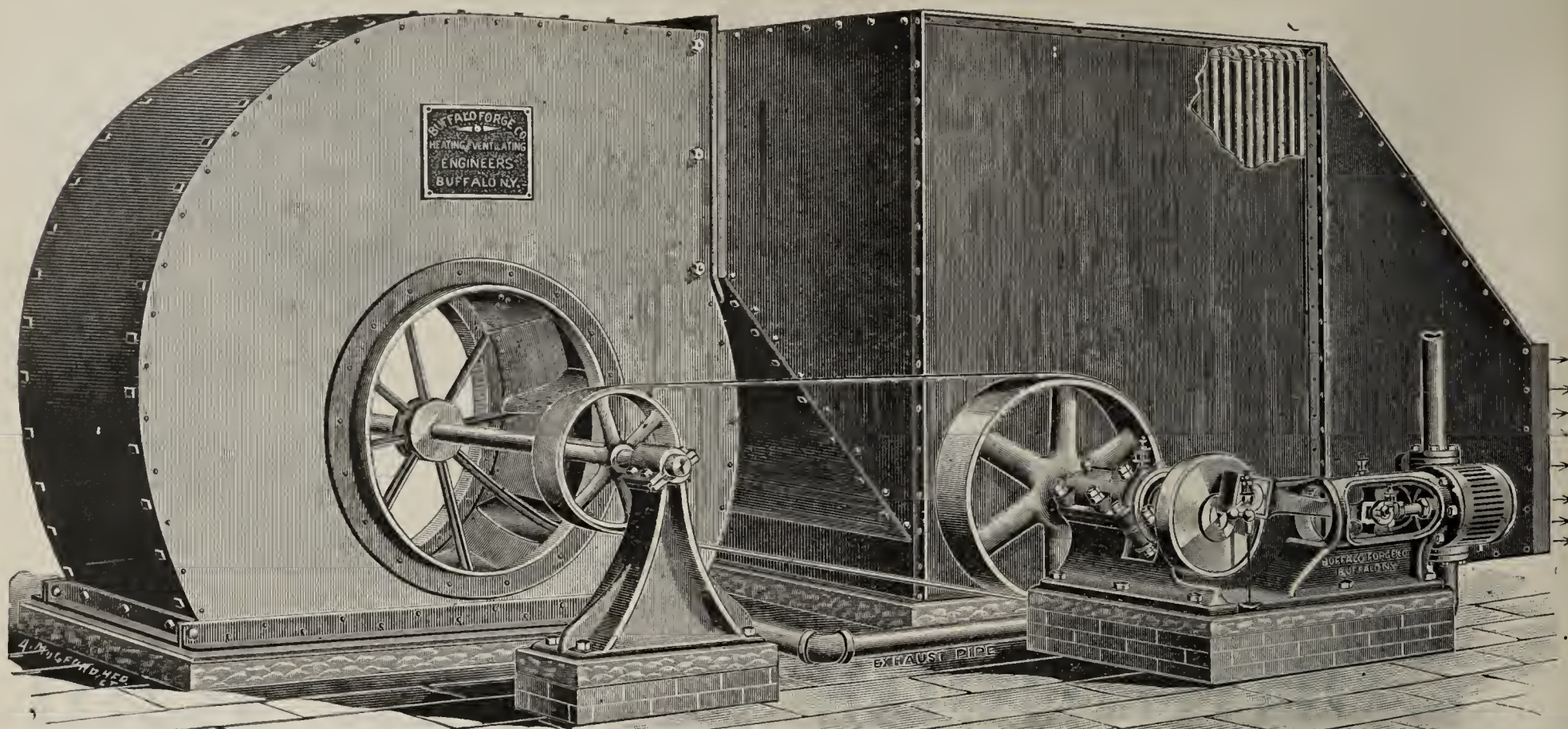
FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A New Brick Dryer.

now so popular in Germany. It is very economical. For full particulars see our catalogue.

We have secured the sole control in the United States of Albert Schaaf's Brick Dryer, (U. S. Patent 483,018.) which is





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To **CLAIM** that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is **ONE** thing; to **PROVE** it is **QUITE ANOTHER**.

The proof that **Buffalo Progressive Brick Dryers** embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO., Buffalo, N. Y.**

## **S. G. PHILLIPS, Agent and Patentee,** WOODBRIDGE, N. J.,

DEALER IN

**"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.**

**"Air Dried" Bricks All the Year Round.**

A new plan of reducing old, approved methods to a System. This frame enclosure needs no iron pallets.

### **THE INSIDE FAN STEAM DRYER.**

A cross, spiral current from fan to fan. Bricks are safely dried in five hours. No "checking" or discoloration.

### **NO CHIMNEYS OR BRICK STRUCTURE!**

And only half the doors are required. A little easy running machinery that lessens the cost for ears, room, continuous use and appears in practical operation to pay remarkably well.

### **MORE FANS! LESS PIPES!**

The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live," as now in common use, and saves enough in this one item alone to pay for all the fan wheels, ears, and, in fact, the entire dryer.

### **"Seeing is Believing,"**

Therefore, "at home," this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

### **"Better Than Drying in the Sun."—"Exhaust Steam."**

S. G. PHILLIPS, Woodbridge, N. J.

OTTUMWA, IOWA, April 6, 1893.

DEAR SIR:—I have had your Dryer in operation during the last season and it continues to give me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTICK.

### **"And Met the Requirements in Every Case."**

MR. S. G. PHILLIPS, Woodbridge, N. J.

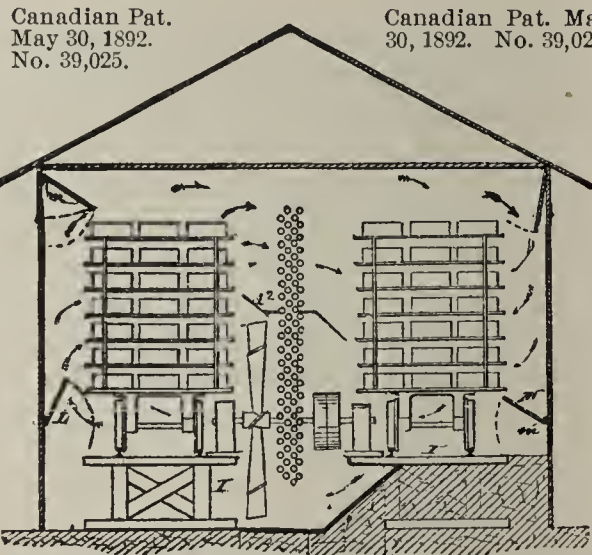
DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,

CHAMBERS BROTHERS Co., J. H. Chambers, Gen'l Mngr.

## **THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.**

**"I think you have the Dryer the brick people are looking for."**—JNO. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently: **"Not over 12 hours to make them VERY DRY—the best by great odds of any in the market"**—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance.



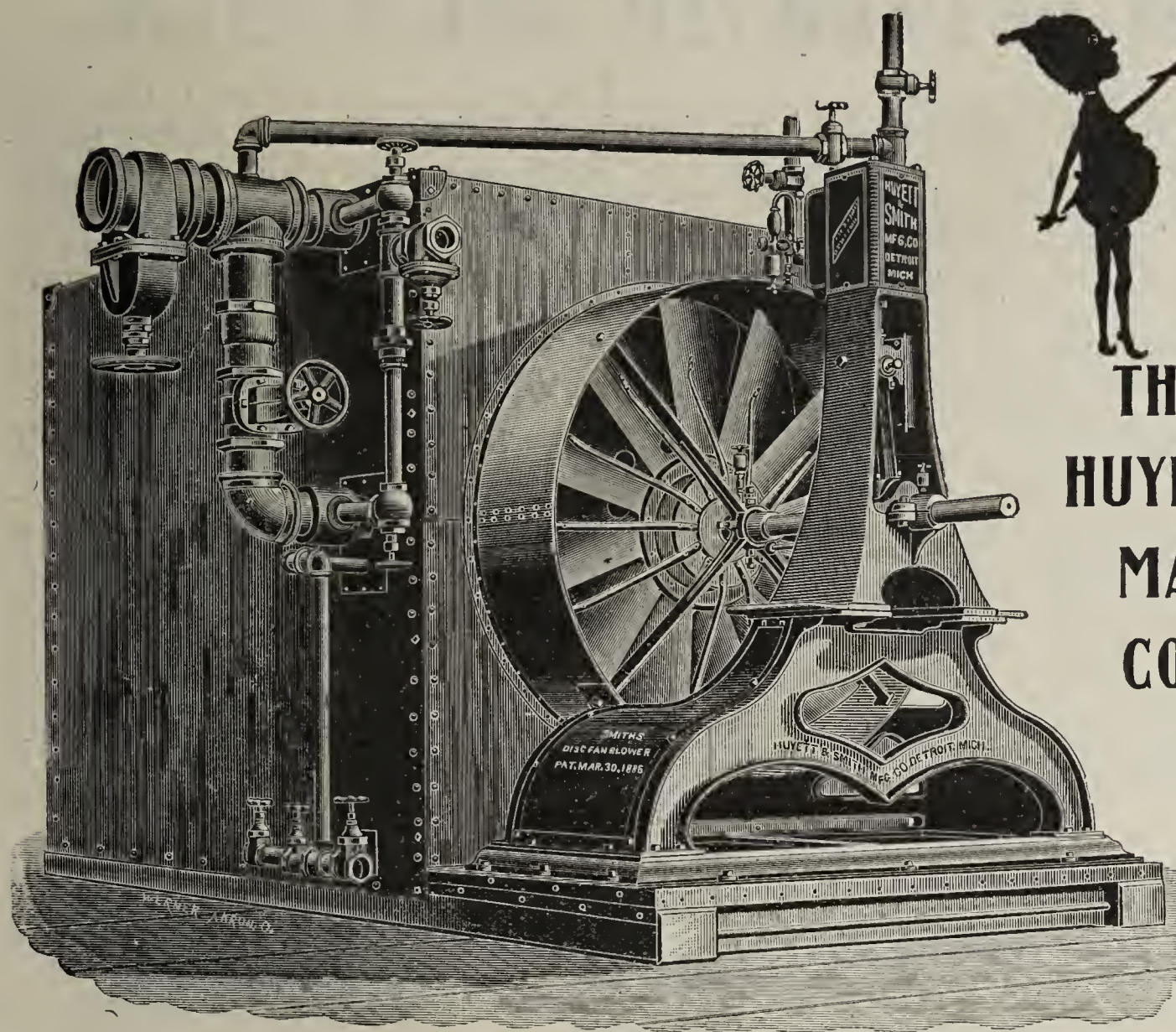
Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.

U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

PHILADELPHIA, December 14, 1892.





Brickmakers that are drying Brick satisfactorily are using

THE....

**HUYETT & SMITH  
MANUFACTURING  
COMPANY'S**

**DRYER,**

Main Office  
and Works.

**DETROIT,  
MICHIGAN.**

THEY MANUFACTURE THE MOST ECONOMICAL, RELIABLE AND EFFICIENT DRYER MADE

HAVE SOME OF THE LARGEST AND MOST PROMINENT BRICK MANUFACTURERS IN THE UNITED STATES

AS PATRONS AND ARE DOING A LARGE AND RAPIDLY INCREASING BUSINESS.

PLANS AND SPECIFICATIONS FOR ERECTING PLANT FURNISHED FREE WITH EVERY ORDER.

FOR FULL INFORMATION, PRICES AND REFERENCES WRITE

**The Huyett & Smith Mfg. Co.,  
DETROIT, MICH.**

CHICAGO, 31 S. Canal St.

BOSTON, 48 Union St.

NEW YORK, 107 Liberty St.



# AN OPEN LETTER TO THE PUBLIC.

LOUISVILLE, KY., May 1, 1893.

The unparalleled success achieved by **The Standard Patent Forced Draft Brick Drier** and its extensive sale, necessitating an encroachment on territory hitherto set aside by the Iron Clad Dryer Co., for their exclusive use, has apparently made our "would-be" competitor from the "windy" city bilious. A realization of the fact having dawned upon them that they are rapidly advancing (?) to the rear, that they cannot continue to compete with us on a legitimate basis, and philosophizing, no doubt, that the "end justifies the means," they determined upon a desperate course. Prompted by this determination, they instructed their attorneys to write several of our customers, informing them that if the "Standard" Drier which they were erecting was constructed thus and so, it would be an infringement on their patents, and dire consequences would ensue if the usual royalty was not paid forthwith. Naturally these communications were referred to us, and being cognizant of the fact that the charge, or rather **implied** charge, (they dared not make a direct one) did not contain **one iota of truth**, but was prompted solely by a **venomous spirit**, and furthermore believing it to be an **unlawful** and **malicious** attempt to injure our business, we immediately instituted suit against them in the United States Circuit Court at Chicago, for **\$50,000 damages**. With a view, however, of bringing the question of alleged infringement to an issue without waiting for a tedious process of law, and also to determine their sincerity in the matter, we agreed to pay them \$5,000 if they could substantiate their claims. We made this offer to them in writing under date of March 2nd, as per copy below.

LOUISVILLE, KY., March 2, 1893.

IRON CLAD DRYER Co., Chicago, Ill.

GENTLEMEN:—Assuming that you **really believe** our Brick Drier, as it is constructed, to be an infringement on your patents, and taking it for granted also that you are an honorable firm, and willing to settle this question in an honorable way, we make the following proposition, to-wit:

If you can substantiate by any three reputable patent attorneys in the United States that the claims made, or implied in the letters written to our customers by your attorneys, Messrs. Poole & Brown, we will pay you the sum of Five Thousand Dollars (\$5,000.)

This committee of experts to be selected in the usual manner, i. e., you name one, we another, and the two thus selected agree upon the third. The facts then to be presented to them, and we to abide by their decision.

In addition to the above mentioned sum to be paid you, if the decision is against us, we will pay all expense incurred in this investigation.

If on the other hand, you fail to substantiate the claims made, we shall only ask you to pay the actual expense which this investigation entails.

Surely no one could ask for a fairer proposition than this. If you are honorable business men you will unhesitatingly accept it. If you ignore our proposition, we shall assume that you have lost that sense of honor which we supposed you possessed and shall conclude that you intend to pursue the disreputable tactics which you have started, and will treat you accordingly.

Your unwarranted attacks on us recalls to our minds a conversation which our Mr. Bemis had with you sometime since, when Mr. Curran tried this same **worn-out dodge** on you. We repeat your own language, "**Mr. Curran must be getting desperate for business, etc.,**" Perhaps this will now apply to your case.

Respectfully,  
THE STANDARD DRY KILN CO.  
ROBT. ELLIOTT, Sec. & Treas.

Up to this writing no reply has been received from them.

In rejecting our proposition, which, as can be seen, is an eminently fair and equitable one, the fact is established that they have no confidence in their ability to sustain their "trumped-up" charge and yet lack the **honesty to admit it**.

In conclusion we would say that the "Iron Clad Drier" has not a single patented feature about it that the owners could hire us to adopt. Our Drier is built **solely** under our own valid "**up to date**" patents and we haven't a particle of use for their antediluvian affairs.

It is apparent that the suit begun against us was not started in good faith. It has no foundation in fact, and was brought merely to "blind" the public and divert attention from the vital point at issue, i. e., the relative merits of the two Driers.

We are prepared to substantiate the correctness of every assertion we have made, and believe further that we can prove to any fair-minded man that the course being pursued by the Iron Clad Dryer Co., is disreputable and betokens a character that is dangerous to encourage.

Respectfully,

THE STANDARD DRY KILN CO.



# "A WISE MAN WILL PROFIT BY THE EXPERIENCE OF OTHER MEN."

AN UNQUALIFIED  
SUCCESS IN  
DRYING STICKY  
TENDER CLAY.

WASHINGTON, D. C., April 15, 1893.  
THE STANDARD DRY KILN Co., Louisville, Ky.

GENTLEMEN:—For months our new yard has been the subject of criticism from Brick Manufacturers owing to the sticky nature of our clay; the universal opinion was that we could not make machine made brick and that no drier could dry the clay without checking. After operating this plant for over a month we have successfully proven the falsity of such opinions. We use the Chambers Brick Machine and are now making, drying and burning the best brick in the city.

**Your Drier works perfectly;** our success is due largely to your patent system which entirely prevents the sudden exposure of green brick to direct dry heat, and by your equal distribution of heated moist air at the danger point in your Drier, **all trouble from checking is entirely overcome.** Your brick drying system is in our opinion without its equal in the market. Economical and simple as to its working and absolutely sure as to results obtained.

We are able to **far surpass your guarantee** in every respect.

Wishing you success, and hoping that, if we can be of any assistance to you, you will command us.

Yours, etc.,

CHILDS & SONS.

THE STANDARD DRY KILN Co., Louisville, Ky.

PITTSBURG, S. S., April 8, 1893.

GENTLEMEN:—In reply to your inquiry, would say that I have now gotten in operation the six track Drier which you sold me last December and have given it a thorough practical test and can say that I am highly pleased with its drying qualities. In fact, I am very agreeably surprised, as I did not think it possible, judging from my observation of other Driers in this vicinity, that my brick could be dried in less than from 36 to 48 hours. You gave me an absolute guarantee to dry them in 24 hours and actual results have proven that they can be dried perfectly in 20 hours. Your guarantee, therefore, of 30,000 or 5,000 to each track has been more than fulfilled. I attribute the rapid work of your Drier to the fact that the heating surface is so distributed that the temperature is **equally** as high at the **bottom** and **center** of the tunnel as at the top; hence the drying process is uniform and there is no time wasted. My brick are soft mud, made on the Martin machine. They weigh seven pounds green and six pounds dry. We have taken, for five days, the actual cost of drying and find that it is **12 cents per thousand brick.**

The results which I get from the Drier are, therefore, I think most remarkable. I believe that I have undoubtedly the best and most economical Drier in this section of the country.

Yours truly,

JOSEPH KEELING, SR.  
Per JOSEPH KEELING, JR.

SOFT MUD  
BRICK  
DRIED  
PERFECTLY  
IN  
20 HOURS.

Pronounced  
"The Most Practical  
and Economical"  
....By a Brick  
Manufacturer of  
Thirty Years  
Experience.

MAY'S LANDING, N. J., April 9, 1893.

THE STANDARD DRY KILN Co., Louisville, Ky.

GENTLEMEN:—We have had your ten track Drier in successful operation sufficient time to enable me to pass judgment upon it.

With over thirty years of experience as a brick manufacturer, using a large variety of Brick Driers, I am glad to say that your Drier is the most economical and practical as to operation and perfect as to the results obtained I ever saw. Our brick come from the tunnels **perfectly dry and free from all checks.**

You are at liberty to refer to, or call upon me, if I can in any way endorse your Brick Drying system. I remain,

Yours respectfully,

INDUSTRIAL BRICK CO.  
PHILIP GIBSON, Supt.

EVERY DRIER A PERFECT SUCCESS Is the record held by  
THE STANDARD PATENT FORCED DRAFT BRICK DRIER.

Our Chicago competitor, envious of our success, and wishing to bolster up a declining patronage, has made the statement that our Drier is an infringement on their "Job Lot" of antiquated patents. Oh, no! We have too much respect for OLD AGE to do anything of the kind. The charge is almost too ridiculous to consider. The United States Court will, however, be called upon to decide the question just as soon as the Iron Clad Dryer Co., will permit, the sooner the better will suit us, and after convincing the Court of the maliciousness of the groundless charge **our turn will come.**

In the meantime, don't be misled or deterred from buying the best, which is always the cheapest. We will satisfy you on all points, quality, price, bond, etc. Write us.

## THE STANDARD DRY KILN CO.,

General Office and Salesroom, 923 and 925 W. Main Street,

LOUISVILLE, KY.



# NOTICE!

## TO THE PUBLIC:

We take this means of informing the public that we have lately secured valuable patents on our Brick Drier, and have good reasons for believing that our improvements have been appropriated, and are being used without authority from us by the

**IRON CLAD DRYER CO., CHICAGO, ILL.**

The United States Court will be called upon, therefore, to decide this question of infringement at the earliest date possible.

In the meantime, we feel that it is incumbent upon us to warn **all users** and **intending purchasers** that we shall fully protect our property rights and promptly and vigorously prosecute all infringers of our patent rights, to the full extent of the law.

**"A · WORD · TO · THE · WISE · IS · SUFFICIENT."**

Incidentally we would add, if you want the **best** and **cheapest** Natural Draft Drier to be had, and at the same time wish to avoid the annoyance of a probable lawsuit, you will do well to communicate with us.

Remember, we charge you only a legitimate manufacturer's profit on material furnished, and do not tax you for even **valid patents rights**, to say nothing of **antiquated** and **expired ones**.

**AMERICAN DRIER COMPANY,**  
**LOUISVILLE, KENTUCKY.**



# Special Notice.

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Imitation is the Best Acknowledgement of Excellence.

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THE old reliable Iron Clad Dryer built under the J. J. and M. C. Curran U. S. Letters Patent, is being infringed, to restrain which and for the purpose of collecting damages, we have commenced suits in the U. S. Courts against—

Harmes & Schlake Brick Co., Chicago, Ill.

Chase Brick Co., Milwaukee, Wis.

Moberly Brick & Tile Co., Moberly, Mo.

Standard Dry Kiln Co., Louisville, Ky.

To prospective purchasers of Brick Dryers, this is a friendly warning that we propose to protect our patents and enforce our lawful rights regardless of expense. Parties having purchased infringing dryers are advised to secure good and sufficient bonds from the builders to cover cost of damages growing out of law suits that will be promptly brought in every instance as soon as we learn of the infringement. Do not be misled or intimidated by other builders—buy the best and cheapest. By actual use, the Iron Clad has demonstrated that for the amount and good quality of work our Dryer does it is the cheapest Dryer in the market.

*Don't buy into a law suit—we own the foundation patents and if you buy our Dryer, we charge you nothing for the patent right. We can sell you a Dryer cheaper than any one else. Send for our Prices and convince yourself.*

Sae ads. on pages 480-513





# The Best <sup>ALL</sup> AROUND Brick Dryer



DRYERS OF THE PURINGTON PAVING BRICK COMPANY, GALESBURG, ILL., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

D. V. PURINGTON, PRESIDENT.  
C. H. CHAMBERLAIN, SEC'Y.

W. S. PURINGTON, VICE PRES. AND GEN'L MANG'R.  
A. A. MATTESON, TREAS.

## PURINGTON PAVING BRICK COMPANY.

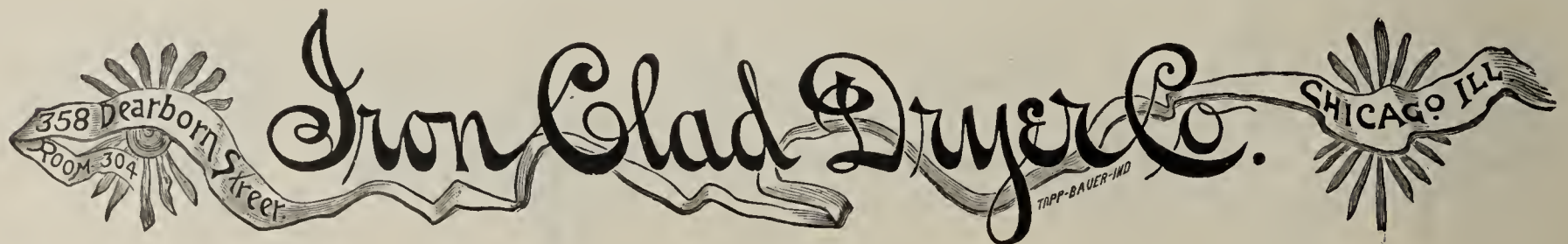
*Galesburg, Ill.,* Feb. 23, 1893.

IRON CLAD DRYER CO.,  
CHICAGO, ILL.

GENTLEMEN:—This Company has had one of your Dryers in constant use since October 1st, 1891. During the first year we experienced a good deal of trouble in the pipes filling with condensed water, but since you overhauled it last summer and put in a pump instead of a steam trap and made some other radical changes in its construction I am more than satisfied with the manner it performs its work. In the four compartments we can dry 75,000 brick in 24 hours, and all through this cold weather we can rely on its doing everything we desire. Our brick when made are  $9 \times 2\frac{1}{2} \times 4\frac{1}{2}$  which is quite a difference from the Chicago brick which are  $8\frac{1}{2} \times 2\frac{3}{8} \times 3\frac{7}{8}$ . Paving bricks contain a great deal more water than those made in Chicago.

As regards the quality of the work of your Dryer, I desire to say that no system I have ever seen can compare with yours. We rarely have a cracked or broken brick come out of the Dryer. Yours Truly,

PURINGTON PAVING BRICK CO., W. S. PURINGTON, Vice Pres. & Gen'l Mgr.





# THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., MAY, 1893.

No 5.

Written for the Clay-Worker.

## ORNAMENTAL BRICK WORK.

THROUGH consideration of the work of others, who do things quite differently from ourselves, we may work out of beaten paths. If there were no outside examples,—if all building work grew from the same motives, there would be a decided similarity and in time a degradation of all architectural work. It would run into the lines of commonness and uniformity. However, from travel, photography, and other means of viewing the world, many examples, each varying greatly from the other, are brought together.

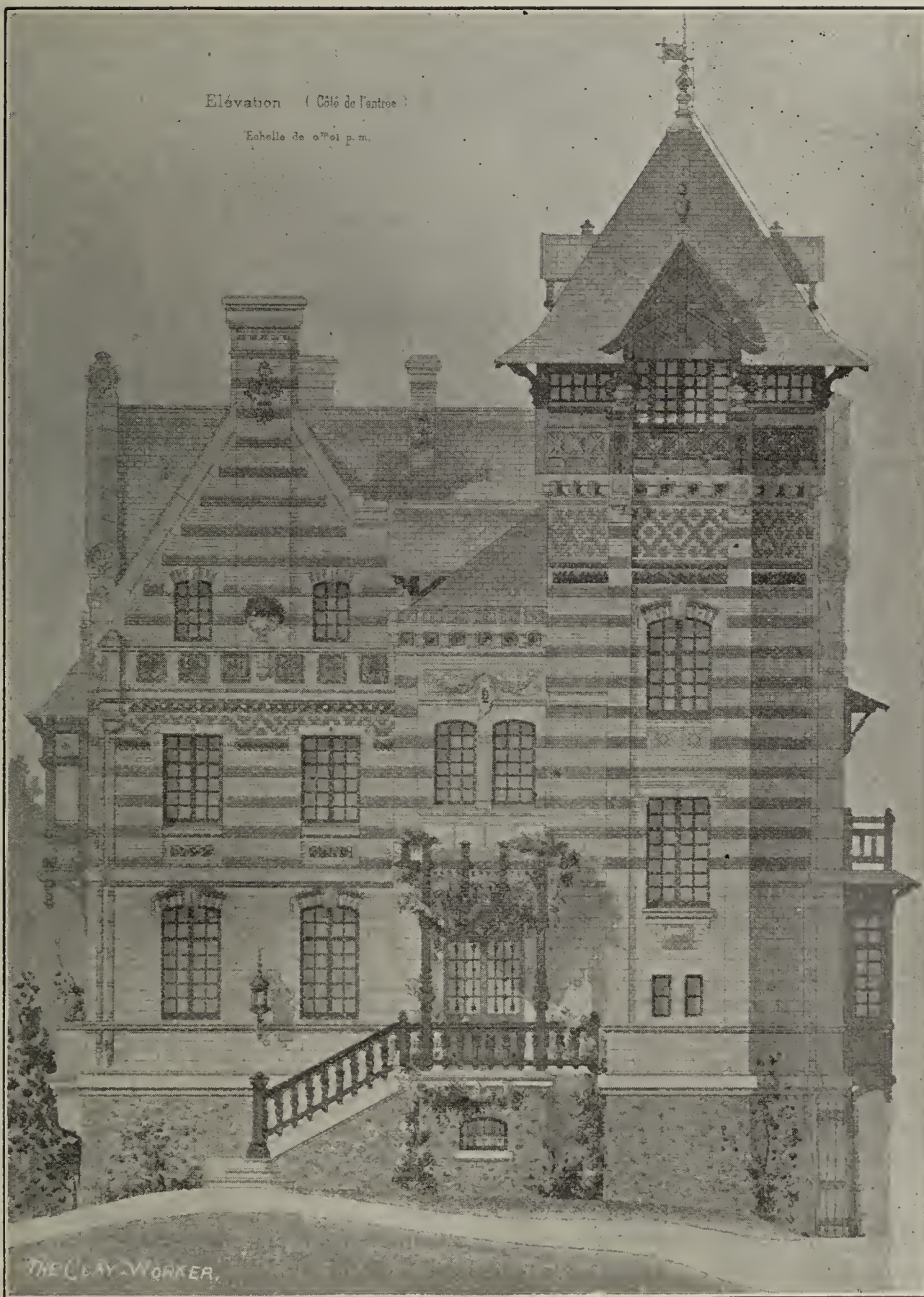
The building which is presented herewith, is a dwelling in the middle of France, and is quite a characteristic of a certain class of houses of that section. To us, with our ordinary surroundings, this building appears quite strange and unusual, and maybe out of place. However, it contains suggestions in matters of de-

tail, and to some extent in general composition. Our climate, our habits and our tastes do not invite an absolute reproduction of the character of work which belongs to another section of the world. We remember seeing, in one of

the recent architectural magazines, an English house which is being constructed in the vicinity of Minneapolis. It had the large openings in great numbers, and hinged and pivoted windows, which belong to the English

mansion, and was altogether unsuited to the climate of the Northwest, with its bright sun, its cold winters and other climatic conditions. This was making altogether an improper and false use of what is very beautiful and attractive in a country where the sun does not shine so brightly, nor where the winters are not so rigorous as in the section named. It was one example of what not to do in our own country. Yet, we could take designs which belong to the English mansion and get a great deal of detail which would be suited to us; but to adapt the whole structure is altogether illogical and misplaced.

This design is given as having interest along the line of decorative brick work. It is particularly apt at this time when so much is being



A BRICK DWELLING NEAR PARIS.



done by the higher grades of brick-makers to give to the country bricks of varying color, texture and design.

In truth, it may be said that the brick-makers are to some extent ahead of the architects at this time. They are furnishing better material than was furnished some few years ago. Can it also be said that the architects are taking corresponding advantage of that which is given them? There is a tendency to make use of just such designs as we present at this time. One can see it in those cities which are in advance just now. Yet good photographs of the character which we give, are wanting. The production of different colored brick which has come about so rapidly in the last few years, furnishes another example of the supply creating the demand. In every town,—in every large city, we can see some use being made of this new material, but the architects are not handling it freely; they touch it as though they were afraid of it. Color in brick work appears to have terrors for them. This is not altogether unnatural when we bear in mind that one, or at most two colors, are as many as have been used in the past, and that, often, when efforts have been made to use more than that number, it has been done so clumsily that it disappoints and disgusts the public. The public does not discriminate very nicely; it says: "Here is a failure in the combination of colored brick. We want no more colored brick." Yet, with a determination to do the right thing, and some enthusiasm in this matter, proper results would be reached. We will edge up to it, as it were.

The first story of the structure here given, is in stone. The forms, as they are indicated, are readily adapted to terra cotta blocks, in which our manufacturers are now becoming so expert. In fact, there is nothing in this construction which does not lend itself more readily to some form of clay product than to stone. As we have stated before, the French are compelled to use stone in small pieces, and for that reason their construction is more like terra cotta than stone proper. All parts of this building, except where wood is shown, might readily be carried out as a terra cotta design unless we except the basement, which is of rough stone.

It will require some considerable agitation on the part of clay journals, architectural publications and clayworkers, to develop the proper market which

is now being demanded by those who are making colored brick. It is not unfair to say that the manufacturers at this time, are ahead of the architects. Certainly they are ahead of the public.

Written for the Clay-Worker.

#### WASTEFUL PRACTICE IN BRICK-MAKING.



WASTE or loss of any part of the material used, the product manufactured, the tools or appliances which enter into the production, or any part of the time consumed in an unprofitable manner, are items which reduce the profits in any manufacturing business.

Where the product has to be handled from first to last in a rapid, dextrous manner, and, as is the case in brick-making, where the whole process is almost entirely manual, it requires close and careful management, to prevent loss or waste at some or all points.

In the first place, the material is of a refractory or unmanageable nature. There are times when the mining, mixing and hauling of clay is done at a great loss. When the sky is bright, air warm and dry, ground and roads firm and solid, there is but little trouble.

But when skies are lowering, clouds pouring rain, or driving sleet and snow, roads are slippery, clay sticky and tenacious, then it is difficult to make headway, and there is loss. When the air is keen and frost turns the clay to stone, then there is loss. Now, why is there loss? We answer, because the manufacturer began operation on the wrong basis; made all calculations in fair weather, with the loss reckoned at the minimum instead of waiting till heavy weather, and then do his reckoning at the maximum.

Where roads are heavy and slick more teams and carts are required, and an increased force in the clay bank to keep the machines supplied.

The remedy in this case is to provide ample sheds, where clay can be housed. There are not many brick plants constructed on a plan which allows storage room for clay sufficient to last during a prolonged wet spell, or for even a few days duration. But there are such and we consider them models of their kind, and that, too, of large daily capacity.

If the yard is of small capacity, it is

much easier to provide storage room for the clay, and where their product comes into competition with larger and better equipped yards, we think it very important that clay be kept in store for emergencies.

In building new plants there is frequently a serious loss or waste of time and material in not hiring good mechanics to construct the necessary buildings. The owner secures a third rate, jack-leg carpenter at a low price, and with the assistance of from three to six laborers, picked up on the yard or off the street, they are put to work with saws and hatchets, to cut and slash at random among valuable material, and often they destroy more in an hour than their wages would amount to in a week. Their time and the material are both wasted. They are men who have never worked on buildings and are not accustomed to clambering and climbing around over-head, and at a few feet from the earth are almost helpless; they consume most of the time in clinging to posts, rafters or braces, or in calculating on a fall. Such men are dear at any price. Three or four good carpenters would accomplish more in one day than a dozen such in three days. Yet I know there are manufacturers who strenuously object to hiring good mechanics at fair wages to do their work; they say, "It is only a rough job of brickyard buildings and I don't need a carpenter."

I have seen such men hired to nail on shingles for one dollar per day, on a shed upwards of a hundred feet long. We had about a dozen men on the roof and each was expected to nail down a stretch of perhaps eight feet in length on each course. Some of these men, by great effort, would manage to nail down about three feet of their share of the eight and others were compelled to help them out. If they were expostulated with, or urged to do more work and keep up with the others, they would make this excuse: "If I was on the ground I could do about as much work as any man, but up here on this roof it is about as much as I can do to sit still and hold on."

Another said, "I know I don't do as much work as these other fellows, but I work just as hard as they do."

Their reasoning was logical; they were right, the employer was wrong. These men were out of place and not fitted for the work required of them. There is no skill or intelligence in their work, and they are more likely to be a de-



trimment than a help. They must be watched constantly to prevent them from spoiling valuable material, and led by the hand from one task to another to keep them employed. Tools have to be furnished them by the employer, and most likely they are a lot of old picked up, borrowed ones, fit for no one to work with. If they are good tools, they are soon spoiled, left out at night or in the rain, nails are scattered about, dumped in piles on the ground, trodden under foot in the dirt, rained on and rusted, and no one stops to gather them up or save them. Time seems to be too valuable to spend in gathering up a few nails, when there are whole kegs of them available.

In building a new plant, arrange it to save steps, condense it as much as possible and move in straight lines with all vehicles, go directly towards the point aimed at, make every move count to save steps and time.

There is, on some yards, a great waste of oil. The engine, shafting and machinery require frequent oiling. In some machines the molds or dies, where they come in contact with the clay, need oil to free them from the green brick or tile. But I am convinced by observation among all kinds of engines and machinery, that on most brickyards there is used double the quantity of oil necessary to properly oil the face or wearing parts of the machines.

How often have I seen the man at the hand or steam repress, take up a can of oil holding a quart or perhaps a gallon or more, and pour over the machine at all points needing it, a pint or more, into the moulds, into the journals and around the boxes. This streamed and dripped down over the other parts of the machine, and caused fine, dry clay or flying dust to adhere to the greasy places, causing it to clog up and push the dirt into the journals and bearings.

The brick machine is, on this account, quite often an object of loathing in both sight and smell and has but little semblance to anything.

In oiling bearings, enough should be put in the cup or oil hole to oil it well, but it is not necessary to wash the whole machine and set every wheel and axle in a drip of grease. A tablespoonful on a bearing is better than a gill. Just enough to lubricate the bearing with

a thin film of oil, and when it needs it again, repeat the process. Oil often, but sparingly, rather than lavishly and infrequent.

On yards where great quantities of brick are made, there are of a necessity many green bricks broken after leaving the mold or machine, before they are set in the kiln.

These green brick and bats are gathered up promiscuously with all other kinds of trash and debris of the yard, and wheeled out to the dump pile to help fill up an unsightly hole or level up a grade on some part of the grounds.

This is wrong; the bats of green brick

reason for this. The pile of "unsalable indestructibles" remain on many brickyards as a monument of the owner's ignorance of brickmaking, or his prejudice against newer methods, and better appliances. The bats are always in sight and force themselves on his mind every time he casts his eye in that direction. Better, far better, would it be to find some use for them, or bury them out of sight.

The small leaks at many points are as bad or worse than a great loss by fire, by flood, or other calamity.

In case of disaster by either of these, the firm will receive sympathy and often substantial aid, until they are again on their feet and start off. But where their loss is evidently through ignorance, carelessness or mismanagement in the detail of the business, no such offer of assistance is made them.

J. A. REEP.

#### A BORN AND BRED BRICK-MAKER.

MR. I. M. GARDNER, is one of Hackensack's most successful brickmakers. He is one of the few in the brick business in that section who acquired his first knowledge of the trade as machine boy on his father's yard. He remained with his father till 1855 when he engaged in the business of manufacturing brick on his own account. Since his first advent on the yard he has seen many changes in the mode of moulding, tempering and motive power, as well as improvement in machines and all tools in use around the yard. As an active business man he has few equals.

He first commenced the manufacture of brick in Haverstraw, N. Y. About thirteen years ago he removed to Hackensack. Through strict attention to the business he has established a good local trade. In the 38 years that he has been in business he has passed through time when the brick trade was at a low ebb as well as the flood time in high prices. If there were more men in the trade like Mr. Gardner it would not be a difficult matter to regulate the prices to suit the manufacturer.

A court beyond all other courts is needed to expound and reconcile the rights of capital and labor, and we shall get the conclusion not until we have ceased to have the need of it.—Judge.



MR. I. M. GARDNER, HACKENSACK, N. J.

have undergone a course of mixing and pugging that has made them better than the raw clay just from the bank. Now that they are dry, is no detriment to them. These should be saved and wheeled to a place convenient to the machine or soak pit and left there to undergo a weathering, and until there is an accumulation of them. Then when a breakdown comes, so that clay cannot be brought from the bank, these bats can be used to make a run of excellent brick.

The waste in the form of burned bats and clinkers, is the item that is sure to be questioned and most talked about by the average brickmaker. There is a



Written for the Clay-Worker.

## HINTS ON BRICKMAKING.

No. 75.

BY R. BRICK.

### GENERATING AND CONTROLLING HEAT IN BURNING BRICKS.

**B**URNING a kiln of brick. What is meant by this? If applied to anything except clay products it would mean destruction, so far as it is possible to destroy matter. But when fire is applied to brick they are not destroyed, if it is done in the right manner. Fire converts a piece of dried clay into an imperishable article of commerce, a building material—all things considered, the best the world has yet produced, excelling all others in its durability and fire-proof qualities, excelled by none in its appearance, and produced in a great variety of color and any shape desired. Clay products form the walls of the palace, and clay products adorn the mantels of its drawing rooms, rivalling in artistic effect the masterpieces of the great painters. How infinite, then, how boundless are its possibilities. The brick burner takes the dried clay, and, by his skill, and knowledge of his art, paints these pieces in unfading colors, in red, buff, white, cream, blue and brown, as well as delicate shades. This is something he should be proud of, for he is helping to make the unwritten history of the nineteenth century.

In building a kiln of bricks there are three distinct stages. The first is drying out moisture, watersmoking; the second, is heating the kiln; the third, finishing or "settling" the kiln. There are so many varieties and kinds of kilns, that it would require a book to go into details of the management of each separate kind of kiln, as well as a writer of vastly greater ability than we can command. But there are a few general principles and ideas that are common and applicable to all processes. In all kilns bricks should be well dried before they are set in the kiln, and however the manner of setting, they should be set uniformly in reference to space and draft. In all cases a brick must be thoroughly free from moisture before it can become red hot (this refers to moisture that a brick-maker knows something about, and not to moisture *supposed* to be in a red hot brick), and then the whole mass must be heated to a degree that will render the brick fit for the purposes it was designed for. These propositions apply to all kilns and processes.

The first object of the burner when he puts fires to his kiln, is to drive off the moisture as soon as possible without injury to bricks. In a kiln of ordinary size, if the bricks were set in the kiln dry, he may watersmoke in 48 hours, if not dry it may require 72 hours or even 96 hours. Where bricks are made from dry clay, or semi-dry, it requires a week, and sometimes ten days, to expel the moisture, the bricks being so compact that moisture escapes slowly, and if driven off too rapidly injures the brick. The bricks may be damaged, or, even ruined, in watersmoking, by firing too rapidly, but they are never injured by firing slowly, so that the safest, and that is always the best method, is to go slowly. This does not mean that you shall watersmoke four days and four nights; that does not insure the safety of the bricks. It means that you must not at any time during the watersmoking heat your bricks beyond a certain degree. If you make your kiln too hot during the first 24 hours the mischief is done; you might then repent and take a week to finish, but the hurt cannot be cured. Hence, it is essential to success that this, the first stage of the burning, receive due attention. What are the results of too great degree of heat in the first stage? If we get a little too much fire or fuel in the furnace or kiln, we will find that there is deposited a white coating on the surface of the bricks—looks like white frost—we say they are "whitewashed." This has become a political phrase, and is applied to a man who goes into politics while he is still quite "green." He gets into some meanness, gets caught, and his friends in their frantic haste to dry him out, are compelled to wash him. There is one consolation, the whitewash always shows. This consolation refers to the man and not to the brick. To avoid this trouble we must not put in too much fuel at a firing and we must not fire too often. If you are firing into a common clamp kiln, leave the fire holes open so that sufficient air enters the kiln over the fire. This prevents too great a heat and is no waste of fuel. The air is heated as it is drawn into the kiln over the fire; this gives a circulation of warm air among the bricks; the air is laden with moisture and the draft carries it to the outlet.

If you use furnace kilns, keep the fire doors open and air will be drawn through the kiln in the same manner. After the kiln is dried, perhaps three-

fourths of the way to the top, then the doors can be closed and heat increased considerably. More fuel can be used second day than was the first, and more heat put into the kiln, but the admission of cold air with it prevents the sudden rise in degree. In cold weather it is easy to know when the kiln is dry. The moisture, as soon as it leaves the kiln, is condensed by contact with cold air and can be seen. In warm weather it is not always visible, especially when the kiln is nearly dry. When the top brick is hot enough to burn the hand, it is dry. By holding the hand near the top brick, moisture will show on the skin, if there is any rising from the kiln.

When the kiln is dry then begins the second stage, heating up. The object of the burner now is to get the bricks uniformly heated, from side to side, and from bottom to top of kiln. The brick naturally heat first at the point where the fire enters the kiln, and last at the place where it makes its exit. In a small kiln a few hours only is required to heat the ware but a brick kiln of ordinary size, 25 feet wide, 15 feet high, and from 40 to 100 feet long, it requires from 48 hours to 72 hours, to get the heat uniformly distributed throughout the entire kiln. To burn successfully it is necessary to do this before the settling or furnishing heat is applied. Where fine coal is mixed with clay in making the brick, the process of burning is entirely different. Hence, this article does not contemplate this process.

When a brick burner has dried his kiln and succeeded in getting it uniformly heated, so that flames appear all over the top, and the arches well heated across the whole width of the kiln, the battle is more than half won. Thirty-six to forty-eight hours of careful and vigilant work will give him a kiln of well burned bricks.

In our next article we will discuss the third and most important stage of the burning of a kiln of brick.

### COST OF COLUMBUS' EXPEDITION.

The cost of discovering America by Columbus, says Prof. Ruge, in the "Globus," was 1,140,000 maravedis, or about \$7,296 of our money. The money of Queen Isabella, of course, had a higher purchasing power than the dollar of to-day. Of the sum named, Columbus received an annual salary of \$320, and the two captains each \$192 per year. Each sailor, in addition to his subsistence, received \$2.45 per month.



Written for the Clay-Worker.

### ENAMELED BRICKS.

THERE appears to be an ever increasing interest in the subject of enameled brick manufacture. The numerous letters I have received seeking information, with what I see in print from other correspondents, all testify to this fact, and open up a wide field for thought, observation and remark. It is said that we shall never have exactly the same experiences to-morrow that we have had to-day, that we shall never travel over this road again, but this statement will not hold good when applied to enameled brickmaking.

In the letters I receive, the writers give me an account of their experiments with the methods pursued and the results obtained, giving a detailed account of the characteristics and appearances of their products and the mystery that surrounds their failures. Couple this with what we see in print on this subject and we are taken back 40 years and brought up and along a road that is very familiar to us, pushing us up against some of those troublesome relations of ours that we thought we had left behind us forever. But, seeing this is not so, I propose to deal with a few of these defeats, by your permission, in a way that will not only be interesting but I think instructive to your readers.

I will first state the ground we propose to traverse, as an indication of the line of thought we intend to pursue, and to make what we say as clear and understandable as possible, I propose dividing the subject under three propositions. First, to show some of the defects which are real difficulties in their manufacture. Second, to show the variety of method and expedients that have been adopted to overcome them. Third, to consider the cost of these methods with the quality of the goods produced as compared with the one method considered to be the highest development of the art of enameled brick manufacture.

The defects in an enameled brick do not all appear at one stage of the process, by any means. One of the first difficulties met with, is, the enamel will not fasten to the brick. In some cases it will come off when they are dry and just

ready for dipping in the glaze. In other cases it will come off just as soon as it is dipped into the glaze, and in other cases it will come off whilst it is annealing in the kiln, or, in others, as soon as it comes in contact with the atmosphere. After being drawn from the kiln another defect is, that bricks that would dry perfectly straight as ordinary pressed, when enameled will dry very crooked. This is owing, to a great extent, to the moisture in the enamel being absorbed into one side of the brick, and, by the fact that in many cases the enamel shrinks much more than the foundation and as it dries it will draw the ends to-

glaze, and they will look to be all that could be desired, but in a few minutes there will be small risings about the size of a small pea, like mole hills in a field, and thus render all the work up to this time a complete failure.

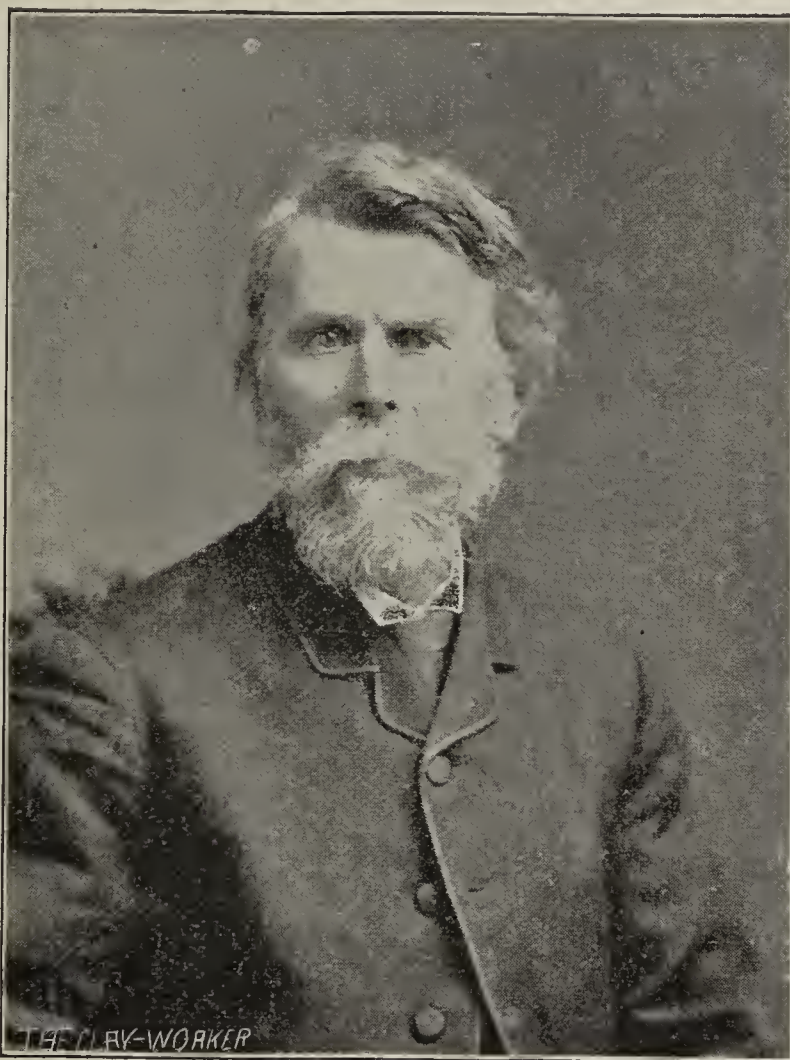
Other defects, some of them of minor importance, cluster round these, not such as to imperil the sale of the bricks for many purposes at a lower price, but they all help to lower the standard of excellency, and, therefore, they cannot be called a first-class article.

I need not go into these. I am wishful to avoid taking up space in your journal with anything but the cardinal and vital points. I name these three, which appear in the first stages of the process of the manufacture, for the consideration of your readers. In my next paper I shall show up fully the methods and expedients that have been adopted to overcome these difficulties. MANAGER.

### A TROUBLESOME INDIVIDUAL.

THE employe who is afraid of doing too much is not the sort who ever becomes very valuable to his employer or to himself. His aim seems to be to do just enough to save him from censure or dismissal. He saunters instead of walking; he does everything with a sort of lackadaisical air, as if he were performing a great act of condescension in waiting upon you at all. He says y-e-s and n-o as if every letter cost a dollar, and they were the last he had; he gazes out of the door, away off yonder, while you ask him a question, and then tortures you with y-e-s or n-o; he

never condescends to correct your mistakes, if you make one, or, if he does, it is in the tone of one vastly superior to your humble and unworthy self, and excites in you a determination to have as little to do with him as possible; he makes all his preparations for departure before the hour, so that not a minute of his own time is lost; he does as he is told, but no more; he never thinks of how he can advance his employer's interests in some unbidden way, and has not brains enough to know that when cultivating the habit of thought of the business of his employer, he is laying up capital and strengthening his own resources for the time when he shall



ISAAC HARDY ("MANAGER"), ABERDARE, ENGLAND.

gether so much as to make it as crooked as a sickle.

Another very serious defect is one that is not seen until the bricks are dipped into the glaze. It is a real difficulty which has been a mystery to many a good workman. The bricks may have taken the enamel all right and dry quite straight, and everything look first-class, raising the hopes and expectations of the responsible man, when to his surprise, this serious defect makes its appearance. To describe this, we will suppose the bricks are dry and ready for dipping in the glaze; they are brought to the dipper, the face to be glazed is dipped into water and then into the



start a business of his own. There are many such employes, but may their tribe diminish.—*Selected.*

Written for the Clay-Worker.

### BRICK AND INSURANCE.

BY J. W. CRARY, SR.

AT first sight the reader will say: What is the old man driving at, when he starts to talk brick, on such a subject as "Brick and Insurance?" What has brick to do with insurance? Now don't be impatient, my dear friend reader, listen a little while, and I will tell, just how brick and insurance agree, or, rather, how they disagree, when they come to balance their cash book.

To begin at the bottom of this subject, (and that is the way to begin to build, if your work is to stand,) I will ask you, Mr. Reader, if you have ever studied the theory and practice of *insurance*, or what some call underwriting, or risk taking? If you have not, I will tell you in substance, that the theory and practice of *insurance* is nothing, more or less, than polite, respectable gambling, differing only from illegal, or criminal gambling, in the fact that insurance policy is a system of involuntary co-operation of the whole community for mutual benefit, while common gambling takes from a few fools and dupes, a voluntary contribution to rascality.

I have written on this subject before this writing, but is a subject of so much general importance, that like the Lord's prayer, it cannot be repeated too often. A subject matter, that affects the pecuniary welfare of every man, woman and child, in the whole civilized world, cannot be too often discussed or too well understood.

I have said, that the policy of insuring rests on the principle of co-operation by the entire community. True, the community has no direct agency in effecting an insurance policy between *A* the insurer and *B* the insured. But it is very plain to see, that if *B* is a merchant, or any kind of a business man, he makes his living and profits out of the patronage he gets from the community. It is further plain to see, that when *B* makes up his account of cost, sale and expense, he must necessarily add the cost of insurance to cost of his goods, or whatever the community gets from him, so that the consumer or user of any perishable thing pays the cost of insurance. Thus

the whole community are constantly taxed to insure against the risk of accident, or carelessness, or criminal action.

Now, we can see that whatever will lessen the liability to destruction of property by fire, will, just in proportion to the lessening of such liability, save the people the expense of living, and from the troubles incident to risk.

It is said that the cost of insurance in the United States is at least \$300,000,000, including risk on houses and articles of general consumption.

Whether this statement of insurance tax is correct or not, it is safe to say, that it is no exaggeration of the enormous burden of expense to which the whole people are arbitrarily subjected, without recourse. No one can say, "I will not submit to this tax of insurance." If he lives as a civilized man, he must pay the tax, in proportion to what he uses and consumes.

#### WILL THE PROPER USE OF BRICK LESSEN THE COST OF INSURANCE?

It requires no proof, or citation of evidence, to answer this question in the affirmative. A fire-proof brick building can be built at only one-third more cost than a first-class wooden building of same size; and if not exposed to the danger of combustible buildings, in close proximity, the risk of fire is so much less than with wooden buildings that the cost of insurance is scarcely felt.

In a city, as for instance, in Philadelphia, where wooden buildings are strictly prohibited, a premium of two per cent. is all it costs for a *perpetual* policy of insurance, while in most of our towns, or cities, where wooden buildings are permitted, the cost of insurance is from two to three per cent. every year, so that a common, respectable tenant, will pay three to four dollars per month rent, more, for living in a combustible, than in a non-combustible house.

But the extra cost of living in wooden buildings is not confined to the insurance of the building only. Furniture, goods, papers, and even life and health are involved in modern structures. It is a common fallacy to say, that "Brick houses are damp and unhealthy."

#### ALL BRICK WALLS FOR DWELLINGS, OR STORES SHOULD BE BUILT HOLLOW.

I have, in previous articles, pointed out the best way to build hollow walls, but I will here repeat, that for common small dwellings, where only 8½ inch

thick walls are to be put up, the best and cheapest way is to set inside two or three courses of brick on edge, then bind to outside course flat, with a "header." Every 4th and 5th header should be a *bat*, so that a free circulation of air can be had, from bottom to top of the wall. Fine *grates* of iron, or clay, about 4x12 inches, should be set in the *base* or *washboard*, on the floor, so that the foul air in the room will pass into the hollow of the wall. If the room be properly ventilated the temperature in the hollow space in the wall, will always be high enough to cause a draft.

No "*furring*" is needed for *lath* as no *lath* are used. The plastering is put on the brick and is never damp from dampness in the outside wall. If the walls are well built in this way, they are as strong as if solid. Door and window jambs should be *returned* solid, and a four-inch *pilaster* on the inside gives strength, beauty and utility to the wall. The *pilasters* may be carried up from the foundation, if the doors and windows are regularly *spaced*, one above the other. WE HEAR A GREAT DEAL OF PARTY CLAP TRAP ABOUT THE BURDEN OF THE TARIFF,

But the waste of money on needless insurance policies is many times greater. If the general public would demand good fire-proof buildings, then have laws to detect and punish incendiarism in all its forms, it would accomplish ten fold more good than "*tariff tinkering*." Some may say that I am a brickmaker and write this to help increase demand for brick. Well, that is true, I would like to see brick used for building instead of lumber, but if the demand for brick were increased, brickmakers would increase in the same ratio, and instead of brick being advanced in price they would become cheaper, and in much better supply than now.

All good, expert brickmakers, might have some advantage in an increased demand for brick, for the reason that with a better demand, a better market for a good quality of brick would naturally follow.

If brick building were to become popular, every person concerned would take an interest in the quality of brick, they would want the best, just as anybody wants and demands the best of a thing in the line of fashion. So, of course, it would be a fine harvest for good brickmakers, if everybody would get enough of good, common sense to want a brick house, or the benefit of brick building, and using, instead of wood, stone, iron, etc.



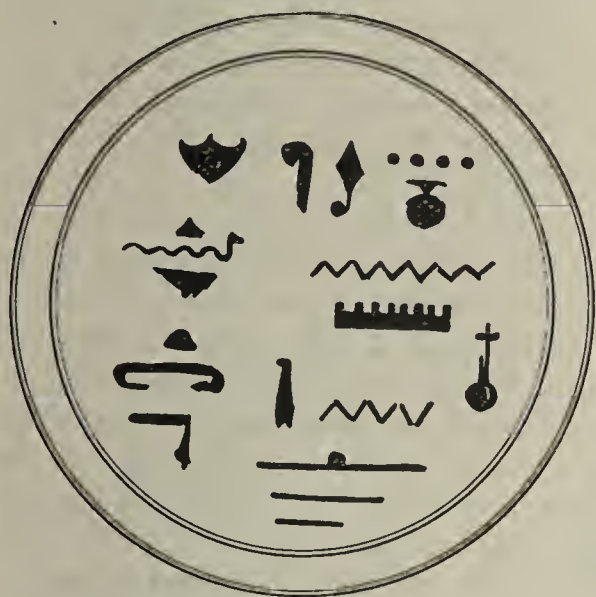
Written for the Clay-Worker.

### ANCIENT CLAYWORKERS.

THE interesting uses that the Egyptians made of clay, was in the construction of implements or devices relating to the sepulture.

Sarcophagi made of clay were in common use among the lower and poorer classes, and all the workmen of the great Tourah Quarries were buried in this manner. The rich, however, availed themselves of the more costly, if no more comfortable, sarcophagi made of breccia, basalt, and alabaster. Some of the latter are rich indeed.

Another strange implement of the burial is what are known as "funeral cones;" the use and motive for which is one of the secrets that can only be surmised. They are made upon a wheel and are often quite irregular in their workmanship. Around and upon the base are stamped in bass-relief a series



of inscriptions. This end is also sometimes painted red for a distance of several inches. The position in which they are sometimes found is over the doorways, but most of the cones are now in the debris. In length, they are from 6 to 12 inches long and about 3 inches in diameter at the base. Many conjectures have been made as to their probable use. Perhaps they were seals for the purpose of sealing the tombs; or, may be, tickets for the coffins, cards of invitation to the mourners, or passports for admission to the tombs. Some more recent discoveries at the city of Warka seem however, to indicate that they were of an ornamental character, being colored differently, and arranged in patterns around the walls, point end stuck into plaster or mud. The writing upon the cones is of a

funereal nature, the titles of the deceased usually being followed by the talismanic phrase "Blessed by Osiris," surely a prototype of the modern "Safe in the arms of Jesus." People were something of the same nature as now even in those olden times. The inscription upon these cones was usually confined to writing and scenes were rarely undertaken. One was found that showed some skill in drawing, representing the deceased sitting beside his wife, and in another he is standing in adoration or prayer before the solar orb as it sails in its bark or baris through the ether, or perhaps it is a monarch that he is worshipping. The impressions are made with a wooden stamp while the clay is yet moist.

One thing about these cones, is that they seem to throw a light upon the inner organization of the empire. They are like the visiting cards of the living, bearing all of the titles and insignia of rank that certain persons may have borne. Let us read one of them for an example: "Merimes, the prince of Ethiopia, devoted to Osiris the justified." Another states this same Merimes to be the scribe of Rameses II, and another that he was invested with the vice royalty.

Another feature of the tombs is the sepulchral figure made of clay, called "Shabti." These were deposited with the dead. Then there were little models of sepulchures, some of which even contained little images of the body. Herodotus states that these were samples submitted by the undertaker to the relatives of the deceased, and from which they chose the style and pattern that they might desire. Possibly all of the models submitted by rival embalmers were so deposited, that they might all reap equally the benefits accruing from such advertising.

Vases were used for the purpose of containing the entrails of the embalmed dead, for these parts were removed and operated upon separately from the remainder of the body. Sometimes the vicera was returned to the cavity from which it was taken, but more commonly it was deposited in four vases. The entrails among the better classes were soaked in the embalming fluid, and then carefully dried and tied up into packets. The latter were placed in their proper vases, four in number and representing four deities ordinarily called the four genii of hades. The vases were made in the form of a body, sometimes mummified, and with a cavity within for

the reception of the packets. The first of these vases was called Am-set, the devourer of filth, and this worthy old god contained the stomach and the larger intestines. The top was of the form of a human head. Am-set was the son of Osiris, the pygmean god of Memphis.

The second vase was known as Hapi, —the concealed,—and contained the



smaller vicera. Hapi was favored with a head shaped like a cynocephalus, something, by the way, of a very uncommon form. Hapi's chief dominion was in the north, over which he presided.

The third of these remarkable divinities was Tautmutf, which means—admirer of his mother,—certainly a very nice trait even in a god. Tautmutf contained the heart and lungs of the corpse, and probably in some cases found that the latter portion of the anatomy was quite a burden. However, if the portrait is to be believed, Mr. Tautmutf was quite a demure person, for the countenance is pleasing.

The last vase-god, or god-vase, was Kebhsnuff—meaning refresher of his brethren. His head was like that of a sparrow-hawk, and his function was to contain the liver and bladder gall of the mummy.

When these vases had been filled with their burden, they were taken on sledges to the tomb, and deposited two upon each side of the coffin.

### MORE PAVERS WANTED.

In his annual report, Mr. William Steyh, City Engineer of Burlington, Ia., states that there was 26,890 square yards of brick pavements laid there last year at a cost of \$49,307.50. He adds that the work has been delayed by a scarcity of paving brick.



Written for the Clay-Worker.

### PICTURESQUE BRICK ARCHITECTURE.

**I**N GIVING examples of foreign work, particularly that of an early period, there is always danger that the suggestions which the presentation of this work naturally offers, will be taken too directly or too seriously.

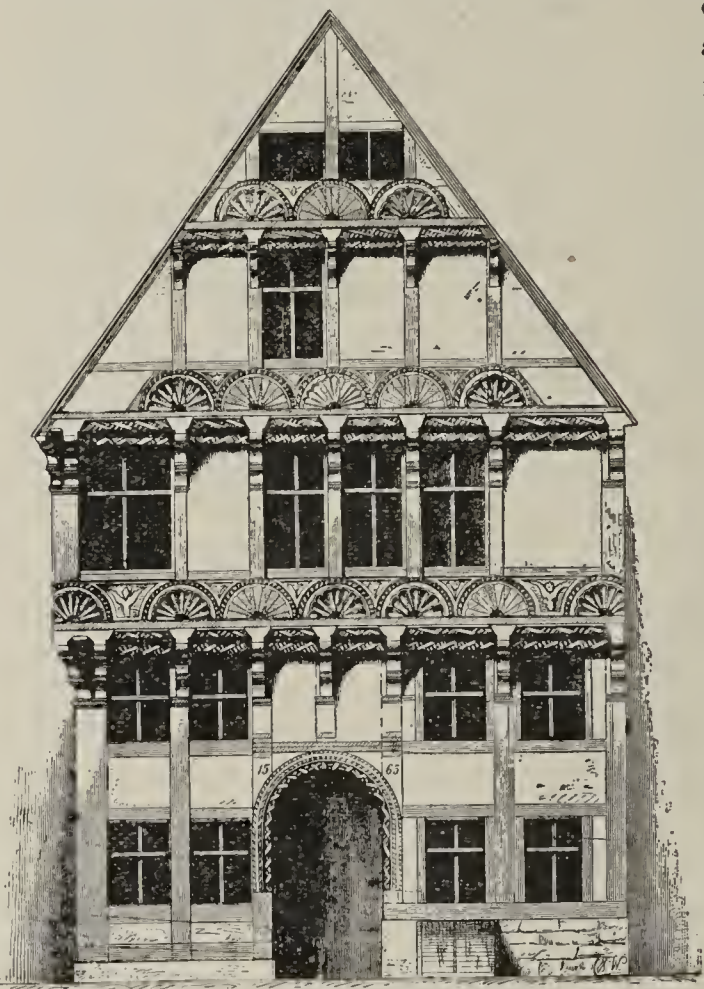
Now, if we give, for instance, an illustration of an old half timber house which is found north of the Hartz mountains in Germany, we present a valuable example in all that is interesting, picturesque and beautiful. At the same time we do not say literally, "Go and do likewise." Work of this kind to have value in this epoch of architectural development, must be taken in the nature of a suggestion. We must consider the conditions which gave such an architecture development in the earlier days. We profit, if at all, through the elucidation of the principles involved. The conditions which surround the builders and people generally, of the 19th century, are altogether different from those, say, of the 15th or 16th.

The work of this picturesque character, which belonged to the early period, was a natural outcome of the practical and artistic requirements of that time. Now, if we take an example of a German half timber house, and reproduce it, we are forcing things. We are accepting the conditions which belong to the 15th and 16th centuries, and undertaking to adapt them literally to the 19th.

It is known that in many things the world moves forward. In some things it moves backward. We must accept the forward movement and at the same time try to bring up that which is in arrears. We must take our own natural requirements from a constructive standpoint, and not allow anything in the past to affect the utilitarian qualities of what we do. We must not say that a piece of work being beautiful in the past gives us reason to carry the same thing into our present architecture regardless of practical requirements. The practical qualities and practical demands of architecture are inflexible. They cannot be taken out of our architecture and leave art.

It was said in the above connection that in some respects the world moved backward. This is true with respect to architecture as an art. The best Gothic

architecture that the world has ever known was developed in the 13th century. The Gothic architecture of the 14th century was not equal to it. The best Renaissance architecture that the world has known was of the 16th century. Nothing that has been done since has equalled it from an artistic standpoint. Nevertheless, the 14th century architecture was admirably adapted to the practical requirements of the time in which it was created. The same thing is exactly true with respect to the Renaissance architecture. Where we take the early work and go from structure to structure, as we find it in the Old World, we find a great variation in plan



and in the arrangement. All has a regard to the utilitarian qualities of the problem, and always an artistic success. There was never a forcing in any direction. It was after the first of their Renaissance work, that the Renaissance commenced to decline. Primarily it was successful from a utilitarian and artistic standpoint, but the builders who came immediately after this period were absolutely embarrassed by precedent. They were embarrassed by the previous successes. They saw what had been done; they noted its beauty; they had information as to what they might do. They took a feature from this structure, one from another, and the result was an imitative architecture, and in so far as it was imitative without a true regard to

the practical requirements, it was, in that measure, less successful than the work which had gone before. As originally developed, there were no rules connected with this architecture of the Renaissance. There was first a development of a plan which suited practical requirements. Then came the proper construction and clothing of that plan. The result, as stated before, was highly successful. It was, when a departure was made from this method, when the exterior and decoration was considered primarily, that we find a stiff and formal architecture; one having none of the fire and life of that which went before. The same general principles apply in connection with the brick and wood architecture of modern times in Germany.

The modern architecture of that kind does not equal that of the earlier periods. The work which is done today has a moulded, formal and stiff, cast-iron kind of appearance. There is evidence also of having an architecture, the surface clothing of which does not properly fit the interior. 14th century architecture was made to suit 14th century habits. 14th century architecture will not suit 19th century habits.

One reason why architecture of today is not as successful as that of the past, is because we have too much to imitate, and imitation is always apparent. Imitation constrains us. When we learn to plan our buildings in the way in which they are the most convenient, say, as dwellings, or paying the best as commercial structures, and then to decorate them in a way to make them appear the best regardless of history, then will we be in shape to consider ourselves in a position to develop an American architecture.

The old German half timber architecture of which we give a very good example in connection with this article, was successfully developed under just such conditions as we set forth. The house keeper, the store keeper in this building, were entirely satisfied. It suited the demands of their time. It was probably the best building from a commercial standpoint, that could be thought of during that period. He did not go back into the 13th century for forms or suggestions as to outlines. Such suggestions come naturally and from physical and commercial demands. Having outlined the plan, the form of



the structure according thereto and according to the material with which he would build it, he then went about in an artistic spirit with regard for the beautiful, and decorated it naturally. This was architecture. It was art in that it was original, beautiful, and utilitarian. Any one would know if such a house was to be built to-day on one of our streets, that somebody was straining a point in the matter of store keeping and house keeping; that they were not living up to date; that they were stepping back three or four hundred years for the sake of developing one edge of an architectural idea.

We have encountered, from time to time, a few glittering cranks, who ape not only the forms and plans of ancient buildings, but the poor construction which happened to prevail in certain details in that time.

There is, in the State of New Jersey, which has produced so much good clay work, an architect who, when he has his own way, has brick exposed in the wall surface and in all sorts of bad forms. A "hog" in the wall is, in his mind, extremely artistic. He had seen "hogs" in the wall in certain early structures which had some essential points which might be admired. Broken bonds, in his mind, is a delight. He had noticed in some of the architecture of early times, broken bonds; hence the world must be brought to that level. He leaves the putlog holes open for the same reason. If they are filled, the work is done carelessly, with fragments of brick. He saw the way it was done in some buildings three or four hundred years ago, and his logic suggests the same thing to-day. Then in walls which this genius has constructed, he has brick filled in at all sorts of angles, and all sorts of positions. The ends stick out from the wall, others set back at irregular intervals and in every possible way which originated in bad workmanship. He apes the mistakes, though not always the artistic qualities of the earlier times, and, strange as it may seem, this man has a certain following.

Good workmanship is always a part of good architecture. But all branches of architecture are not always up to the same level. It was not so three or four hundred years ago, and it is not true to-day. The decorative work of the earlier periods was, generally speaking, better done than we can expect to have it done now. Oftentimes the structure itself was far inferior. Now if we take that

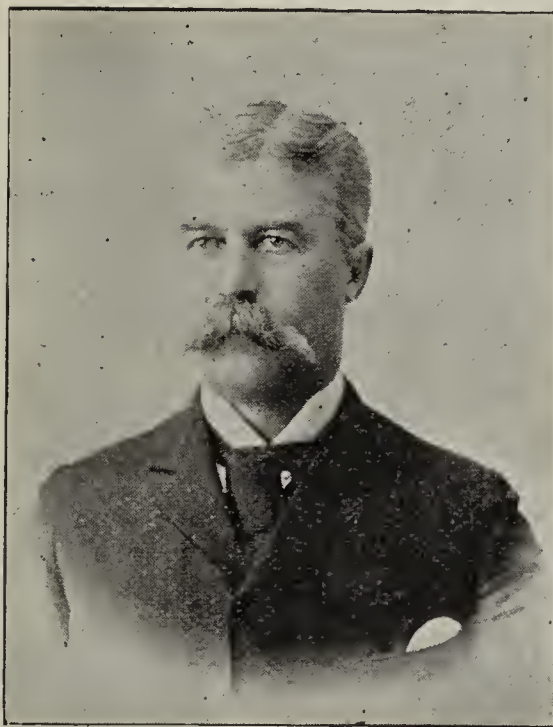
which is to-day good and cling to it and go back in the dim past to that which was good then, and unite it with what we have now, there is a rational American architecture.

#### PRICES AND PROFITS OF TILE AND BRICK.

\*BY GEORGE GILLEN.

*Mr. President and Gentlemen of the Convention:*

I will first endeavor to explain how the average tile and brick maker figures when he starts into business, he will build his factory, all complete, as he thinks, then he will make and burn a kiln of tile or brick, and when he gets ready to draw his kiln he will not try to count the tile or brick, as he takes them



J. E. CHANDLER, PRESIDENT ILL. BRICK & TILE ASSOCIATION, BUSHNELL, ILL.

out, as he should do, but guesses at the number.

Then he will count the cost of labor and fuel and leave out the interest on money invested, nor does he count wear and tear of machinery and decrease in value of his works. Nine-tenths of them will, in the first place, make the number of tile or brick, one-third to one-half more than they really have, then only counting the labor and fuel, they conclude that tile and brick can be made very cheap. Of course, they will sell cheaper than their neighbor and still have large profits, but after they have been in the business about five years their works are running down, their purses shrinking very fast, so they conclude to sell out to some one else and find that no one wants their works at

\*Read before the Illinois Tile, Brick and Drainage Association.

any price. Then they find that their profits have been very small, so small it is impossible to find them. Too many men think the capital invested should not be considered. Why not? Can't you get interest on all money you have to loan? The same is true of our works. It is not like buying a farm, which you can sell at any time for about the same you paid for it. You can buy plenty of tile and brick works, to-day, for one-half or less than what they cost, ten, or even five years ago. What has been the result of men going into the tile business, especially, in such a way?

I think it is claimed that at least three-fourths of all the tile men have either failed or have gone out of business with considerably less than they started with, in the past ten years.

Now, shall we continue to go along, with the profits where we can't see them, and think that every other tile and brick maker is our enemy? Or shall we ask reasonable prices for our ware and have at least enough out of our business to live on? I will not say what tile or brick can be made for, as that depends on how the works are built, what a man has to pay for labor and fuel, what kind of machinery and kilns he is using, the kind of clay he has to use, and last, but not least, if a man knows how to manage men, how to temper his clay, run his machinery and burn his ware.

I do think that when a farmer tells you he can buy the tile at a reasonable price and can make one hundred per cent. out of his investment, which I have had farmers tell me nearly every week during the past year, that we should stop and consider what we are making, and if it would not be advisable for us to have a little of the profits instead of cutting on prices and paying the farmer to take our tile and brick, which we surely do when we sell them for less money than it cost to make them.

I, for one, would rather sit down and rest, than lose money in order to be doing something. If a man wants you to sell tile for less than you can afford to make them, tell them that you will not sell them for less, but you will furnish them the tile for one-half what he will make out of them during the next five years, the profits to be divided each year, and you will soon have all the money you are looking for, if the farmer will only take you at your offer. Don't give off five or ten per cent. because you



think that don't amount to much, but stop and think what five or ten per cent. will amount to during the year on your sales, and what it will lose for you, before you go into that kind of business. I find that a great many men are anxious to sell tile cheap to men who own large tracts of land, in order to have the credit of selling to them. This is not right. A man who owns a large tract of land, can afford to pay as much for tile as the man who has the small tract, or more. Therefore I believe in making one price to all, and not have the poor man pay for what you lose on the rich man.

I don't think there ever has been a class of men who work more against each others interest than the tile and brick men. It is their fault that it has been all loss and no profit so far, and I think it is about time that they redeem themselves.

Show me a class of men who have done more for the State of Illinois than the tile and brick men have done. They have driven out chills and fever, reclaimed the low, wet land, increased the value of land from ten to seventy-five dollars per acre, have paved the streets of our cities and made a solid roadbed where it was impossible for a horse to pass through, have drained our highways and will pave them in the near future so they can be traveled over at any time of the year; they have made Illinois the richest in agricultural lands, the third in population, the most progressive, and it will be the leading State in the Union, both in population and in wealth before the year 1900. Who deserves more credit for this prosperity than does the tile and brickmaker, and yet they have been paid the least for their labor of any class of men in the State.

The prospects for tile are good for the next year and the brick business is just in it's infancy. Now is the time for us to unite and consider the subject of "Prices and Profits" in our business. "In union there is strength," so let us get together and not think that every other tile and brickmaker is our enemy, but let us be friendly toward each other and work for each other's interest. Let us not ask for anything out of reason, or that does not belong to us, but let us go hand in hand, and shoulder to shoulder, and ask fair prices and reasonable profits for our labor, so that when we have done our work we may retire, and have at least a few days of rest in our old age

and have enough left to leave our families in comfortable circumstances when we come to lay aside this body of ours. I think if there is any person who deserves a little of this world's goods, it is the tile and brickmaker and his family, so in the future let us strive to have profits instead of losses.

Written for the Clay-Worker.

## PRACTICAL POINTS ABOUT PAVING BRICK.

### Thirteenth Paper.

BY D. W. STOOKEY.

SOME PECULIAR SPECIFICATIONS CONCLUDED. SIZE OF BRICK.

**Q**UOTATIONS from four lists of specifications are given; each one separated from the other by marks.

"The brick shall not be less than eight inches in length, two inches in thickness, and four inches in depth."

"The brick must be of the following dimensions: Eight (8) inches long and four (4) inches wide, and two and one-quarter ( $2\frac{1}{4}$ ) inches in thickness."

"Square edged, to wit: Length,  $8\frac{3}{4}$  inches; width, 4 inches; thickness,  $2\frac{3}{4}$  inches."

"They shall not be less than  $7\frac{1}{2}$  inches long, 4 inches wide and two inches in thickness and not more than  $8\frac{1}{2}$  inches long,  $4\frac{1}{2}$  inches wide and  $2\frac{1}{2}$  inches in thickness. The brick to be gauged and piled according to size, dividing on two-sixteenths of an inch. The brick to be laid in courses across the street, using the same size through each course. A proper amount of sand being used to bring the top of bricks of less gauge flush with pavement."

It is certainly drawing things pretty fine when city engineers are so exacting that they dictate the size of brick to be used, and draw their lines at "two-sixteenths of an inch." If the brick should vary that much and even more, it is the province of the intermediate bed of sand to provide for the correction of all such irregularities, and when the top course of brick is rolled, the surface is made smooth and all differences in width of the brick are adjusted in the sand.

It is an absolute impossibility to make all of the brick of exactly the same size, and it is not the part of wisdom, nor does it show a spirit of fairness to be so particular as to the small details that in no way affect the quality of the finished pavement.

The slight variations in the size of in-

dividual brick from any one plant exert no influence upon the completed pavement. The bedding in sand and subsequent rolling are intended to, and actually do, correct the slight differences.

The size of the brick is a matter that will probably adjust itself. There is but little danger that they will be made too large, for the difficulties in the way of making large sizes are such that the makers will not attempt it, nor would they succeed profitably, if they should. The contractor will see that the brick are not too small, for it is to his interest that they shall build up as fast as possible, and he will not buy brick that are below the standard size. The expense of laying small brick is greater per yard than for large ones, and as the work is usually done by the square yard, he will guard his own interests by using the largest brick that he can find for the price, other things being equal. It matters not to the financial interests of the city, the traveling public, nor to the animals and vehicles that travel the streets, whether the paving brick are seven and three-quarters or eight and one-quarter inches long. Brick machine makers and brick manufacturers have studied the question of the size of brick and have, generally, come to the conclusion that the best size for paving brick is the same as that of building brick, and the specifying of all the engineers in Christendom will not likely be able to change it.

### TOP DRESSING.

By continuing the examination of different specifications it will be found that there is a diversity of opinion as to the proper method of filling the spaces in the top course of brick and of applying the top dressing.

These differences arise from varying conceptions as to the means necessary to attain a given end, upon which all seem to hold a common opinion. This end, which all desire to gain is, that the pavement should be made as nearly solid and impervious to water as possible. In order that the foundation may be preserved, it should be kept as free from water as possible, and this is assisted by having the surface of the pavement water-tight, so that it will shed water to the gutters and thence into the drains or sewers.

Several methods employed to accomplish this are shown in the following quotations:

"When the brick have been rammed



to a solid bearing and brought to a perfect surface, the interstices shall then be thoroughly and completely filled, from bottom to top, with distilled coal tar pitch, (known as No. 6), heated up to 300 degrees. All crevices must be filled, and the entire top surface covered to a depth of not less than one-fourth inch, and upon this must be spread one-fourth inch of clean, sharp sand, which must be comparatively dry and free from moisture. This sand must be thrown evenly over the boiling pitch, as rapidly as the pavement is filled in, and the pitch spread over the surface of the pavement, the aim and object being to make the pavement one solid mass, which, when completed, shall be practically a fixture and water tight.

"If Portland cement grout is used in the joints it must be mixed one-half cement and one-half sand, and after the grout has settled down in the joints they must be raked out to the depth of one inch and then neatly pointed with a trowel."

The following extract goes a step farther and requires the use of a composite cement filling: "The joints will as far as possible be completely filled to the bottom with a cement composition, composed of not less than ten per cent. of refined Trinidad Asphalt, mixed with coal tar cement, distilled at a temperature of not less than 600 degrees, Fah., and the whole mixed with such proportion of still-wax as not to soften or become brittle under heat or cold.

"The composition shall be heated and used at a temperature of not less than 300 degrees, Fah., to be determined by a proper gauge or indicator placed upon the tank used in the street; extra material and care shall be used at the gutters in filling all joints in both paving, curbing and around catch basins or other receptacles, to effectually prevent the leakage of water into the sub-roadway; all joints to be completely filled to the top, and refilled such number of times thereafter as may be directed before adding top dressing. The cement not to be used until the brick are completely dry."

"All joints of curbing shall be thoroughly back filled and made water tight from the base to the surface of the stone with Portland cement concrete,

made of one part fresh ground Portland cement and one part clear sand thoroughly mixed with sufficient water."

The idea comes to mind from reading these specifications that they contain certain details that have been introduced into the work of brick paving from experiences and practices in other lines of work. The use of coal tar and pitch to fill the spaces and form a covering for the surface has probably been brought from the custom of treating cedar block and other wooden pavements in this way. The utility and necessity of them in connection with wooden pavements



FRANK D. BROWN, AGENT WHITTAKER BRICK PRESS, QUINCY, ILL.

as preservatives is very evident, but their introduction into brick pavements for this purpose is entirely superfluous. The superficial covering of coal tar on wooden pavements has the double use of excluding the moisture and of making the surface more compact and less liable to wear, because it fills the pores of the wood, but on vitrified brick pavements this superficial treatment with tar or pitch is evidently not only unnecessary, but is an item of expense that is wasted. It cannot enter into the brick and as a superficial covering, it is of no practical value, as it only forms a soft coating that will wear off with the first travel.

The utility of some filling for the spaces between the brick will not be questioned, as it is very desirable that the water which falls upon the surface shall be prevented from passing down through the pavement to the soil beneath. Even for this purpose the necessity of such fillings as tar, pitch, cement and asphalt is denied by many practical men who claim that the sand soon becomes so closely packed into the spaces and mixed with dirt that no water will pass through.

Whatever elements of value these dressings may have, their use is not often adopted, practically in the West, and they certainly are items of expense that add materially to the cost of the work.

Some requirements are mentioned in their use that are almost impracticable, notably, the one that specifies that the cement is not to be used until the brick are completely dry. In wet seasons or in times of rain, the work might be very much delayed by this requirement.

The using of the compositions of tar and pitch at high temperatures is something that will be very hard to do in practice. If the weather should be cool and the brick cold, the preparation would almost instantly lose its high temperature upon application, and certainly would be cold before the sand could be thrown over it while boiling hot, as one seems to require.

The idea of using "extra material and care" at the gutters and around catch basins and other receptacles, and that all joints of curbing shall be thoroughly filled and made water tight to effectually prevent the leakage of

water into sub-roadways is certainly wise and commendable.

The requirement that the joints be raked out to the depth of one inch, and then "neatly pointed with a trowel" evidently came from the builders' trades, and was incorporated into the specifications for brick pavements, because the mind of the one who prepared the specifications saw the use of brick in both and made the mistake of supposing that the methods of treatment in both cases should be similar. Joints filled with cement and neatly pointed with a trowel would not retain their neatness very long under the rough



treatment of shod horses and heavily loaded drays, although they are so very desirable in a brick wall.

CONTRACTORS SHALL FURNISH A GUARANTEE.

One specification says: "The contractor must maintain the pavement for three years from the date of completion."

Another reads as follows:

"The contractor will furnish a five-year guarantee for his work, without extra charge. The guarantee to be of such form and nature as the Board of Public Works may direct.

"If at any time during the continuance of said guarantee, the pavement should be opened for the purpose of putting in the street sewers, gas pipes or water mains, or repairing the same, or for any other purpose, the contractor shall relay said pavement at a cost of ten per cent. above the original price, and when said pavement is relaid and restored, said guarantee shall extend to the pavement so relaid and restored for the balance of the time for which said guarantee is to continue, and in no case where it shall become necessary to disturb said pavement for any of the purposes above mentioned shall it be deemed as releasing said guarantee."

Here is another suggestion that the engineer and Board of Public Work are afraid to trust their own judgement, or it is a virtual acknowledgement that they are incompetent to inspect and pass judgement upon the material and work done in laying the pavement. After they have done their duty in the work of inspection it seems but just that the contractor, who has done everything in accordance with their requirements, should be relieved from further responsibility. When the pavement is completed and accepted in accordance with the requirements, it becomes the property of the city and the contractor's responsibility should end.

Compelling him to stay around for five years and follow up the plumbers and every one, who for any petty reason, shall have occasion to take up a portion of the pavement, is certainly more fussy than fair.

If the contractor is requested to guarantee his work for a period of from three to five years, the necessity of an inspector is, in a measure, removed and the matter may be left largely with the contractor, who, if he be a wise business man, will not introduce any material or work that will not give satisfaction for the required time.

Persumably the time of the guarantee is fixed long enough by the authorities to thoroughly test the qualities of the pavement, and to satisfy them that it is all that is required, and the inference is that if it will stand during the specified time, it will be all that could be expected.

Written for the Clay-Worker.

#### AT THE WORLD'S FAIR.

#### Some Interesting Notes and Valuable Pointers About the Great Exposition.

**S**EATED in a cozy office quietly meditating on the "has beens" the smooth current of my thought was somewhat rudely interrupted by the bearer of a yellow message which read "Go to Chicago and the World's Fair."

Without further prelude I may as laconically say, "I'm here" and proceed to tell the readers of the CLAY-WORKER something of what I have seen and

be in good presentable shape before the first to the middle of June. To be sure there is now enough of interest to take ones entire attention for days and days, but those who want to see the entire show complete will do well to wait a few weeks. Come later and stay longer.

Before leaving home procure a guide book and map of the Fair and familiarize yourself with the general arrangement of the buildings and exhibits so that you will not be at the mercy of guides but can follow your own bent intelligently and without unnecessary delay. Study to improve every moment for there is a world of wonders that will take days to view, even when one goes about it in systematic manner.



DOULTON'S "TALL SHAFT," NEAR LAMBETH, ENGLAND.

learned of this, the greatest show of modern times.

#### SOME GOOD ADVICE.

First, let me say to those unfamiliar with Chicago that it is aptly called the "Windy City." There is always plenty of wind here and at this season of the year particularly, the lake breezes are very chilly. It is these vigorous zephyrs that make Chicago a good summer resort and those who are coming here for the first time will miss it sadly if they do not bring heavy wraps, even though they come in midsummer.

To those who are planning to visit the Fair this month I say *don't* unless it is your only opportunity, for the exhibits are not completed and probably won't

#### ORDER IS THE KEY TO ALL THINGS.

If one throws the whole body into the work of seeing the Fair, the mind becomes a perfect daze. In the elegant phrase of an eminent official of the Exposition, "Ones head soon contains enough wheels to start a bicycle factory." To avoid this be systematic and mathematical. Count the number of days you can remain. Then divide the ground to be covered according to the table appended, remembering always to leave one day for loitering outside, looking at buildings, looking at the people, sailing on the lagoons, dreaming of the lake as seen through the gleaming Peristyle and listening to the music of the bands.

In apportioning the remainder of your



time, remember that the great hall of Manufactures and Liberal Arts alone equals each of the following: Machinery Hall and Hall of Agriculture; Art Galleries; Electrical Building, of Mining and Women's Building; Transportation Building, Fisheries and Forestry; U. S. Government Building, Horticultural Hall, Krupp Building, the Monastery of La Rabida and the Leather and Shoe Trades exhibit.

Then it will take a day to simply glance through the "side shows" or what is known as Midway Plaisance, a stretch of parking to the west of Women's Building and which contains the City of Cairo and other foreign concessionaries, as they are called.

On arriving at the park, permit me to advise you, gentle reader, to close eye and ear to everything and make your immediate way to the Building of Administration. This is the heart, the nerve-centre of the Exposition, the place from which order emanates. The building I speak of cannot be mistaken as its great gilded dome over-shadows all about it. Go to the eastern facade of this structure, the side towards Lake Michigan, and gaze upon the scene before you. There, is a view to dream of. Stand still and drink it in, and you will remember it till your dying day.

It is called the "White City" and well called so, for the large number of buildings are of that tint. Their architecture are triumphs of artistic taste and stupendous engineering. Without the great store of human wisdom and genius that they will cover, these buildings alone are worth traversing the globe to gaze upon and to study.

#### AMONG THE EXHIBITS.

In England, the name of Doulton is closely connected with artistic and useful works in clay. Their works are located in several parts of the Kingdom, but perhaps the principal ones are at Lambeth, London; and at Burslem, Staffordshire.

On the bank of the Thames, opposite Westminster and south of the Lambeth Palace, are to be seen the shafts and buildings of the pottery district, the most conspicuous being the "Tall Shaft," which stands some two hundred feet high. From these factories emanates one of the most interesting exhibits to be found at the Exposition.

It will be of interest to consider some of the products of these great works. One factory is devoted to the making of drain pipe and all kinds of sanitary

stoneware. The magnitude of this manufacture is something to think about, 40,000 feet of all sizes of pipe being made in a day. Another group of buildings are devoted to the making of stonewares and enameled wares, and at this place are made plumbago crucibles for smelters, an unusual industry to be connected with work in clay.

Near this general group is the plant for making the art wares and also for manufacturing fire-clay stoves, and tiles. Doulton also holds patents for several water-filters of stoneware and has promoted a large manufacture of them.



DOULTON'S EWER, SIX FEET IN HEIGHT.

Their architectural terra cotta is also a feature, they having executed in late years several large and important erections. Their plant is now of the best and capable of the finest work.

It is proper to state that the Lambeth is a stoneware pottery. The process, especially in regard to firing is different from many other potteries. The heat is very intense, there being but one firing, which lasts for several days. The risk of breaking is great in the one firing process, and a constant watch is kept upon the clay-pits and a frequent chemical test of the clays made, so that proper allowance may be made for variation of

component parts of the crude material. It is only the stoneware that can be salt glazed, this in effect being a partial fusion of the ware itself. It is done at the last stage of the firing when the ware is on the point of vitrification, when the salt is thrown into the kiln. In its decomposition, a glass of silicate of soda is formed all over the ware, this being the glaze. Another feature of the one firing process is that all of the decorating must be done while the piece is yet in a plastic condition or in biscuit. After the plastic decoration, it must be dried before painting or coloring. This drying is important as upon its thoroughness depends the ware. When the Doulton was first colored only simple blues and browns were used, such as had gone before in Gres de Flanders, but since then many other colors have been added. The lustres are varied, in fact, being glasses, and are, on that account, harmonious and deep, "full of quality."

There is another grade of Doulton, known as "silicon ware," this being fired like the glazed ware, without, however, being glazed. It is hard, and resembles the Jasper ware of Wedgwood. Another Doulton of great interest to potters is "Marqueterie Ware," which process is, by the way, protected by patent. Geometrical designs and marbled effects are obtained by cutting and compressing thin slices taken from prepared blocks. The making of a solid from clays of different colors and shrinkages had up to this time been unaccomplished. The pavilion in which

#### THE DOULTON EXHIBIT

is found, was planned and executed at Lambeth, being then taken to pieces and brought to the Exposition. There it has been re-erected in the Hall of Manufactures and Liberal Arts. It covers a floor space of sixty feet by thirty and consists of a domed hall flanked by arcaded pavilions. The painting is in light shades of green, and there are rich draperies and curtains of green plush. All of the architectural enrichments were designed and modeled at Lambeth.

Some of the pieces are marvelous. An ewer of novel treatment is six feet in height, and as far as is known, is the largest piece of ornamental stoneware ever made. It is slender and graceful, and generally of a light color, only at the base there is a band of blue-green and some touches of brown and green in the ornament. The contrasts are obtained more by modelling than by coloring. At the shoulder there is a strongly formed scroll



design springing from the heads of horses. The scrolls are open and the effect is delicate. The bold modeling makes a striking design.

Another grand piece is the "History of England Vase." It is four feet and four inches in height and in its form is like some of the *Gres de Flanders* tankards of the 17th century. It was burned in an open kiln, the figures of a natural color, and the mouldings and ornaments are painted. Around the widest portion are a series of niches, twenty in number, and in each is a group commemorating some event of



HISTORY OF ENGLAND VASE.

English history, while about the neck are twenty figures of as many English monarchs. These latter are arranged in order and portray the British Caratacus and Boadicea, the Roman Cæsar, Vortigern, Alfred, Canute the Dane, Edward the Confessor, Henry II, Richard I, Henry III, Edward I, Edward III, Queen Philippa, Richard II, Henry IV, Henry V, Richard III, Henry VII, Queen Anne, and George I.

The historical groups illustrate the following: The early Britons and human sacrifice; Roman Invasion; King Alfred with Bishop Asser; William of Normandy and his sons; King John

signing Magna Charta; Edward I presenting the first Prince of Wales to the Welsh people; Henry VIII and Wolsey; Edward VI going home; Queen Mary at prayer; Elizabeth giving the ring to Essex; James I and Guy Fawkes; Charles I; Oliver Cromwell tasting the misery of power; Charles II and the Duke of Buckingham; James II escaping from Whitehall; William III landing in England; George III and Nelson; William IV; George IV and Caroline; Victoria and Prince Albert.

Another interesting piece is the "Love Vase," at the foot of which are Cupids enchainning a pair of parted lovers. A delicate stem supports a shell of iridescent pearl, decorated by finely painted Cupids. The handle of the cover is a Cupid holding aloft a lighted torch and casting over the globe upon which he stands. The Americas are brought out upon the globe in gold and a tiny pearl is set at the point where Chicago would properly be found.

[TO BE CONTINUED.]

#### FREIGHT RATES ON BRICK.

A point which often escapes the attention of brickmakers, but which is worthy of consideration, is this: "Good brick and poor brick are all one to the railroad companies." In other words, the freight rate on front face brick, which bring fancy prices in the market, is no more than a common brick, which bring low prices in the market. Many brickmakers in small towns depend on shipping three-fourths of their product to the neighboring cities, yet think they cannot afford to make high-grade brick. The fact is, only the brickmakers in large cities, who have no freight rates to pay, can afford to make low-grade brick. If you must pay tribute to the railroad

companies, why not make three times the profit on your shipments that you are now making?

Another point not generally known is that by the modern methods, high-grade brick can be made at no greater cost than low-grade brick. In fact, one of the manufacturers of improved machinery claims, and even guarantees, that the highest grade of front face brick can be made at considerably less cost than ordinary common brick; and from all we can learn, their statements are borne out by the facts.

Here are two points which all brick-makers will do well to weigh carefully and ponder deeply in laying their plans for the coming season's campaign.

#### PAVING BRICK IN HARTFORD, CONN.

THE twenty-first annual report of the street commissioners of Hartford, Conn., George G. Sill, Chas. H. Northam, William E. Cone, James Burns, James U. Trainor, and Charles S. Davidson, states that after a careful investigation of the merits of granite, asphalt and brick as street paving materials, it was decided to try brick and Pratt street was paved with this material. They say: "The work was duly completed in the best manner, and it presents a clean and smooth surface, and has become a desirable street for heavy and light vehicles. So far it has met our hopes and expectations. If, after further wear, it continues sound, level and unbroken, we shall think we have found a good quality of paving. The freight on these bricks was greater than the cost of the bricks. It would seem that when clay is so abundant as in this vicinity similar bricks might be made here, and supplied at one-half the cost of those used."—Ex.



A FRAGMENT OF DOULTON'S EXHIBIT.



## THE NEW YORK MARKET.

## PRICES OF FIRST SHIPMENT.

WHEN I quoted \$5.50 per M last month as the bottom figure for the first shipment of brick from Hackensack, it looked as if the market had no sustaining power. If 18 barges from Haverstraw and the seven barges from Hackensack had reached the market at one time, any one conversant with a \$7.50 market, would suppose that all of them would have been readily taken at that price or a very small reduction from that rate. As the tow from Haverstraw arrived some days before the first barge from Hackensack was placed on the market, on account of the number of railroad bridges in the Hackensack river, the tow boat could take only one boat at a time, therefore the 18 barges had the market knocked flat.

Some of the Hackensack boats were in the market two weeks before they were sold—rather given away, and the buyers did not seem to think that they bought them low enough. There was not a barge load that went from here that brought over \$5.00 per M; in other words, the price ranged from \$4.50, \$4.62½, \$4.87½ to \$5.00 top, and some say the bottom has not been reached. Last fall there were very few brick stocked for winter use, with the expectation that it would be an open winter, so that shipments could be made, or it should occur that Haverstraw and Hackensack should be shut out by ice, Long Island and South Jersey would be able to supply their needs. Well, all points were shut out by the ice for a time. The old saying, "That Satan takes care of his own," fits their case, as the weather was so severe that no brick were needed. When the masons could lay brick, South Jersey and Long Island could place stock on the market and received a fair price for their product. The finishing up of old work does not consume the quantity of brick that new does, and the arrival of from four to five millions on the market at once, with continued bad weather through March, navigation opened so that there would be no trouble to pick up what stock was required from day to day, and pushed a market that had no backbone in it, way down. Why not restrict shipments to the point of demand you may say? Mr. Partington's attempt to sweep the Atlantic Ocean back with a broom was just as feasible, as to expect the brickmaker to hold back his stock.

## ON THIS POINT A COUNTER MOVE.

It does not seem that anything can be kept a secret in this country. Even that august body—the Senate of the United States—when it goes in executive session, cannot keep the doings therein from the public. So it would seem in this trade; whether spoken from the house top or within closed doors, there is always a leak. After the recovery from the slump in price, some of the manufacturers said that they would hold back, as they would not sell for such figures; they would lay their barges up. There were about 60 barges on the market. Presto,—they were all bought up in one day. While the manufacturer was thinking about the matter of curtailing shipment, the buyers cleaned the market out and sent the barges around the harbor, and in some cases stocked to cargo, then said to the shipper: "What are you going to do about it, we have brick enough until some of you ship."

When the market was cleaned out, some of the manufacturers thought that they had everything their own way. As the move of the buyers in the matter became known, to say that they were taken back is to but feebly express their feelings in the case.

## OLD STOCK.

There is still on hand very close to two hundred million old brick, with a demand for not many million a week. Possibly with the advent of settled weather the demand will increase, but not to the extent of consuming the stock on hand before new is placed on the market, as there is no prospect for large work to call for more than the usual quota.

## WILL THE DEMAND IMPROVE?

With figures before us, the prospect is far from promising. Of course, the demand will increase as the new work starts up, but the amount of new work. How does it compare with other years?

The first quarter of the year always contains more permits to build than any other, as those who wish to erect buildings get the permits early, so that they can have the buildings finished to lease or rent them by the first of May of the next year.

|          |      |                            |
|----------|------|----------------------------|
| New York | 1892 | 820 permits.               |
| "        | 1893 | 648 "                      |
| Brooklyn | 1892 | Brick bldg. 330 Frame 695. |
| "        | 1893 | " " 402 " 829.             |

New York City has issued 172 less permits than for the same length of time last year. Brooklyn 72 more brick

buildings and 134 more frames. All in all 206 more than for the same period of 1892.

The construction of frame buildings does not help the trade. There was a bill before the Legislature the past session to abolish the erection of frame buildings. Too much politics killed it.

## UNIONS.

This is the first spring that there has been no labor troubles among the trades in the cities of New York and Brooklyn for a number of years. The brickmaker has had, in times past that matter to contend with. The only ripple on the surface comes from the brick handlers, who sent a committee to wait on Candes and Kane to have them discharge some non-union men. The firm's answer was, that they had no grievance to adjust. Two years ago the brick hauler would have struck and not worked with a "scab," as he would have called the "non." How things have changed! He was the power then, now the employer has the say.

## A DERELICT.

The ship New York and New Jersey Brick Association has not been reported for a year and serious fears are entertained that she has foundered. Possibly there was some fault in construction. At any rate the attempt to navigate her afforded a full view of "Do as I say, but not as I do." If she should prove a total loss, a new vessel may be constructed on more improved lines. Who can tell, the mistakes of some may prove the salvation of the many.

## THE FINNEGAN BILL

Has passed both branches of the New York Legislature and is in the hands of the Governor. He has thirty days in which to sign it. If it becomes a law the men who work on the yards in New York State cannot work over ten hours per day. The men who work on the yards in Haverstraw will hardly know what to do with themselves, present hours being from sunrise to sundown. It will seem strange to some of the older ones to be able to eat their breakfasts before going to work and get through before bedtime. There was a class of men in the army, so old soldiers say, who seemed to know when an engagement was near at hand, and generally found their way to the rear. At present it would seem that the Baltimore brigade must have learned of the bill, as none have made their appearance around here, and it looks at present as if



there would be a scarcity of labor. Some of your readers may not know what constitutes the Baltimore brigade. It is composed of a class of men who have a hickory shirt and overalls and shoes, sometimes a coat, very often not. When the yards stop in the fall he will walk, or when he can, jump a freight train for Baltimore, and go dredging for oysters during the winter. In the spring he will return the same way, generally about two weeks too early, when he is obliged to beg for what he gets to eat. The majority of them are first-class brickyarders, yet rum has gotten in its fine work, and one cannot depend on them.

#### WHAT IS BEING DONE.

On one of the yards they have been pumping out bank for the past ten days,

here has no brick, as they shipped two barge loads this spring and have none for their local trade. Another yard has a contract for a million made last winter, when prices were high, to outside parties, and will do well with it by the time they get that in. If the parties want any more they will be able to buy them low enough to satisfy them for the fancy price paid for the first million. As things shape now, it will be early to start and early to quit. This making four or five million and carry them for a year and then sell them for \$5.00 per M is a game that does not pay.

#### PRESENT MARKET.

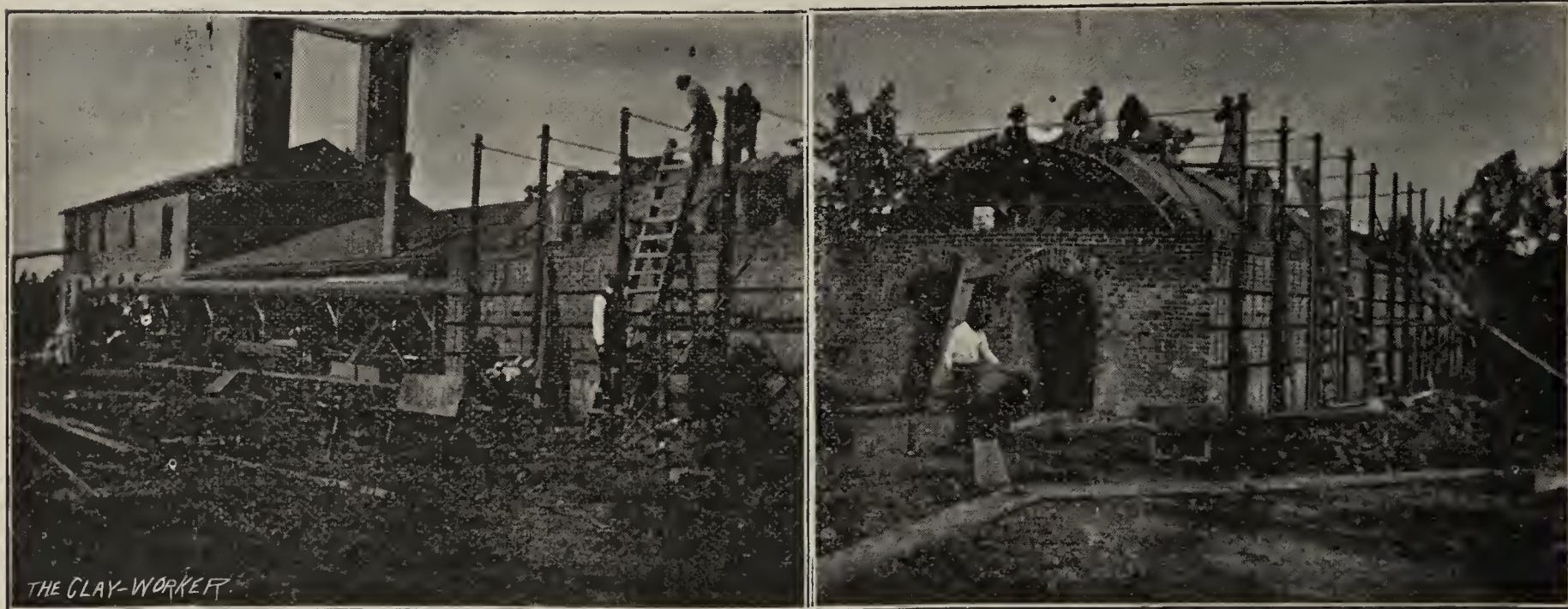
There is an accumulation on hand all the time, so that it is a buyers market with no sign of help by curtailed shipment or increased demand. Prices

Other currents supply the air necessary for the combustion. The dust burns in one continuous intense flame, and not an atom escapes as smoke.

#### A PAVING BRICK PLANT.

THE Danville Brick and Tile Company, organized with a capital of \$75,000, has erected extensive and complete works west of the city of Danville, Ill., near the Vermillion river. The Company has purchased eighty acres of land which contains four varieties of clay including shale and fire clay, an abundance of coal and a fine gravel bank.

The buildings are of brick and comprise the main building 48x60 feet, two stories high, the office and engine room, one story, 22x41 feet, and the drying room, 48x100 feet. These are furnished



A PAVING BRICK PLANT—KILNS IN PROCESS OF ERECTION.

24 hours to the day; with two pumps, and think they can get the water out by pumping till they commence to mould, which will be about the first of May. Some of the yards commenced to mould last week. One of the yards moulded for the first time Wednesday, April 19th. The next day a very severe easterly storm came up and destroyed the pit of brick on another yard, the river overflowed into their bank, which will take two days to pump out. At present there are five yards moulding. On one of them they are burning a kiln—one that they carried over from last fall. The rest of the yards are getting ready as fast as they can. Haverstraw does not seem to be in any hurry to mould, in fact, it would be better for all if they did not start till the middle of May. One of the yards

range from \$4.50 to \$5.50 for the best gilt edge in the market and it is only the month of April. How about July, when some that may hold will be compelled to ship for room?

If money gets any tighter than it is at present, it looks as if there is trouble coming. Brick will be slow of sale and very slow. A. N. OLDTIMER.

#### COMBUSTION WITHOUT SMOKE.

The Berlin correspondent of the London *Standard* tells of a new invention which claims absolutely to do away with smoke from the combustion of coal. It has the great merit of simplicity. The coal is ground into powder and is injected into the boiler by means of a current of air, when it immediately becomes ignited from a small fire near the mouth.

with all modern improvements, such as iron cars, steel tracks, brick tunnels for drying with hot air and steam.

The machinery was furnished by the Decatur Leader Manufacturing Company, nearly all of it being made at that establishment, including the Decatur Brick Machine with new Automatic Cut-off Table, large iron Pug Mill, a Disintegrator, and one set of rolls. There are also a Williams' Cyclone Crusher and Raymond's Columbian Repress. The power is furnished by a Buckeye engine, 130 horse-power, and two boilers of 150 horse-power each.

The clay is brought by automatic dump cars and belt elevator.

Three kilns are in operation and two more in process of erection, and five others will be built. They are down draft, oblong, Decatur patent kilns, 55x16 feet





A PAVING BRICK PLANT—MINING COAL WITHIN A FEW FEET OF THE ENGINE ROOM.

inside, with a capacity of 120,000 at a burning. The cars are run from the dry house into each kiln, there being no re-handling after leaving the cut-off table until handed to the setter.

Manufacturing was commenced last fall and continued through the winter but the severity of the weather seriously interfered with the work. About 3,000,000 bricks have been made. Experience has shown that the best results are obtained by mixing different kinds of clay, and different devices have been arranged for preparing the material; the fire clay and shale must be dry when ground, and the other materials are prepared while wet.

J. G. Shea, the manager of the establishment, removed from Decatur to Danville last summer. Eleven years' experience in making tile and brick in Decatur, and the erection and management of two different factories in that place, (with which he is still connected) have peculiarly fitted him for successfully planning and conducting this large and important establishment.

Mr. Shea has also had large experience in paving streets with brick, having done paving in Decatur, Evansville, Mattoon and Danville and furnished paving brick to a number of other cities, in all of which both workmanship and material have always given the utmost satisfaction.

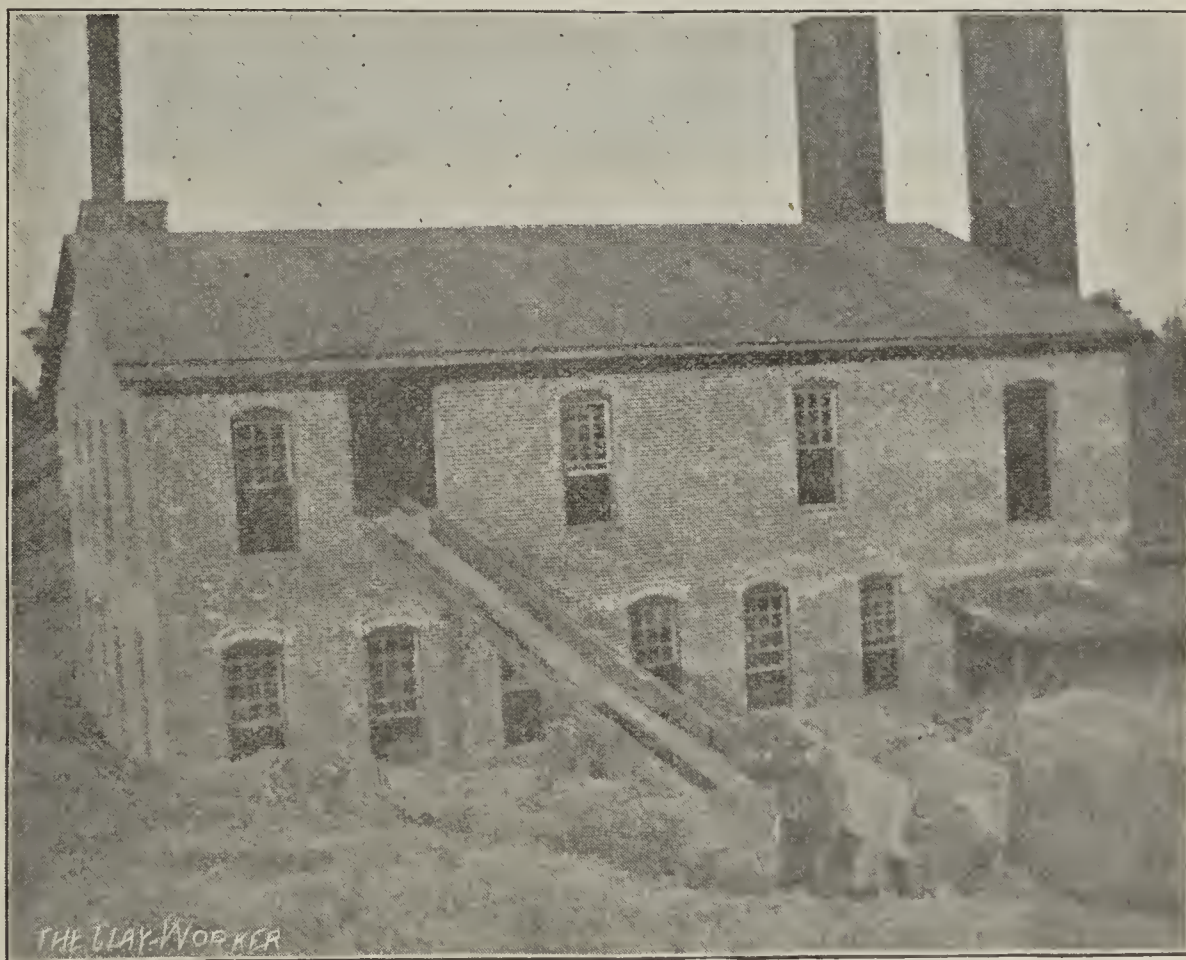
#### DOWN IN MEXICO.

It was about the 1st of January when we had a call to make a trip down into the land of the Aztecs. The general idea when thinking of Mexico is that nothing but sun dried bricks are used in their buildings, and although this is largely the case, they are beginning to

come around to improved methods, and it was a call for machinery for making real American bricks to be burned in kilns, which took us to that sunny land. The trip is long and tiresome and although a chapter might be written on the scenes and "unscenes" one encounters along the road, I will simply jump over through St. Louis, Kansas City, Albuquerque, etc., touching the corner of Colorado, down through New Mexico to El Paso, Texas, and here we begin to smell Mexican air for the first time, for just across the river is Old Mexico. El Paso is a thriving little city, but seeming almost as much Mexican as American. The country is flat and low, and not attractive.

In Mexico every state has its own particular currency, and one must be very careful not to have a surplus of paper money of one state to carry into the next or he may expect to have the biggest end of it taken in discount if he uses it. Silver and gold are the only standard mediums; so it is necessary for one to prepare himself with small New York drafts, say \$20 to \$30 each, which he can have changed into silver at any railroad station and at a good premium too. When we were there the premium was 23 to 25 per cent.

From El Paso down, the country is rather uninviting until Chihuahua is reached, except occasional little valleys



A PAVING BRICK PLANT—AUTOMATIC CAR CARRYING CLAY TO CRUSHER.



which are very rich and filled with people. Then for long stretches we would pass through an uninhabited, God-forsaken looking country.

Chihuahua, the capital of the state of the same name, is the first city of any considerable size that we pass through. It has about 50,000 inhabitants, and like nearly all Mexican cities, has a magnificent cathedral and convents, also is noted for an extensive aqueduct through which the city is supplied with water.

Our first stop of any length was at Torreon, in the state of Durango. This is the junction of the Mexican Central and the Mexican International R. Rs. It is a town of about 50,000 inhabitants,

by night a most romantic sight presents itself to the æsthetic gaze of the traveler. Zacatecas being our objective point we will stop here for the present.

Not being able to speak Spanish, and finding no one who could speak English except the U. S. Consul, it looked like up-hill business all around to do anything. However a hotel was found, fairly comfortable, and as a hotel means a place where there is supposed to be something to eat, you are sure to follow your nose and find a dining room at the other end, and when one is hungry it is surprising how quick he will learn the lingo and get hold of the names of the articles of food that are to be had,

was this General who captured Maximilian and had him shot. Our young Spaniard had inherited both from his father and uncle immense estates, and therefore lived in the good old Don style. We had been warned before going into Mexico that we would find a man of this kind most polite and agreeable in every way, but never ready to get down to business; it was always "Come back to-morrow." Well, we found our man living in most royal style; the outside of his house fronting directly on the street looked like a prison wall, or the outside of a reservoir in some city—not a window to break its blankness. The one opening leading to the interior was a large archway with heavy folding doors. As you pass back through this archway some 20 or 30 feet, both sides are lined with most luxuriant plants and flowers, and when you merge into the inner court a transformation scene takes place; the house surrounds a square, with a gallery all around. A large fountain is in the center, surrounded by trees and flowers and everything indicating luxury; birds were singing in the trees, and the distant dreamy music of the guitar came floating from some unknown quarter, but the dark-eyed maiden whose delicate fingers touched the strings could only be seen in imagination. On our first visit our man had gone hunting and we were invited to call next day; our first call on the second day found him in bed; he sent word to call in the afternoon; this time we found him, and a very agreeable man in every respect. We sat under the shade of the trees near the fountain, drank wine, cracked nuts, threw salt over our left shoulders, etc., etc., and become fast friends. But to get him down to talk business and get through with the real object of our visit seemed impossible. He said, "Come back to-morrow, and we will go down on my plantation, and the next day we will go hunting, and the next day something else, and then we will go to the brickyard and see the machinery and see what I need." This was all very nice if a fellow could stand it, but when we looked at that bloody villain of an interpreter sitting by, through whose Pulque soaked guzzle all this conversation had to pass, it seemed impossible to stand it twenty-four hours longer. He, of course, insisted on our not being in a hurry, the Don's wine was good, and \$5 a day was better, and the semi-occasional treat of Pulque which he demanded was not bad; of course, he



A PAVING BRICK PLANT—DRY ROOM BEFORE COMPLETION, MAIN BUILDING, ENGINE ROOM AND OFFICE.

right in the mining district. We had a few hours here, and in looking around, one thing that particularly attracted our attention was a large three-story oil mill, built of adobe brick, and each of the three floors was filled with very heavy machinery.

The distance to El Paso is nearly 2,000 miles, and from there to Zacatecas nearly 1,000 more, and it requires five good days and nights hard travel to get there.

Zacatecas is a city of nearly 90,000 inhabitants, situated right in a bowl in the top of the mountains 9,000 ft. high. It occupies a space not to exceed one-half mile square. The railroad skirts around nearly one-half the edge of this bowl away above the city, so that one coming in by day-light has a grand view, and if

whether it be Spanish or Chinese. In this whole city of greasers there was but one interpreter to be found, and he demanded \$5.00 a day and expected to be treated not only occasionally but semi-occasionally to that Mexican beverage called Pulque, which takes the place of our lager beer. We found a great deal of truth in the old saw—

"If you ever go to France, you want to learn the lingo;  
If you don't, you'll wish you had, by jingo."

Our customer was a young Spaniard, over six feet tall, highly educated, had traveled considerably, but could speak no English. He was a nephew of an old General who commanded the Mexican forces at the time of Maximilian's short lived rule over Mexico under the French at the close of our late war. It



didn't want us to be in any haste. But we told the Don that our time was limited and that it would be positively necessary to get down to business next day.

TO BE CONTINUED.

#### RELATIVE COST OF BRICK AND GRANITE PAVEMENTS.

**M**R. GEORGE B. FLEECE, commenting on statements in the recent annual report of City Engineer Meriwether, of Memphis, says:

"Maj. Meriwether says a brick pavement will last, without repairs, under a traffic of 40 to 50 tons per square foot, about 8 or 10 years, but how much longer, he does not state. It is fairly presumable, however, that the life of a pavement that required no repairs in 10 years would extend to at least 15 years before final disruption. He estimates the life of granite, under heavy travel, at 15 to 20 years. We will assume that the city engineer is correct, putting the life of granite pavement at 20 years and brick at 10 years, and figure up financial problem involved.

|                                                |           |
|------------------------------------------------|-----------|
| Original cost of one mile granite.....         | \$84,000  |
| Interest on cost for 20 years.....             | 100,800   |
| Total cost in 20 years.....                    | \$184,800 |
| Original cost of one mile brick.....           | \$47,000  |
| Interest on cost for 20 years.....             | 56,400    |
| Relaying at 10 years, at \$1.50 per yard.....  | 28,500    |
| Interest on cost of relaying for 10 years..... | 17,100    |
| Total cost in 20 years.....                    | \$149,000 |
| Balance in favor of brick.....                 | \$35,800  |

"This balance in favor of brick would pay for laying a new pavement, thus extending the life of a brick pavement, to 30 years—or 10 years beyond the estimated life of granite, and still leave a balance in favor of brick over granite. Now repeat the estimates foregoing upon the basis of equal durability of granite and brick, placing both at 15 years, and the problem works out as follows:

|                                      |           |
|--------------------------------------|-----------|
| One mile granite, original cost..... | \$84,000  |
| Interest on cost for 15 years.....   | 75,600    |
| Total cost in 15 years.....          | \$159,600 |
| One mile brick, original cost.....   | \$47,000  |
| Interest for 15 years.....           | 42,300    |
| Total cost in 15 years.....          | \$89,300  |
| Balance in favor of brick.....       | \$70,300  |

"A surplus fund, the interest upon which, at 6 per cent. would largely exceed the cost of perpetual renewal of brick pavement.

"If, then, brick will last 15 years, it is far cheaper and better than granite, even if granite should last forever. It is

the opinion of many who may be fairly considered authorities, that brick will wear longer than granite."—*Paving*.

#### THE PRICE OF BRICK MACHINES.

Men who make machines know how to fix the price. If it is the best machine they know it, and put the price at the top. If it is the second best they know it, and put the price next to the top. It is the price alone that sells an inferior machine. When a man don't want to pay the price for the best machine he tries to make himself believe that the cheaper machine is just as good. The wish being father to the thought, he is easily persuaded, but eventually he rues it. No good, successful manufacturer will make low prices if his machine is the best, or equally as good as the best.

The Boyd Brick Press is the cheapest, but not the lowest priced. Other presses would not be sold at low prices if they were the best, or equally as good as the Boyd. It is safer to buy a Boyd press and get the benefit of all discounts than to buy a press that must be sold cheap to find a purchaser.

#### THE ARNOLD CLAY STEAMER.

**T**HE Arnold Clay Steamer is an apparatus invented for the purpose of aiding those engaged in the manufacture of brick and clay products by the dry press and semi-dry press systems.

After a thorough and practical experience in the manufacture of brick by the dry and semi-dry press systems, the inventor has become fully convinced that some scientific and reasonable process of properly preparing the ground clay is necessary. The introduction of this process of preparing clay by steam obviates every difficulty in the way of perfectly satisfactory results in the manufacture of clay products by the dry and semi-dry press system.

The apparatus consists of an enclosed steam chamber, at the top and on one end of which is located the feed box for the ground clay, in open connection with the inclined trough or clay chute leading from the elevator. Inside the feed box is located the clay sprayer or scatterer, the latter comprising a swiftly rotating brush. This sprayer extends the entire width of the steamer or steam chamber. Beneath the sprayer or scatterer is arranged a coil of steam pipe, consisting of two rows of jets. This coil is perforated to allow the discharge

of steam. The perforations are arranged at such an angle that the escaping steam forms a V, through which the ground clay is thrown by the revolving sprayer. Upon rotating shafts, which extend lengthwise through the lower part of the steam chamber, are placed alternating blades or knives. These knives project in opposite directions, and serve to discharge the ground clay through an opening in the steam chamber opposite the location of the sprayer, and which discharges into the tubes leading to the brick machine.

The clay is conveyed through the chute to the feed box in a finely ground, disintegrated condition, and passing over the swiftly revolving sprayer is scattered by the brush through the V shaped steam jets issuing from the perforated coil. The ground clay thus treated with steam, falls in a warm and saturated condition upon and among the knives, and is thoroughly worked in its passage to the outlet leading to the brick press. The plasticity is thus developed, and the clay being introduced to the machine pressure is in a state of thorough preparation.

The advantages claimed for the manufacture of brick through the use of this process of preparing clay may be summed up as follows:

The clay ground thoroughly dry, without the addition of water in the dry pan, causes a saving in the grinding and screening power of fully one-third.

The process of steaming carries with it a chemical action equivalent to the action of the weather, thus ridding the clay of many impurities.

The steaming apparatus furnishes a regular and automatic feed to the brick press.

Clay prepared by the steaming process has its plasticity fully developed, and the brick are dense and compact, with perfect bond and free from any tendency toward disintegration.

The surface of the brick is smooth and glossy, free from cracks and checks.

Brick made through the steaming process of preparing clay are burned with the minimum per cent. of breakage, and can be handled without fear of abrasion.

This process of preparing clay has been covered by Letters Patent recently issued. The extreme simplicity of the apparatus and process, taken in connection with the above advantages, renders the Arnold Clay Steamer an aid of incalculable advantage to those engaged in brickmaking.

See advertisement on another page.







## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## CONVENTION ECHOES.

## The Chicago Associations.

*Editor Clay-Worker:*

At the National Convention of Brick Manufacturers' held in Washington, D. C., Mr. Edwin McGraw, of Pittsburg, read an able and carefully prepared paper on organization of brickmakers.

He started out by saying, "Organization is a wonderful and potent word; it represents wonderful and potent forces. In casting about us we see the atoms of matter organized by the hand of nature's God into the beautiful flower, leaf, tree, mighty planet and resplendent suns. Our bodies are the product of the law of organization, \* \* \* and when we organize as brickmakers, we are simply following the general law that prevails from the atom to the planet," etc. He then detailed at length, the formation of the Pittsburg Exchange, cited as an illustration of its desirable features, the fact that in a little more than one year the price of common brick was advanced nearly twenty-five per cent. He then described the division of customers by the Exchange into two classes, one of which was termed "regular," and the other "irregular," and told us how the one class could buy brick 80 cents per M cheaper than the other. It was my fortune, good or ill, to lead in the discussion on this paper, and in that discussion I took occasion to say that I knew nothing of Pennsylvania laws, but that such an organization conducted under such rules in Illinois would land its members in the Penitentiary. See pages 133 and 134, Vol. 17 of the CLAY-WORKER.

From recent extracts from Pittsburg papers, I am led to believe that Pennsylvania laws are not so different from Illinois laws as I supposed, for they inform me that the President and several members of the Pittsburg Builders' Ex. have been convicted of violation of the laws in restraint of trade, etc. Mr. Mawhinney, who replied to me, (see last paragraph page 133, Vol. 17) said, "I don't think any person would have any more right to indict a brickmaker of Pittsburg, who only asks remunerative prices for their brick, than to indict the brick

buyer who only gives us \$6.00 for what is worth \$8.00."

The law never indicts a man for being such a consummate fool as to sell anything for 75 per cent of its value, but it does provide in Illinois and Pennsylvania for the punishment of a number of men who combine together to illegitimately force prices beyond a scale warranted by supply and demand. It provides, and justly, adequate punishment for those who conspire to boycott individuals or classes as illustrated by Mr. McGraw's paper, wherein he sets forth explicitly that certain favored individuals could buy brick for 80 cents per M cheaper than their unfortunate neighbors who did not belong to the same organization. Mr. McGraw, in closing the discussion disclaimed any intention to bring about a discussion of prices by the Convention, but hoped it would start the members to thinking, so that when they arrived at home they could turn in and start a little association of their own.

The advice was followed by a large majority of the Chicago craftsmen, with results that have increased the production in this market 20 per cent., and reduced prices below one year ago in about the same ratio. Mr. McGraw's advice has also resulted in queries in the minds of the Chicago brethren whether it would not have been better to have kept prices during the past year, at a point sufficiently remunerative to have produced ample returns on capital invested, rather than to have raised them to an unreasonable point, thereby inducing enlarged production and the consequent depreciation in values we now have.

With all due respect to Mr. McGraw and the majority of the brickmakers in the U. S. who differ with me and who are many of them novices in the art of combining to increase the selling price of their product, I am satisfied that at no distant date they will agree with me in the following general conclusions:

First. That the arbitrary fixing of prices so that the supply and demand for the article in question does not, in any way, affect the price, will in the end ruin those whose wealth, power or numbers enables them to carry their plans into effect.

Second. That all such organizations which attempt to arbitrarily raise or lower the price of any commodity, regardless of the question of supply and demand, strengthen the weak, vicious

and irresponsible at the expense of the strong, upright and reliable.

Third. That experience has demonstrated in more than one such organization that "Too many cooks spoil the broth" and that the combined wisdom of a dozen or more bosses in the settlement of a business proposition is not equal to the foolishness of one central head managing its own affairs.

Fourth. That no inducement other than a pecuniary one will make a naturally dishonest and untruthful man live squarely up to an agreement.

Fifth. That no one is more fully convinced that individual efforts, honest competition and an honorable ambition to excel in volume of trade, methods and manner of doing business will in the long run, ensure success than

Yours truly,

D. V. PURINGTON,

Chicago, May 5th, 1893.

## A Different Story.

*Editor Clay-Worker:*

Your letter, inquiring whether any members of our Brick Exchange have been indicted for conspiracy, etc., is at hand and noted. In reply, am glad to be able to say that such is not the case. Your information concerning us is at fault. None of us have even been charged with violating the law, let alone being indicted. We believe that we have nothing in our Rules and Regulations that is illegal.

The rumor, no doubt, originated through the suits that were decided against the Builders' Exchange, with which the Brick Exchange has no connection. We are a separate and distinct body.

Would say that our Brick Exchange is stronger and more harmonious to-day than at any time in our history. It is true that we passed through what some might term a crisis this spring. One member resigned and together with three large outsiders made war on us. They naturally had the contractors with them. To meet this opposition, we decided, after several special meetings running far into the night, to declare the south and north sides open at any price, and in the city proper we knocked a dollar per M off the price. Less than one month of this was enough for the opposition. They struck their colors and we marched then into our camp in great glee. Prices were at once re-established, and we have found our old enemies first-rate people, who are will-



ing and active in all matters tending towards the good of our Exchange.

During the battle on the North and South sides, we jumped in and sold below cost of production—not against each other, but against the outsider. We wanted a short, quick battle. The results showed that we were right. We hold both regular and special meetings right through the trouble and our roll book showed not one member absent. Every one put his shoulder to the wheel, we worked together as one man, and now we feel more than ever satisfied and confident that we are here to stay, and that we are able to cope with any question or state of circumstances that may present itself.

We rounded these little troubles off with a grand theatre party and banquet, which lasted until daylight. We invited and had present every Master Bricklayer in the two cities. You may know what kind of an affair it was when I tell that the cost was over four thousand dollars, which was cheerfully and promptly paid by our membership.

It is our custom, you know, to have a supper once a month. It is always well attended in numbers, and, with plenty to eat, drink and smoke, we manage to have a pleasant time. EDWIN MCGRAW.

Pittsburgh, May 3d, '93.

#### Wants It Made International.

*Editor Clay-Worker:*

Your Special Convention number came duly to hand, and I have drawn on my imagination, while reading it over, to make myself believe I was there. I am glad in one sense that I was not, for I fear I would have found myself on my feet and have given my American cousins an opportunity to hear how little I know, so I will patiently wait for the *International Brick Manufacturers' Association*. For if there is any good way to develop a good brick it should be universal. I consider the attendance of three hundred and forty a small meeting for the United States, when one thinks how many there are, who are following that honorable, but unlucrative business, dubbed by some of your craft at the Convention, as the Profession. To take my place among such giants of business, of intellect and orators, I would require to borrow some American pluck, called by another name by Canadians.

There is nothing big about a Canadian in the eyes of an American, but his country. But he cannot deny that we have some good clay deposits laying be-

tween the North Pole and the Great Lakes, from the Atlantic to the Pacific. We have not tested it all yet and are only beginning to find out how rich we are in Nature's gift of clay. With the knowledge stolen from the leading lights of the Profession and the CLAY-WORKER and with the use of American machinery, we, as a country, may yet hope to achieve, as brickmakers, a place among the great. I must thank the CLAY-WORKER for the well produced photographs of the officers of the N. B. M. A., men we read and hear so much about. I, at a distance, can thoroughly endorse the action of the Convention in bestowing the highest gift of honor at your disposal on the man and not on the city, and feel that the laurels have been placed upon a worthy brow. I was very much pleased to see that A. L. McDonald is as grand looking as he is noble. I can find no words to describe the impression made on me by his action and appearance, and can but say of him, as an artist once said of a great man, "He is as grand as the Falls of Niagara." But an Irishman said about the same falls "It would be grander if they were rowling up." I hope to see him and all other such men rolling up to the first places among officers of the *International B. M. A.*

I would much prefer to write a few paragraphs to the readers of the CLAY-WORKER, the young fellows, away back, who had the excuse that it was too far to go to Louisville to the Convention, or that they were too busy, or the weather was too severe. We, in this vicinity, prepared for cold weather and we got our usual ten below zero at the time of the Convention, but we were still working away. There is nothing like being prepared for the extreme weather and then being reimbursed by having a good stock of brick on hand for the spring.

To encourage the young fellow in the brick yard who has ambition enough to make it a profession, I would say "There is many a Milton following the plough share," and there is many a wheeler and shifter, who, if he would but try his hand at some other department of the calling, might find himself a genius.

We are indebted to the United States for such men as John Rogers of New York, who was at one time a machinist in Chicago, until he tried clay. Although he had taken a trip through the land of arts he was never inspired with its grandeurs, but, in taking up a piece of clay as a pastime, he left behind him

more than "foot prints on the sands of time." He has left his finger marks on clay, and we have only to regret that his reproductions did not come through a kiln. The forms of his creation will go down to posterity. He has illustrated American history and endeared himself to the hearts of the American people. He illustrated the Civil War from Lincoln and Grant, down to the fugitive slave. He illustrated American Legends when he produced Washington Irving's "Sleepy Hollow." He put souls in his little men and life in his little horses. He stepped into the classic arena and, in spite of cruel art criticism for his want of art training, illustrated Shakespeare and did it well, winning fame and honor and well deserved wealth, all from making a little town pump out of clay. He made the American art world stare when he produced his "One More Shot," and the whole United States smiled when he showed them "Us Boys."

Oh, that I could wake up some slumbering genius in a brick yard, the most likely place to find one daft with clay. So much to encourage. Perhaps, we had better say something on the other side. A learned dignitary of the bench is credited with encouraging his young friends by telling them, "Perseverance without ability will accomplish little. Ability without perseverance accomplishes less."

But with ability and perseverance combined, there is no telling what can be accomplished. I am thoroughly convinced that I am not possessed of these two desirable commodities, but I can tell the boy from away back how I tried and then let him see how he succeeds after using all his perseverance and calling out his store of ability. The same authority that spoke of perseverance and ability, gave small hope of success when he said "If you have a good case, a good judge, a good lawyer, and a good jury, you might possibly win." It is to be hoped that clay is not like law, and that good results hang not on chance, but depend on ability and perseverance. There is so much to win in this noble art, it is well worth trying.

Mr. Walter Smith, a gentleman who has had the advantage of travel, writes of clay work, or rather terra cotta, which literally translated, means baked or cooked earth (the words are of Italian derivation.) He eulogizes its beauty and grows eloquent on its permanency, pointing out notable examples in Europe and America of modern terra



cotta. He says, "It displays every color known to art, and these colors, no possible condition of the atmosphere can destroy. Even when the earth is consumed with a fervent heat, terra cotta will be left behind, a permanent record of past civilization. You may reduce all the pictures in the world to tinder, melt all the bronze statues until they run into the gutters, calcine all the marble statues into plaster of paris, burn all the buildings into lime, and all animal creation and vegetation into ashes, and all the while terra cotta will glow red hot and cool down again into the shape we first fashioned it and remain uninjured. It is the noblest of all vehicles for the expression of art. It may be difficult to describe what else it is we produce that would be even comparatively permanent in any great universal shock or relapse into barbarism."

I hope to lead some by my feeble assistance and long practice to produce something more beautiful than a brick—but if we do produce a brick, we should aim to make it a good one.

M. JAY.

(To be Continued.)

#### A Trip to Europe.

Editor Clay-Worker:

At your request, I will try to give you a few notes concerning my recent trip to old England. As I only had about three weeks there, and there were a great many people I wanted to see in that time, I had very little time to spare to go a-brick-hunting. Still I don't expect to go around with my eyes shut, and, if I ever stop to pick anything up to look at, my wife says it's sure to be either a brick or a piece of clay.

I suppose I could write a long letter on my impressions and observations in the old country on things in general, after an absence of nearly eleven years, but I must confine what I have to say to what may be of interest to the readers of a clay journal. I visited four or five brick works, and one or two large potteries. Before making any special reference to these, a few general remarks may not be out of place. Every one knows, or at least all who read their clay journals may know, that the English brick are much larger than the American, being, in fact, nearly double in cubic contents. This, of course, I know from personal acquaintance, and when I first came to America some of the bricks here seemed like toys in comparison. While never disputing the

advantage of small brick to the manufacturer, I have at times ventured to argue on general principles, in favor of the English size brick. But after being accustomed to the small size brick for this length of time, and then going back to observe the large ones, I cannot express how unspeakably clumsy, coarse and vulgar they appeared in comparison. Once for all, let me put myself on record in favor of the American Standard size brick, not only on account of their being better and more profitable to manufacture, but also more artistic and beautiful in the wall. I suppose the brickmakers of England would have but little chance to work a reform in this direction, but it would be immensely to their advantage if they could.

Now, as regards quality. As applied to common brick, I think that it can hardly be questioned that the English brick are superior, very much so. There are millions of rotten, unsound, or ill-shaped brick that are put into walls here, that would never be allowed to come in contact with mortar in England. To this fact can be attributed the greater stability of the general run of brick buildings there than here.

When it comes to pressed facing brick, the case is different. In the matter of strength, or resistance to the crushing test, the American pressed brick are, *on the whole*, equal to the English. I do not know that they are better, although a few special factories might even claim superiority, but for regularity of size, squareness of edges and corners, smoothness of surface, and all that goes to make up perfection in a fine front brick, the American is away ahead of the English. When I say this, I am not alluding to exceptional cases in either one country or the other, but taking the general run of pressed bricks made in both. If exceptions were to be admitted, I will say that I have seen brick turned out from more than one works in America which I doubt very much if they could be matched in England.

I noticed costly residences and other buildings there, put up with rough, mis-shaped and discolored brick, that would be rarely, if ever, seen here. Certainly for excellence in brick work I saw nothing while there, to in any sense, compare with the elegant structures one can see any day in New York, Washington, Chicago, Cleveland and any other large city in this country.

Some of your readers may say I am prejudiced. Let me say if I have any

prejudice at all, it is in favor of that land which is still the most dear to me, and which, in many respects, is superior to this country yet.

In England, brickmaking is nearly all on the plastic system, and mostly by wire-cut machines. It is not, perhaps, generally known, that nearly all the improvements in this class of machinery in America in recent years have been introduced from England, or copied from patents there that have run out. It is sometimes amusing to see an old machine or device in a new dress and with an "American patent" stuck on it.

The semi-dry or dry press process has gone very much out of favor in England. For general application there, it was a conspicuous failure, and even with the clays specially suited to it, it has never been a "brilliant success." I have my own ideas as to the reasons for this, and believe with the experience gained here, I could go to places that have failed on this system in England, and "astonish the natives" by making dry press brick that would satisfy the most exacting critic.

For some reason or other the English brickmakers have never caught on to the right idea in making the dry press brick. As to the machines themselves, I know of nothing in England to compare with more than one dry press made here that I could name.

The first brick works I visited was at Leeds, belonging to our friend Mr. Johnson, whose name is familiar to the readers of the CLAY-WORKER as a maker of special lines of brick machinery. This is a common brickyard, and from the material they are working, the wonder is that they could make brick of any kind. A small proportion of the bed is a tough plastic clay, but the balance is nothing but a soft rock. It is ground in dry pans and made into bricks on two of Mr. Johnson's "B" machines and pressed on two steam lever presses. (Cuts of these machines and presses can be seen in the advertisement pages of the CLAY-WORKER.) The brick are burned in Johnson's Continuous Kiln, and turn out a good, sound brick; in fact, extra good for common bricks. They make about 25,000 per day. This is an old yard and the clay is nearly all worked out, hence no repairs are made except what are absolutely necessary, and the yard did not present such an inviting appearance to a stranger on that account, but the machinery appeared to work easily and make good brick. When the



works are moved to a new location, it will no doubt be fixed up in nice shape.

ALFRED CROSSLEY.

*To be Continued.*

#### Ohio Valley News.

*Editor Clay-Worker:*

The demand for sewer pipe and paving brick at the various works in this region is very good but prices are very low and apparently no immediate improvement in sight.

A. O. Jones, of Zanesville, O., World's Fair Commissioner, and President of the A. O. Jones Brick, Tile & Terra Cotta Co., was in Toronto, April 7th, meeting with the clay manufacturing people of the valley, and perfecting arrangements for the exhibition of their wares in the Ohio building at the World's Fair. This exhibit will be a feature, and cause other states to envy us, as it is one of the state's most important industries.

Stock is being rapidly taken for a new Yellow-ware pottery in New Cumberland, W. Va., and ground will be broken for the buildings about June 1st.

The New Cumberland Fire Clay Co., whose works are located at Brown's Station, Ohio, on April 19th, made an assignment for the benefit of their creditors to J. Carl Bigger, of Steubenville, Ohio. The assets are \$5,500 and liabilities \$7,000. The assignee has filed a petition to sell real estate.

The Jefferson sewer pipe works of Toronto, Ohio, the pioneer of the valley, was sold at sheriff's sale in front of the Jefferson County Court House on April 24th for \$20,000, two hundred dollars more than the appraisement. It will now be operated under the name of the Toronto Fire Clay Mfg. Co., under the direction of the following men well known in the clay business: Wm. Baird, President; Sam'l Kelley, Treasurer; D. J. Kennedy, Secretary; Jno. Kling, Gen'l Manager. C. T. Young, Superintendent. It is now running in full blast and resembles "old times."

The machinery for the new paving brick plant of Capt. Jno. Porter, at Hamiltontown, W. Va., has arrived and is being erected.

The sewer pipe works of the Phoenix Fire Clay Co., at Malvern, Ohio, which was sold at sheriff's sale will be operated by a number of capitalists of Urichsville, Ohio. The plant will be enlarged and many improvements made.

After many meetings and much hard labor the sewer pipe manufacturers have succeeded in forming what, in their opinion, is an iron-clad combination.

It was incorporated under the laws of West Virginia on April 29th, under the name of the Central Sewer Pipe Co., with headquarters at Toronto. This company includes all the pipe factories in this vast region,—twenty-one in number. Mr. T. F. Anderson, of Knowles, Taylor & Anderson, of East Liverpool, is President, and Mr. Chas. A. Freeman of the Freeman Fire Clay Co., of Freemans, Ohio, is Secretary. About the first action to be taken by the company will be an advance in prices to take effect about June 1st.

It is rumored that the Jno. Porter Co. are contemplating changing the old Clifton Brick Works at New Cumberland, W. Va., lately purchased by them into a sewer pipe works. The directors of the company are not a unit on this change and the works are now idle, awaiting the final decision.

BUCKEYE.

#### A Flourishing Business.

*Editor Clay-Worker:*

Please find enclosed \$2 for the CLAY-WORKER for one year to be sent to our address.

We receive copies of many good brick journals and we carefully examine all of them, but we are not subscribers to any other than the CLAY-WORKER, for we find in it what all others together contain.

Our plant is situated in the central part of White county, which is one of the richest in Illinois, at Carmi, the capital and principal town in the county. We use the Adrian Brick machine and turn out an average of 25,000 good brick per day, and where we have call for them we send out repressed brick from C. W. Raymond's Columbian press which we have lately purchased. The greatest portion of our trade is in shipping, as we have the only plant of any importance in our section of Illinois and we supply Cairo with all her paving brick and a part of her building brick, notwithstanding the fact that Cairo is 105 miles distance and has several brick works nearer than ours, but through us they seem to secure a better article for the same money. We have abundance of stiff stubborn yellow clay, with some iron and lime gravel but not enough to interfere, and requires very careful attention in drying. Up to date we dry our brick in sheds on pallets, but from recent developments in dryers we think that in a short time we will put one in our

plant. We have no trouble in securing \$6, \$7 and \$8 per M. for our common brick and last year we were unable to supply the increasing demand for our product.

Wishing you success with your journal, we beg to remain,

GRANT & GRANT.

Carmi, Ill., May 5th.

#### Wants More Light.

*Editor Clay-Worker:*

Please send me a copy of J. W. Crary Sr's., "Brickmaking and Burning."

I would like to get a little light on burning with coal; that is, coal screenings put in the heads of the kiln. At present I burn with wood, in scoving kilns. I cannot settle the whole thing at once but have to fire on each head about 18 hours after the center is down. I understand that by putting coal in the heads, I can settle the whole thing at once. Now I would like to have some of those who burn with screenings give me a few hints. 1st. What kind of coal hard or soft and about how much to the M. 2nd. Is it a safe process for a beginner to try. 3rd. Give a little outline as to how a kiln should be fired. I have no trouble burning with wood, but, often as head is settled and fire changed, it cools too quick and as a result I have considerable breakage in arches. If some one will answer this through the CLAY-WORKER I think others will profit by it also.

C. HOUGHTON.

Carthage, N. Y.

#### Roofing Tile Never Wear Out.

*Editor Clay-Worker:*

The idea seems to prevail (and to be constantly expressed) among those interested in the manufacture of roofing tiles, that this article is suitable for the most permanent and expensive buildings. This idea is, of course, naturally taken up by the public, greatly to the detriment of this branch of the clay manufacturing industry.

As I am of the opinion, and am prepared to prove, that, if the proper pattern of roofing tile is selected, the proper machinery used, and the proper skill and care exercised in its manufacture, roofing tile can, after paying a magnificent profit to the makers, be put upon the market at a price which will at once successfully compete with all the best classes of material, such as slate, etc., and immediately drive all temporary coverings like shingle, tin, etc., from the market. I would be glad if you would



publish a full and reliable (as of course it will be, if it appears in the CLAY-WORKER) estimate of the cost of all the principal roofing materials in general use.

As soon as I have this I will conclude what I have got to say on the manufacture of roofing tile. R. M. Greer.

April 25, 1893.

### Large Bodies Move Slowly.

*Editor Clay-Worker:*

GENTLEMEN:—You will please find enclosed \$2.00 for subscription. I thank you for sending it if my time is out, for I do not want to miss one number and you can rest assured the \$2.00 will come if it is a little late.

The brick business is booming just now in this part of the country and has caused a great many people to launch into the business who knew nothing about it, and I expect a great many will come out at the little end of the horn. We have moved our yard on the line of the I. C. R. R., and expect to do a much better business, as we have been hauling our brick three quarters of a mile to the railroad. That cut off a big share of the profits.

I see the I. C. R. R. has an ad. in the CLAY-WORKER in which they are offering inducements to parties to build brick-yards on their line, but if they do no better by the new firms than they have done by the old ones, I do not think they will get many to locate. They compel the brick man to do his own grading and furnish the cross ties for the side track to his works, and after that is done they take their own time in putting down the rails. They also compel new firms to sign articles of agreement, to ship a certain number of car loads of brick during the year, but say nothing about furnishing the cars when called for.

We have just burned a kiln of 225,000 brick and will soon be ready to ship them, for they are sold already, and all we can make this year, at a good price. We have written to the railroad company to this effect, but as yet, see no signs of the rails being put down. It makes a man feel rather blue when he has complied with his part of the contract, and brick ready to ship, with no sign of the rails being laid, especially after having gone to so much expense to move. I presume, though, the delay is caused through so much "red tape" in going from New Orleans to Chicago.

Osyka, Miss.

J. T. MOORE,

### Philadelphia News.

*Editor Clay-Worker:*

Business in this section has been active in nearly all branches until within a week or so past when the textile mills very generally began to experience a slackening in orders. Prices have ruled so immoderately low in everything that manufacturers see the benefit of curtailing production and buyers are more careful, also, and are taking goods in quantities for present requirements only. In fact there appears to be a very general hesitancy in anticipating a better condition of the markets, and no permanent improvement may be looked for until business men and manufacturers can be relieved from the present uncertainty. They are threatened with radical changes, both in currency and the tariff, and we may say reciprocity arrangements, so they pause till they know what the changes are to be. Money is therefore finding an outlet in building operations, and the season of 1893 promises to be one of the best in the history of the brick trade. In all sections of the city large numbers of houses have been contracted for, some of which will be the handsomest erected for several years.

There is a possibility of trouble among brickmakers and a probable strike of the employes of yards in the southern section of the city unless the wage scale fixed by Triumph Assembly 6541, of the Knights of Labor be adopted by the Manufacturers' Association.

The season of 1893 promises to be one of the best in the history of the brick trade, and labor troubles might prove disastrous to building interests. At the present rate at which bricks are selling there don't appear to be any room for increased liabilities, but labor is too often blinded by what seems to them golden opportunities, and they go it blind too, in many of their undertakings. In fact, no profit has been realized by anybody from the manufacturer of hard brick in recent years, and the other grades were selling for lower prices than ever before until the recent scale was established.

The Claymont, Delaware, brickyard started up last week, and the prospects are good for the coming season.

A Philadelphia syndicate is erecting three big boilers and other machinery for a new brickyard in the old George Gesner estate, near Norwood, Delaware County.

Dovetail paving bricks is the latest out.

A large brick kiln at Printz & Co's brickyards at Reading was demolished by the recent storm.

Experiments are being made with a light brick for interior partitions, ceilings and other places where crushing strength is not required. With ordinary clay and sand, about 50 per cent. of fine sawdust will be mixed; the brick will be moulded under heavy pressure and then burned until the sawdust is consumed.

It is said that in Central Asia bricks are baked in cylindrical ovens about three days, and then burned in an atmosphere of steam, which is produced by closing the heated ovens with covers of wet felt. The bricks are turned by the steam from red to dark gray, acquire great hardness and become sonorous. They are said to resist weathering better than fire-burnt bricks. ANON.

### A Voice From Jersey.

*Editor Clay-Worker:*

In looking over the April number of the CLAY-WORKER I see valuable news from all parts of the United States, except from Rocky Hill, N. J. Perhaps you are not aware that we have a nice little pressed brick factory in this town.

The factory referred to is operated by the Partridge, Powell & Storer Co., E. 22nd St. and 4th Ave., New York City, who have large beds of valuable clays close to the works. We are now making about 10,000 pressed brick a day, and are still building kilns and making preparations to go into architectural terra cotta and enamel brick. The factory is built a few yards from the Rariton Canal, midway between New Brunswick and Trenton, and has also the communication of Rocky Hill branch of the Pennsylvania railroad. The plans for another brick works is now projected near Rocky Hill. I wish to call your attention to the fact that the brick, of which I sent you sample, referred to in the "Editorial Notes and Clippings" of the CLAY-WORKER were not made of plastic clays, but red shale or trap rock, of which there are large hills all along the Rariton River from Sayresville to New Brunswick. It is well adapted for the dry press process when finely pulverized and run through a sieve about 30 holes to the square inch. But if mixed with about 20 per cent. fire clay it can be made into first quality paving brick, by the plastic process. Owing to the large percentage of lime and potash which it contains, it will vitrify about 2,200° or 2,300° Farh. In the writer's opinion it is just the thing for paving brick. Respectfully yours,

A. M. STRUSHOLM, Supt.



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T. A. RANDALL &amp; CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

**OPENING THE WORLD'S FAIR.**

The exhibits of manufactured clay products at Chicago are like the other exhibits at that great exposition. The condition is chaotic. There is no denying the fact that when President Cleveland touched the button, there was nothing else in the way of exhibits to touch. He started the great engine, but that was all there was to move. The shafting in Machinery Hall, to say nothing about the exhibits, was not in position. After the engine was started it was run a few minutes and then stopped, because there was nothing better to do. A statement of this kind need not discourage anyone. No one should think for a minute that the great show at Chicago will be any less satisfactory, merely because it was not complete on the first day of May. Quite the contrary. The exhibition has outgrown the ideas of all the people; certainly those of the managers. Their estimates of the cost have had to be doubled and thribbled, because the idea has grown. Everything connected with the exhibition has grown. Where it was thought there would be one or two exhibitors, five and six have appeared. The scheme has outgrown its original proportions; and while the exhibition, as originally planned, might readily have been in shape by the 15th of April, little or nothing was to be seen on the first day of May, aside from the architecture and the general preparations. Thus it is that the exhibition was in-

complete, unfinished and chaotic at the opening. However, the management's splendid organization, which for the time was swamped, is rising to the emergency and will develop an exhibition far superior, in all its details, to anything of which the world has ever dreamed. Let no one feel that because the first day of May found this exhibition in an unsatisfactory state, that anything has miscarried. It has overcarried. The greatest expectations of the most sanguine people have been utterly inadequate, and there is going to Chicago, a mass of material of all kinds, representing the world's industries, such as was never before conceived by the mind of man.

**OHIO'S CLAY PRODUCTS AT THE FAIR.**

If Ohio had been called upon five years ago to make an exhibit of clay products, it would have appeared an age behind as compared with what it is doing to-day. The exhibit in the Mines and Mining Building shows not alone splendidly made brick,—those which are ideal in form and texture, but those which in color were not thought of as a possibility five or ten years ago. In the Ohio exhibit are bricks of varying shape and perfect texture, and colored to match and work uniform with other building products. One does not expect to match or get a color harmonious with some other product from stone; but with stone one may expect to develop a harmonious color from clay.

The Ohio exhibit has many different natural colors from the stone quarries of that State; but the burned clay products have been colored and made to appear harmonious and uniform with this work of nature. There is stone with a pitched face worked alongside with and harmoniously a part of pitched face brick of a delicate grey shade. The result is very beautiful. Not only this, but there are the molded forms, the decorative panels of brick and terra cotta, which are works of art.

**OUR OWN STATE EXHIBIT.**

Indiana has an exhibit next to that of Ohio. Indiana had an experience with its Legislature. That august body sent a committee to Chicago; they arrived there in a snow storm. The Indiana building was unfinished, and while contracts had been made and the money at hand to meet all obligations, this

committee, like others before, judged of unfinished work. They saw a building half done in the middle of winter and said to the Commissioners of the State of Indiana: "If this is all you have in the way of a completed building, you have done badly enough, and we will cut your appropriation." This, together with a spirit of demagogery which seeks to build up a cheap reputation on a cry of economy, did cut the appropriation, and one-half of what was really necessary was given to make the State exhibit. There is no way so easy for a demagogue to climb as by the ladder of economy. A reputation for economy may be bought cheaply, but the result is disastrous.

Indiana will make a relatively good exhibit. Compared with what might be done, it will be poor indeed. Little will be shown in the way of finished clay products. One reason for this is that Indiana has little to show from a manufacturing standpoint. It has splendid manufactories of common brick and tile of various kinds, but of pressed brick, molded and colored clay products aside from the work of the Encaustic Tile Companies at Indianapolis and Anderson, there is relatively little to show. Nevertheless, in the Mines and Mining Building in the Indiana section, one will find a great deal that is creditable, and an exhibit of clays which will astonish the world. No State in the Union is richer in raw material for a high grade of clay products than Indiana. Not alone is clay which will make good brick found nearly all over the State, but pottery clay and kaolin of the highest purity are found in many sections, and a splendid quality of fire clay throughout the coal areas. All this and much besides will be shown in a very satisfactory way as a part of the Indiana Mines and Mining exhibit. Paving brick from various sections will be shown and of a quality which will redound to the credit of all concerned.

**CHICAGO A GOOD EXAMPLE.**

The Illinois exhibit, in the Mines and Mining Building, promises well in its display of clay work. Nevertheless it is to be understood that none of these exhibits are complete or fully arranged at this time. The terra cotta companies, those who manufacture paving brick, pressed brick and other clay products in this State, will be fully represented. The journeyman clayworker who goes



to Chicago need not, however, confine his attention to the Exposition, in order to see great accomplishments and new and original work. Chicago itself, particularly the better part of Chicago, with its splendid office buildings, represents the highest advancements in the science and art of clay work. We find this true because of the development of the new principle of construction which has reached its highest development in that city. We speak of the steel skeleton construction so well known as the Typical Architecture of Chicago, the steel forming the framework and the clay products its protection against fire. This construction has been made possible through the co-operation of the workers in clay. To those who have a practical interest in this art, Chicago itself, as a city, is a part of the great World's Fair.

#### WORLD'S FAIR NOTES.

Scattered throughout the Liberal Arts Building one finds a number of brick and terra cotta pavilions, showing advanced types of construction, and what is peculiarly interesting at this time in that connection, a high regard for the artistic qualities of this work. The exhibits in the Liberal Arts Building are more in the nature of private or individual displays, and while none of them can be said to be finished at this date, the work is progressing and in a few day's time many very attractive exhibits of clay products will be completed.

The National Buildings, especially those from Foreign Countries—Germany, Sweden, etc., will well repay study, though all do not make a display of brick work. The coloring and ornamentation of the German building will be a novelty to most Americans. At first it appears strange, though from its harmony it soon calls for admiration. All over the grounds one meets clever conceits, showing the products in clay from the various sections of the world. All this will, in time, be taken up and described in detail in the columns of the CLAY-WORKER. Remarks made at this time must be of a general character and written on the basis of what is in progress of completion. It is not wise to judge prematurely of unfinished work.

The roof of the California Building, with its Spanish tiles, is one of the unique features among State exhibits. The building itself is designed in the old Spanish Mission style, and is splen-

didly worked out. It has as much character and originality as any building on the grounds, though without its beautiful tile roof, much would be lost in effectiveness.

There is an exhibit in the Mines and Mining Building of the Farnley Iron Co., of Leeds, England, in which they show glazed bricks, bath tubs and wash-tubs which our clayworkers may study with interest. The quality of the glaze and the general character of their ware is of a high order, and will well repay the attention of practical people. It is to be hoped that it will be only a few years until porcelain ware of an equally high grade will be produced by our own manufacturers.

Chambers' Bros. Co., Philadelphia, write that they now have an exhibit of Brickmaking Machinery at their new store building, No. 203 South Canal St., Chicago, and cordially invite all brickmakers visiting that city to call and inspect their machinery. Their resident agent, Mr. J. E. Eastes, will extend to all a hearty welcome.

The Chicago Brickmakers' Club have established reception rooms in the Ogden Building, southwest corner of Clark and Lake Streets, where they hope to entertain every craftsman who visits the World's Fair. Brickmakers, generally, the world over, and particularly members of the N. B. M. A., are requested to make the Club Room headquarters during their stay in the Windy City. The latch string hangs out to all visiting craftsmen.

C. T. Drake, proprietor of the Drake Standard Machine Works, Chicago, has equipped a large exhibition room at his factory, No. 298 and 300 Jackson Boulevard, where a complete line of his stiff clay machinery can be seen in practical operation at all times during the coming season. Brickmakers are requested to call and inspect the exhibit. If any desire to have their clay tested, it will be done free of charge while they are present, if they will bring or forward the clay, expressage prepaid.

A model of the Boyd Brick Press will be exhibited in the northwest corner of the Patent Office Exhibit in the Government Building. Also a working model of the Boyd Press and dry-pan, together with a very extensive exhibit of burned brick, green brick and clays, will be made in the northeast Gallery of the Mines and Mining Building. In the Canadian Department, at the extreme east end of

the Machinery Building, will be a 4-Mold Boyd Press in operation, exhibited by their Canadian Agent, Mr. J. M. Smith, of Galt, Ont.

Chisholm, Boyd & White, Chicago, are sending out an ILLUSTRATED GUIDE of the WORLD'S FAIR and CHICAGO. It is a complete directory and guide, including a map of the city and fair grounds, by which visitors may inform themselves fully as to the location of the various points of interest, and the best means of reaching same—also the location of the offices and factories of Chisholm, Boyd & White. All of the principal buildings, both National and State of the Columbian Exposition are well illustrated and described. The book also contains cuts of many of the most notable structures of Chicago. It is bound with flexible cover, making it suitable for pocket use. To those of our subscribers who are not acquainted with the Windy City and its surroundings, the work will prove very interesting, while it is invaluable to all those who are going to the Fair,—and who is not? A copy will be sent free, to any of our subscribers who will cut out, sign and mail the blank on page 622f. Non-subscribing readers can obtain a copy and also the CLAY-WORKER one year by sending two dollars with the blank. Every one going to the Fair should make a careful study of the map of the grounds and surroundings, so as to locate all the prominent buildings and other features, so they may get about intelligently and thus avoid vexatious delays and annoyances. *Time is money* when you go to the World's Fair.

#### SOME BANK FAILURES.

Some one knocked over a brick in Chicago and it has caused quite a tottering along the line. These brick were of the variety known as fish-worm brick—half baked. Of course, a few fairly good institutions and men whose ability was not up to their intentions, have been caught; but on the whole, the public is remarkably clear on these questions, and while it creates a little flutter and some disturbance, the element of essential and large weakness is not at hand. For that reason it cannot result in general harm or business distress. We heard one frightened capitalist say that he intended to take his money out of the banks and put it into brick and mortar. It is an ill wind that blows nobody good.



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| Evans & Howard.....                | 629  | The Van Duzen Gas and Gasoline Engine Co..... | 625  |
| Fiske, Homes & Co.....             | 638  | Weaver, Edward C.....                         | 625  |
| Ittner Anthony.....                | 622h | Waplington, W.....                            | 645  |
| Jackson Bros.....                  | 628  | Westbrook & Wells .....                       | 632  |
| Lafayette Freight Elevator Co..... | 628  | Small Ads., Wanted, For Sale, Etc.            |      |
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## BOOKS FOR BRICKMAKERS.

- "BRICKMAKER'S MANUAL,"**  
Morrison and Reep, \$3.00
- "BRICKMAKING AND BURNING,"**  
J. W. Crary, Sr., \$2.50
- "TABLE OF ANALYSES OF CLAYS,"**  
Alfred Crossley, \$1.00
- "DURABILITY OF BRICK PAVEMENTS,"**  
Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.



### Circular of ELEVATORS AND CONVEYORS

FOR HANDLING

Clay, Tile, Etc.,

Adapting the

**CURVED SLAT,  
CONTINUOUS PAN,  
LINK BELTING and..  
SPECIAL CHAINS,**

Mailed upon application.

**LINK-BELT MACHINERY COMPANY,**  
CHICAGO, ILL.

**LINK-BELT ENGINEERING CO.,**  
Philadelphia and New York.



# THE COLUMBIAN SPECIAL ....RE-PRESS,

Used throughout the world and indorsed by all users. Will repress 4,000 more brick per day than any other double die press. Capacity 20 to 25,000 Bricks per day.

Fifteen years experience on represses exclusively enables us to offer the Ne Plus Ultra of all presses,

## The Columbian ....Special,

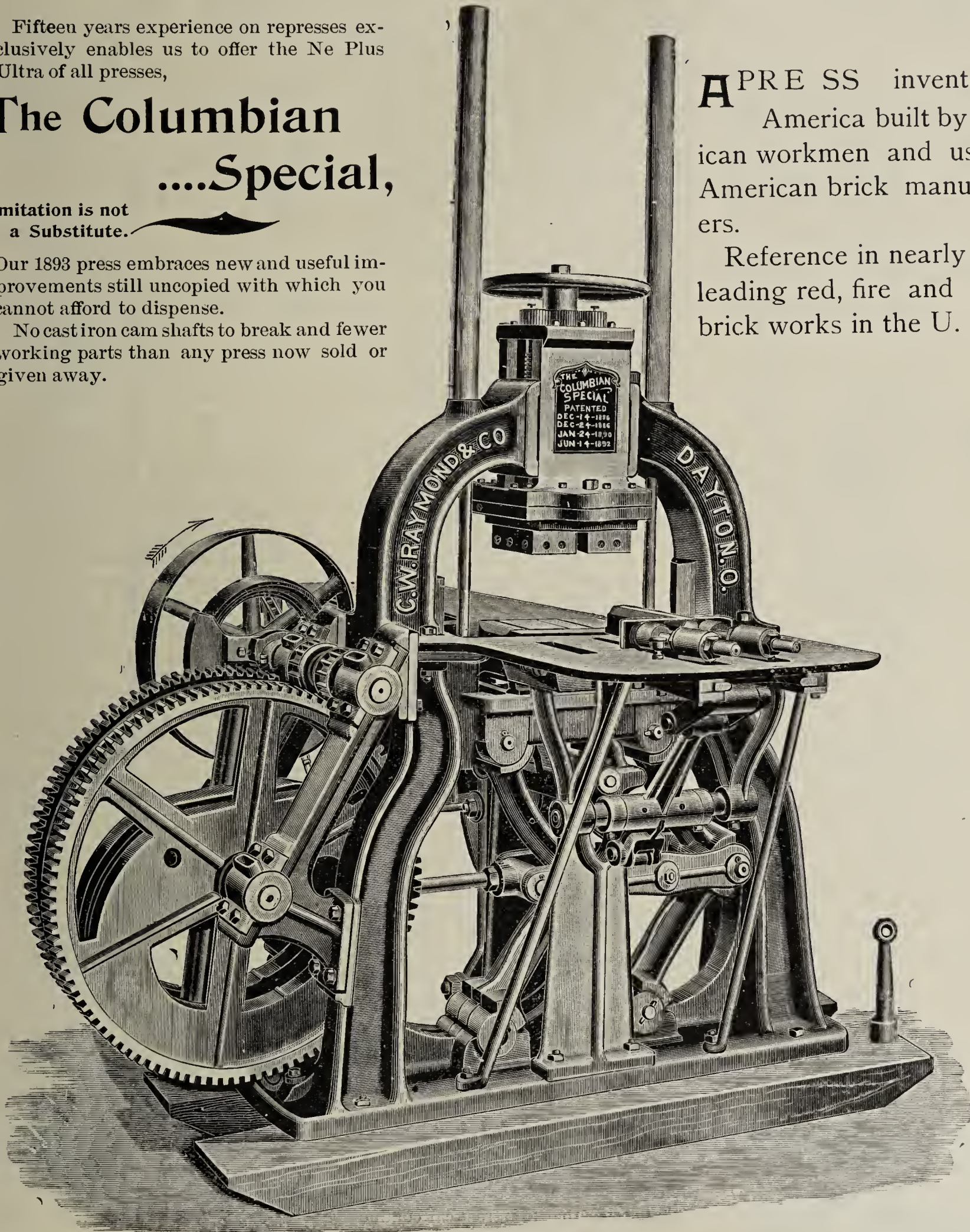
An Imitation is not  
a Substitute.

Our 1893 press embraces new and useful improvements still uncopied with which you cannot afford to dispense.

No cast iron cam shafts to break and fewer working parts than any press now sold or given away.

A PRESS invented in America built by American workmen and used by American brick manufacturers.

Reference in nearly all the leading red, fire and paving brick works in the U. S.



C. W. RAYMOND & CO.,  
DAYTON, OHIO.

(Mention the Clay-Worker.)





IF Chicago is spared the visitation of the cholera and Mr. Ward McAlister, of New York, the chances of an immense success for the World's Columbian Exposition are favorable. In case of their absence several people will visit the World's Fair, an enterprise which has been conducted with great secrecy and which will be sprung upon an unsuspecting public as soon as Major Handy's lurid whiskers bloom again.



THIS IS NOT NECESSARY.

Many of these several people will no doubt be readers of the CLAY-WORKER. I have a little advice to offer them, especially to those who hail from Boston, Red Dog (Indian Territory), Philadelphia, or Hoboken Heights, most of whom have probably never seen any form of street cars before. Now, my friend, from any one of these burghs, if you will observe my directions, no one will ever suspect that you hail from where you do, and that you are unfamiliar with street cars.



IF YOU HAVEN'T ANY CHILDREN BORROW SOME.

Now, suppose you bring your best girl; or some other fellow's second best girl, along; it isn't absolutely necessary to put your arm around her waist, to keep her from falling, in case there are no seats. Hand her a strap and let it go at that.

And if you have seats it isn't the proper caper to sit sideways. You take up too much room and it doesn't look well.

If you have no children of your own, borrow some. There is nothing so instructive for children in arms, and children in feet as great expositions. Besides, small children are such good company in a strange city, and very few hotel keepers and such like will charge more for children during the World's Fair than they will for adults.



NICE POSITION IN AN OPEN CAR.

If you happen to be riding on an open car where the seats are back to back hitch your shoulders over on the other side. People will like to feel your elbows poking into their backs.

Try to instill a belief into your wife's mind that she cannot take too much hand baggage along. Everything that one has at home may come in handy at some time when you are abroad. There will be ample room on the street cars for all the baggage that you want to tote along and save express charges on. Most lines of street cars will run baggage cars for the especial benefit of tourists.

Remember that the street car conductor is paid by the company to answer fully all questions regarding hotels, location of parks, restaurants, three card monte games, churches, theatres, mes-



THE MORE BAGGAGE THE BETTER.

senger boys, bargain dry goods stores and the reliability of the statements of  
CHARLES LEDERER.  
Chicago, April 'Steenth, 1893.

## CAPITALIST AND LABORER.

THE man who rises on Monday morning without a dollar in his pocket, but with a six day's job of work before him is a laborer. The one who arises at the same time with the money proceeds of the past week in his possession is, to that extent, a capitalist. The laborer should be protected in his inalienable right to sell his services for the best price he can legally secure. And, equally, the man with a previous week's savings should be protected in its possession and enjoyment. That is the exact theoretical relation between capital and labor. But the man who seeks to earn a living by creating trouble between these two classes is usually neither a laborer nor a capitalist. He seems to be very numerous of late years, and the sooner honest laborers ignore his teachings, the better off they will be and the more prosperous all lines of business will become.—*Sawmill Gazette*.



DON'T SIT SIDWAYS.



# Please You, "I Should Malt House."

OFFICE OF M. C. MEIGS.

LA FAYETTE, IND., April 26, 1893.

THE WALLACE MFG CO., Frankfort, Ind.

DEAR FRIENDS:—I am so charmed with the "Little Wonder" that I have tried to express my approval in verse, which, of course, I hope may please you. But, if not, I want you to unhesitatingly say so, for truth is better than "taffy," if it is not quite so sweet.

## WONDERFUL.

Of all the mighty wonders  
In mechanics I have seen,  
The BIGGEST "LITTLE WONDER,"  
Is in Cunningham's machine.

It is built on proper principles,  
With a view to Nature's Laws,  
And the author, after years of toil,  
Has won the world's applause.

Its appetite's enormous,  
Dines ten hours every day!  
And never seems so happy  
As when its belly's full of clay.

Its jaws are made of iron,  
And its teeth are made of steel,  
Takes fifty yards of gnarly clay  
To make its daily meal.

When I see it operating,  
So efficiently and calm  
My heart goes out in honor  
To the author, Cunningham.

Not only will it mould your clay  
And mould it in the proper way;  
But more I solemnly aver  
'Twill help to mould your character.

In saving steam and saving stop,  
In saving running to the shop,  
In saving temper, saving tear,  
In saving ruinous repair.  
In saving epithets I fear  
You'd blush to have your mother hear;  
While competition fades away,  
The "LITTLE WONDER" has come to stay.  
M. C. MEIGS.

THOSE desiring a machine that will put them in a happy frame of mind cannot afford to buy other than the **Big** or **Little Wonder Brick Machines** or Cunningham's Automatic cutting table, Pug Mills, etc. Manufactured by

**The Wallace Manufacturing Co.,**

**Frankfort, Ind.**

[See ad. on page 567.]



## EDITORIAL NOTES and CLIPPINGS.

Minco, Mich., has a new brick factory.

A \$3,000 brick plant is being erected at Barnes City, Ia.

A pressed brick plant is being erected at New Castle, Wyo.

H. W. K. Ayres, will erect brick works at Port Angles, Wash.

We have mail for Geo. Broadhurst, formerly of Pittsburgh, Pa.

A. J. Marquis, West Middleburg, O., wants a flower-pot machine.

Geo. B. Fagan & Chas. D. Speck will erect a brick plant at Carlisle, Pa.

The Humboldt Brick and Tile Works have been organized at Humboldt, Ia.

Read the Wanted and For Sale Ads. for bargains, help, situations, etc., etc.

The Niagara Falls (N. Y.) Brick Co. has increased its capital stock to \$30,000.

A company is being formed at Moberly, Mo., for the manufacture of fire brick.

On page 638 we illustrate a new character of brick work—The Boston Brick Ashlar.

The Kaolin Co., New Castle, Colo., will manufacture ornamental brick this season.

Rowan & Co., Shawneetown, Ills., are in the market for a hydraulic pressure tile mill.

N. C. Tilbury, is making extensive improvements in his tile works at Dilman, Ill.

A number of sheds at Jarden's Brick Works, Philadelphia, were recently destroyed by fire.

Mr. Benner, of Pittsburgh, Pa., has purchased the Challenge Brick Works at Greenock, Pa.

The Boston (Mass.) Fire Proofing Co., are building new kilns (Yates' Patent), and enlarging their plant.

The brick plant of H. C. Koenig, St. Louis, Mo., was damaged to the extent of \$200 by fire, April 16th.

J. Power Speers, of the Speers Brick Co., died at the family residence in Pittsburgh, Pa., April 15th.

The Kulage Brick Works, St. Louis, Mo., recently destroyed by fire, are being rebuilt as rapidly as possible.

ENLARGED AGAIN. This issue of the CLAY-WORKER includes 118 pages, being the largest number ever issued.

The brickyards of Robert Law & Son, East Toledo, O., were damaged by fire to the extent of \$2,000, April 25th.

A company will be formed for the manufacture of roofing and flooring tile at Fort Worth, Tex. Albert Blitz is interested.

The brick works of R. H. Montgomery, Lewistown, Pa., were seriously damaged by fire, which totally destroyed his saw mill.

Clark & Kavanaugh, in addition to their large plant in Platte Park, Highlands, Colo., are building a plant at Colfax, Colo.

Jansen & Krouse have sold their large brick yard at Ashwaubenon, near De Pere, Wis., to Messrs. Fred and Eugene Smith. The new firm will commence operations at once.

Mr. H. H. Keller, the well-known dry press machine salesman, has severed his connection with the St. Louis Iron and Machine Works.

A cave-in at the clay banks of the Waterloo (Va.) Brickyard resulted in the serious injury of one of the employes, Carson Williams.

J. C. Steele's Improved Brick Truck is still carrying the day, and seems to have nothing but smooth sailing. See ad. on page 629.

The Newbern (Ill.) Brick Works has been incorporated by William Courtney, Geo. H. Smiley and Levi Davis, Jr. Capital stock \$150,000.

The Lewis Run (Pa.) Pressed Brick Co. has been incorporated by Geo. H. Potter, C. S. Whitney, O. F. Schonblom, F. L. Richardson and C. V. Merrick.

A large plant for the manufacture of fire brick and drain tile will be established at Morgantown, Va. Prof. I. C. White and E. M. Grant are interested.

Dr. Theo. Wagner and others of Indianapolis, contemplate erecting a pottery near that city, and would like to receive circulars describing machinery, etc.

A. C. Smith has filed articles of incorporation for the Table Rock (Neb.) Brick and Tile Co. Plant will be erected and operations commenced at once.

Wm. Radford, inventor of the Monarch Continuous Kiln, is building kilns for the McCoy Brick Co., Augusta, Ga., and the Ft. Dodge Clay Works, Ft. Dodge, Ia.

Mock Bros., Muncie, Ind., are covering their new tile factory at that place, with Vulcanized Rubber Roofing, furnished by S. C. Keesling, who has an ad. on page 622h.

The old Jefferson Brick Plant, Toronto, O., has been purchased by C. T. Young, D. J. Kennedy and F. E. Dutort, and the name changed to the Toronto Fire Clay Mfg. Co.

Mr. J. W. Carson, formerly connected with the Thomas Pressed Brick Co., Brussels, Ills., has accepted a position as superintendent of the Hercules Brick Co., Chicago,—works at Millsdale, Ills.

W. P. Holman, father of Chas. P. Holman, the well-known brick and pottery manufacturer of Sergeant Bluffs, Ia., and one of Iowa's best known pioneers, died at his home in that city, April 14th., aged 80 years.

Mr. F. E. Lotterer Ft. Scott, Kan., writes that he is in the market for a dry pan or crusher that will grind soapstone. Also pug mill, cutting table, second-hand dry cars and kilns for burning vitrified brick.

James Pope has leased five hundred acres of fire clay land in Mahaffey, Clearfield Co., Pa., and will establish brick works. Mr. Robert Mahaffey, of the same place, will erect works for the manufacture of fire brick.

The Diamond Brick and Tile Co., Kansas City, Mo., have secured a large order for pavers at Creston, Ia. They write that their brick were selected from a dozen competitors and at a higher price, which is a gratifying evidence of their superiority.

The Atchison & Leavenworth Stone and Brick Co. have filed articles of incorporation, with a capital stock of \$50,000. A plant will be established at Leavenworth, Kan. The directors are Jas. W. Waggener, Thomas Beattie, Wilkin Coleman, W. P. Waggener and James W. Orr.

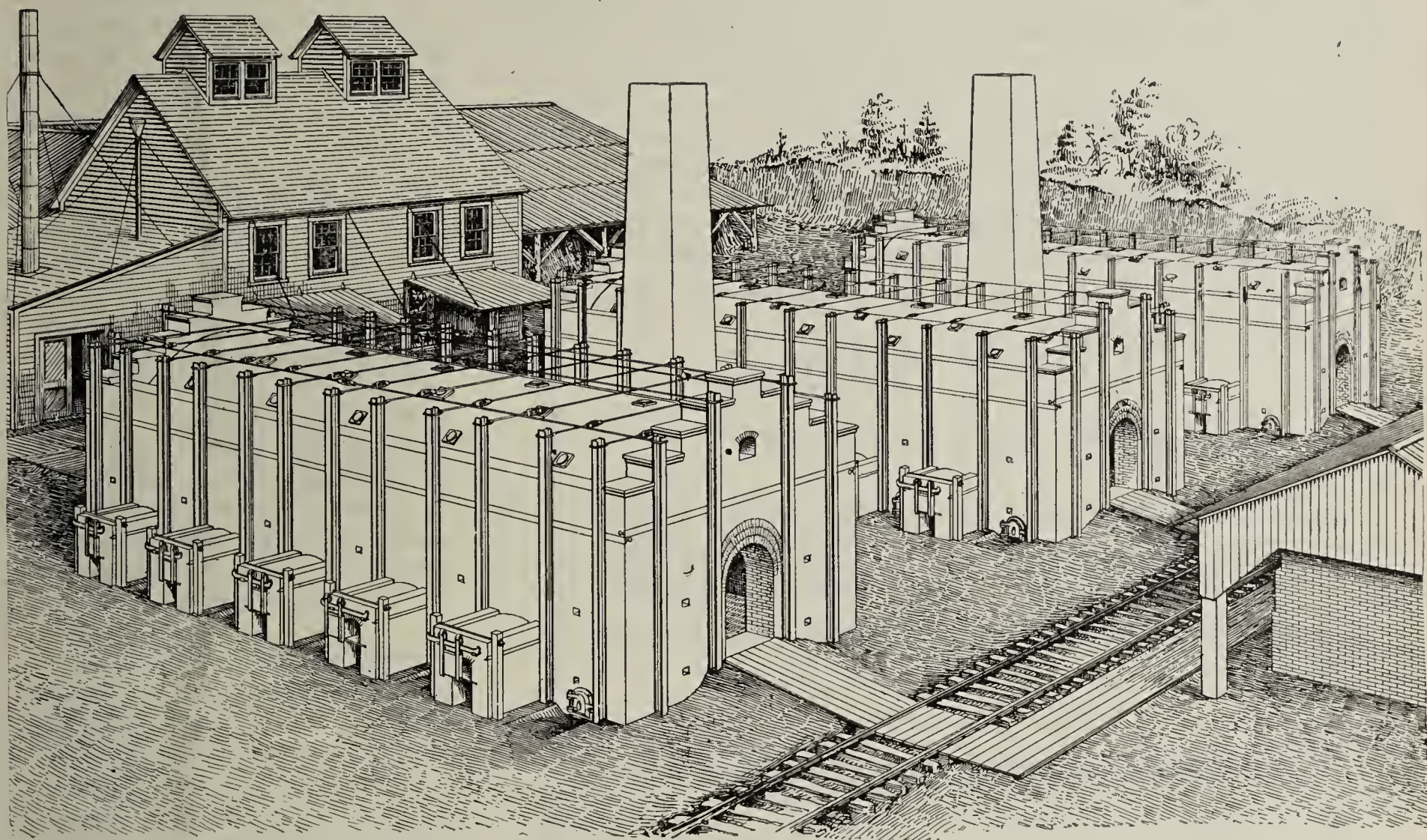
The Date-Goodwin Pressed Brick Co., of Des Moines, Iowa, have purchased 120 acres of fine clay land near that city, and are making preparations to start large works. They have purchased two Ross-Kellersix-mold machines, 150 horse power Corliss Engine, three boilers, and expect to be making brick some time in June. Mr. Dale of the firm said he went on a long tour of examination, and selected what he considered the  
(Continued on Page 622f.)



# THE FLOOD KILN.

•⇨ Up=and=Down=Draft. ⇨•

The Flood Kiln for burning brick of all kinds is a wonderful success. It uses less fuel than any other down-draft kiln. Old experienced burners are enthusiastic in its praise. It dries the brick up-draft, having special furnaces for this purpose. It burns down-draft. It is scientifically and correctly proportioned. All parts are under the perfect control of the burner, enabling him to produce brick all hard and of a uniform color from top to bottom. There are many Patent Kilns in use, great fuel eaters, which we would change over at our own expense and take for our pay the value of the fuel saved in one year.



✦ Extraordinary Offer. ✦

We will build the Flood Kiln for any responsible party, at our own cost for material and labor, and superintend one or more burnings of front, ornamental, common or paving brick, under guarantee of absolute satisfaction in quality of product and cost, the loss to be ours in case of failure. The time has come when the brickmaker should demand, and obtain, satisfactory results in burning his own brick before paying his money for yard rights. Correspondence solicited.

**CHISHOLM, BOYD & WHITE,**  
**Monon Block. CHICAGO.**



(Continued from Page 622d.)

very best the market afforded. He also purchased a 48-inch Ross Disintegrator which will prepare clay for two machines guaranteed to make 60,000 brick per day. He is now putting up the Reppell Kiln and the works present a most business like appearance.

Ground was broken last week at Shermerville for the new plant of the Alsip Brick Company. The new plant will be one of the largest in the vicinity of Chicago, occupying some 200 acres. The Alsips are constructing about 4,000 feet of tracks, so as to facilitate shipments. It is expected that the plant will be in such a shape by June 1, as to ship at least twenty car loads per day after that date. Shermerville is twenty miles from Chicago, on the Milwaukee Division of the Chicago & St. Paul road.

Henry Pahl formanly manager of the Tower Grove Brick Works of St. Louis, Mo., has secured a fine track of clay land on King's Highway just south of the Oak Hill R. R., St. Louis, and is pre-

paring to open a large works for making fine pressed brick. Mr. Pahl has purchased one of the Ross-Keller six-mold machines, which is guaranteed to make 30,000 brick in ten hours. The Bennett Brick Works of St. Louis make every day 33,000 to 35,000 brick with the same machine, and the quality is unsurpassed.

Mock Bros., Muncie, Ind., have purchased 60 acres of clay land and will at once commence the erection of a brick factory, which will be equipped with all modern appliances for the manufacture of brick by natural gas. They will have a daily capacity of 50,000 brick.

An exhibition of no little magnitude will be made by Messrs. C. W. Raymond & Co., of Dayton, Ohio, at Chicago, 203 South Canal St., just one block from the Union Railroad Station. They will exhibit a full line of improved clay working machinery, including the greatest variety of represses ever shown. They will also have many novelties in their

special line of interest to progressive brick manufacturers. Brickmakers visiting Chicago during the year will find a ready welcome at their ware-rooms.

#### TRADE LITERATURE.

"CHAMBER'S PICTURE BOOK FOR BRICK MANUFACTURERS," is the title of a very handsomely executed catalogue, now being sent out by Chamber's Bros. Co., Philadelphia. It is a picture book, for sure, and the pictures are finely drawn and of a character to interest the brick-making craft for they illustrate a complete line of stiff clay machinery and brickyard supplies. If you have't received one, reader, write them for a copy and it will be sent free.

"WE MAKE LIBERAL TERMS," is the caption of an imposing pamphlet issued by the Columbia Mfg. Co., St. Louis, Mo. If we may judge by the appearance of their new Columbia Brick Press, as illustrated in this pamphlet, and also on page 582, they also make a splendid press. From the text of the pamphlet it may be learned that the *Columbia* has several claims for consideration. One of its chief points of superiority is an adjustable mold box (patented), by which the liners can be changed in a few minutes with ease. Send for a circular giving full particulars.

THE TIFFIN AUTOMATIC BRICK MACHINE and other stiff clay machinery, is the theme of an odd pamphlet, being mailed by the Tiffin (O.) Agricultural Works. If you want to know more about it, write for a copy.

A NEW DEPARTURE. It will be seen that the proprietors of The Flood Kiln, advertised in this issue, are taking a new departure in furnishing brick-makers with kilns. They propose to build the kilns outright at their own expense. The brickmaker need not pay them a dollar until the kilns are tested, and nothing at all if the kiln fails to give satisfaction.

THE DRY CLAY SYSTEM is the modern and common sense way of making brick from any clay or shale; so modern that many cling to the older methods; so common sense that many fail to preceive that it will do them great good. There is both the right and the wrong system, but that is a matter of cause and effect. For any information about it, always go to the firm that is progressive; the firm that has always brought success to its patrons and itself. That firm is Chisholm, Boyd & White, Monon Block, Chicago.

## GIVEN AWAY!

**CHISHOLM, BOYD & WHITE**

Will present each Subscriber to the **Clay=Worker** one copy of their Beautifully illustrated **Guide to the World's Fair and Chicago**, with complete Maps of the Grounds and the City.

I am a Subscriber to the **Clay=Worker**.

Name \_\_\_\_\_

P. O. \_\_\_\_\_

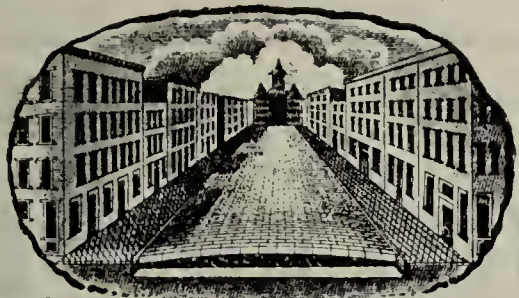
County \_\_\_\_\_

State \_\_\_\_\_

 Cut out this Card complete, fill in the blanks, and mail to Chisholm, Boyd & White, Monon Blk, Chicago.

See ads. on pages  
572-573-622e



*W. A. Doyle, President.**M. D. Hinton, Secy. & Treas.**Fort Smith Paving Brick and Fire Clay Co.*

WOODWARD &amp; TIERNAN PATS. CO. ST. LOUIS.

*Factory: Beckel, Birnie & Gray Streets.**Fort Smith, Ark. April 24th. 1893. 189*

The Frey-Sheckler Co.,

Bucyrus, O.

Gentlemen:-

We have been using two of your "Eagle" represses for something over thirty days, and wish to express our entire satisfaction with them.

Before placing our order we examined carefully the merits of the various steam presses on the market, and liking the general construction of yours best, bought from you with the proviso that the presses should fulfill all of your representations. We are pleased to say that they have done so.

The machines are simply and durably built and have run with uniform ease and smoothness, putting a very heavy pressure on the brick. They have been making from 20 to 22 strokes per minute, each machine repressing from 2400 to 2880 brick per hour. We can sincerely recommend them to the trade.

Very truly yours,

FORT SMITH PAVING BRICK &amp; FIRE CLAY CO.,

BY

SECY &amp; TREAS.



## FOR SALE, WANTED, ETC.

**Advertising rates in this column** 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**FOR SALE.**—45 Brick Cars for steam dryer. G. P. ORENDORFE, Lacon, Ala., Morgan Co. 5. 1. c.

**FOR SALE.** A Tallcot (Croton) brick machine, in good order. Address, N. Care Clay-Worker. 4. 4. c.

**FOR SALE OR RENT.** Fire brick works located at Canal Dover, O., suitable to manufacture any kind of clay products. C. S. BARRETT, Cleveland, Ohio. 4. 2. d.

**WANTED.** An experienced man to sell our product. Call on, or address, THE FURNACE FIRE CLAY CO., Salinville, Ohio 5-1-d

**FOR SALE VERY CHEAP.**—A heavy chasing mill, good as new—for grinding rock or clay. For prices and particulars, address GEO. E. STAUFFER, E. Stroudsburg, Pa. 5-1-c

**WANTED.** Agents to handle a full line of dry press brick machinery. Address 5-tf-1 HOWE, Care Clay-Worker.

**FOR SALE.**—The Leach Brick Mold Sander—simple, cheap and durable. Satisfaction guaranteed. Price \$100.00. Address, E. E. BRILES, Gen'l Agent. Fairmount, Ind. 5-1-o

**FOR SALE.** One three-mold Andrews dry press. Latest, heaviest pattern. In good order. Apply to MISSOULA BRICK AND SEWER PIPE WK's., Missoula, Mont. 5-tf-d

**WANTED.** Position by a man experienced in the handling of enamels for glazed brick and wall tiles. I am willing to accept a position for the manufactory of same with salary and percentage. An established brick plant preferred. Address "ENAMEL," Care Clay-Worker. 5-1-c

**FOR SALE.** One No. 2 Michigan Brick and Tile Machine. Tile dies from 2½ to 8-inch and brick dies with tables complete. In good order. Price for all \$125.00. C. D. PETERS, Brookfield, Eaton Co., Mich. 4-2-c

**FOR SALE.** Thos. Oliff hand repress, as good as new; used only two months. Will sell cheap. Address W. B. Co., Care Clay-Worker. 5-2-d

**TO LEASE FOR LONG TERM.** A fine terra cotta clay and kaoline property on Staten Island Sound, near N. Y. City. Good water front and dock. Clays for hollow and fine face brick and sewer pipe. Address R. H. BOYD, 59 Murray St., New York, N. Y. 5-1-c

**FOR SALE.**—At a great bargain. One Brewer Auger Brick Machine, nearly new, one Penfield Pug Mill and one Decatur Roller Clay Crusher. Address, C. LAMMERS, South Adam St., Peoria, Ills. 5. 1. c.

**WANTED.** A first-class brickmaker, who understands the brick business from top to bottom, to take full and complete charge of our yard. Must know how to make all kinds of brick, and furnish recommendations as to habits and ability. KEOKUK BRICK CO. Keokuk, Ia. 5-1-d

**FOR SALE.**—A fine lot of modern brick sheds, in best of order, complete with pallets capable of storing 150,000 bricks and ready for immediate use. This is a rare opportunity of procuring good and cheap brick sheds, the owners having put in steam dryers and have no further use for them. Apply at THE RIVERSIDE BRICK WORKS. River Front and Austerlitz Sts., 6th District, New Orleans, La. 5-1-d

**FOR SALE.** To close partnership, the brick and tile works located at Kerney, Ills., consisting of four acres of good clay, three down draft kilns, building 316 feet long, with racks complete, good engine and boiler, Brewer machine and good house. Sale for all the brick and tile you can make, at good prices. Will be sold cheap. Address, B., Care Clay-Worker. 5. tf-d

# ROOFING. VULCANIZED RUBBER ROOFING,



LIGHT, DURABLE  
and CHEAP.....

MUNCIE ROOFING WORKS,

Just the thing for—

MUNCIE, - - - INDIANA.

FACTORY BUILDINGS.

F. W. SILKMAN, 251 Pearl Street,  
NEW YORK.

IMPORTER AND DEALER IN

## CHEMICALS, MINERALS, CLAYS AND COLORS,

For Potters, Terra Cotta and Enamelled Brick  
Manufacturers.

Correspondence invited. ....

ANNUALLY  
27,000,000  
ITTNER'S  
BRICKS

MADE

AT

ST. LOUIS, - - MO.

—AND—

BELLEVILLE, - - ILL.

UNSURPASSED FOR QUALITY.

OFFICE ADDRESS:

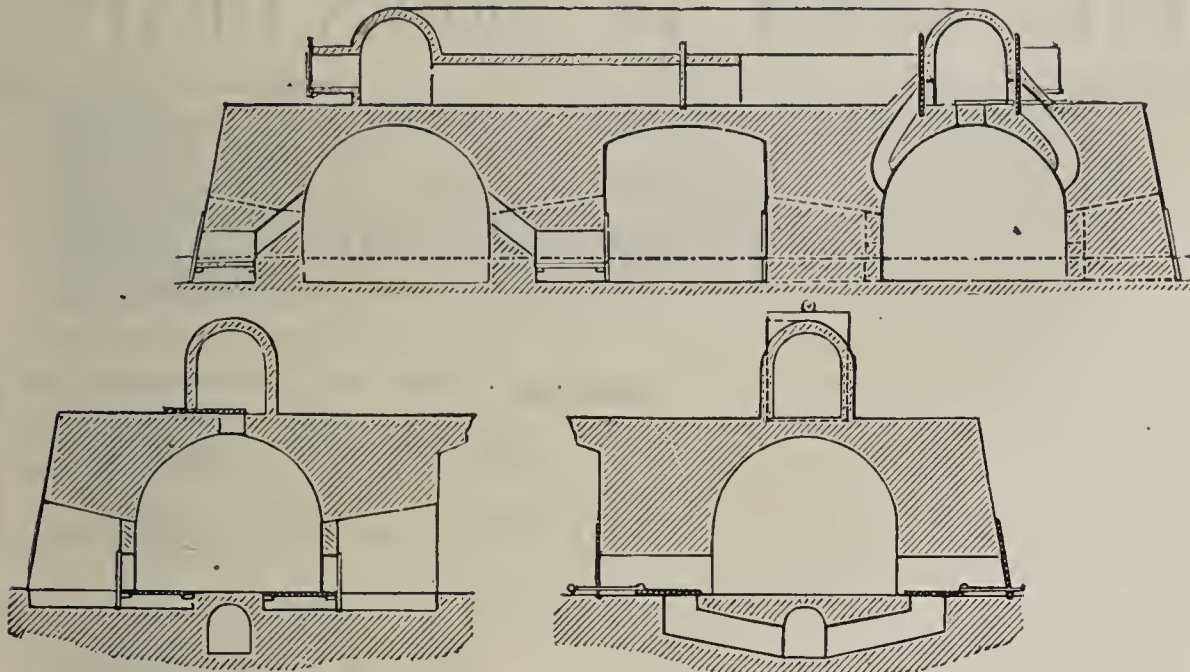
ANTHONY ITTNER,

TELEPHONE BUILDING. ST. LOUIS.

ESTABLISHED 1859.



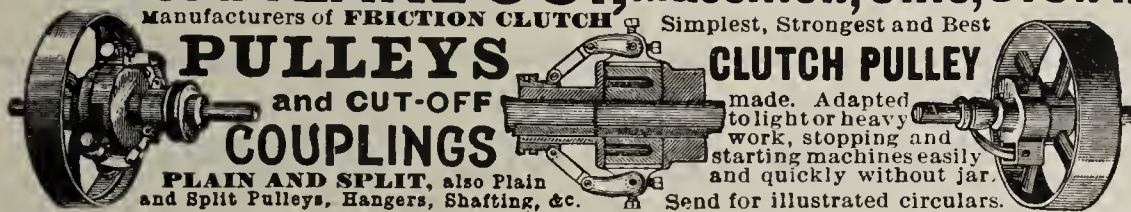
# The MONARCH Continuous Kiln.



If you want a Continuous Kiln that will burn Face Bricks, Dry Pressed Bricks, or Vitrified Paving Bricks, or Fire Bricks, you must get the Monarch. The fuel is not dropped in from the top and mixed with the bricks, and it saves 35 per cent. of fuel over the old style. No expensive valve dampers or feed holes required. It is no experiment. Do not decide on a kiln before writing for circular to

WM. RADFORD, = = Fort Dodge, Iowa.

## J. H. & D. LAKE CO., Massillon, Ohio, U.S.A.



Manufacturers of **FRICTION CLUTCH** Simplest, Strongest and Best  
**PULLEYS** and **CUT-OFF COUPLINGS**  
**PLAIN AND SPLIT**, also Plain and Split Pulleys, Hangers, Shafting, &c.  
made. Adapted to light or heavy work, stopping and starting machines easily and quickly without jar. Send for illustrated circulars.

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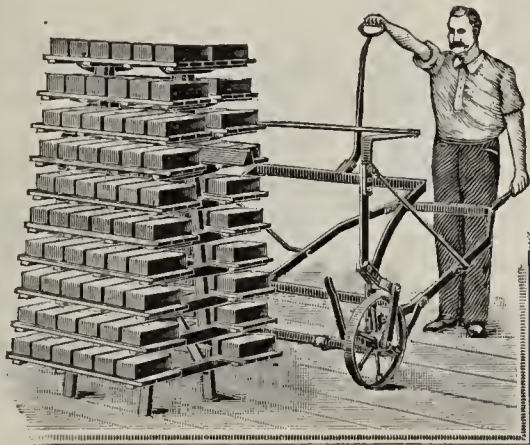
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By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

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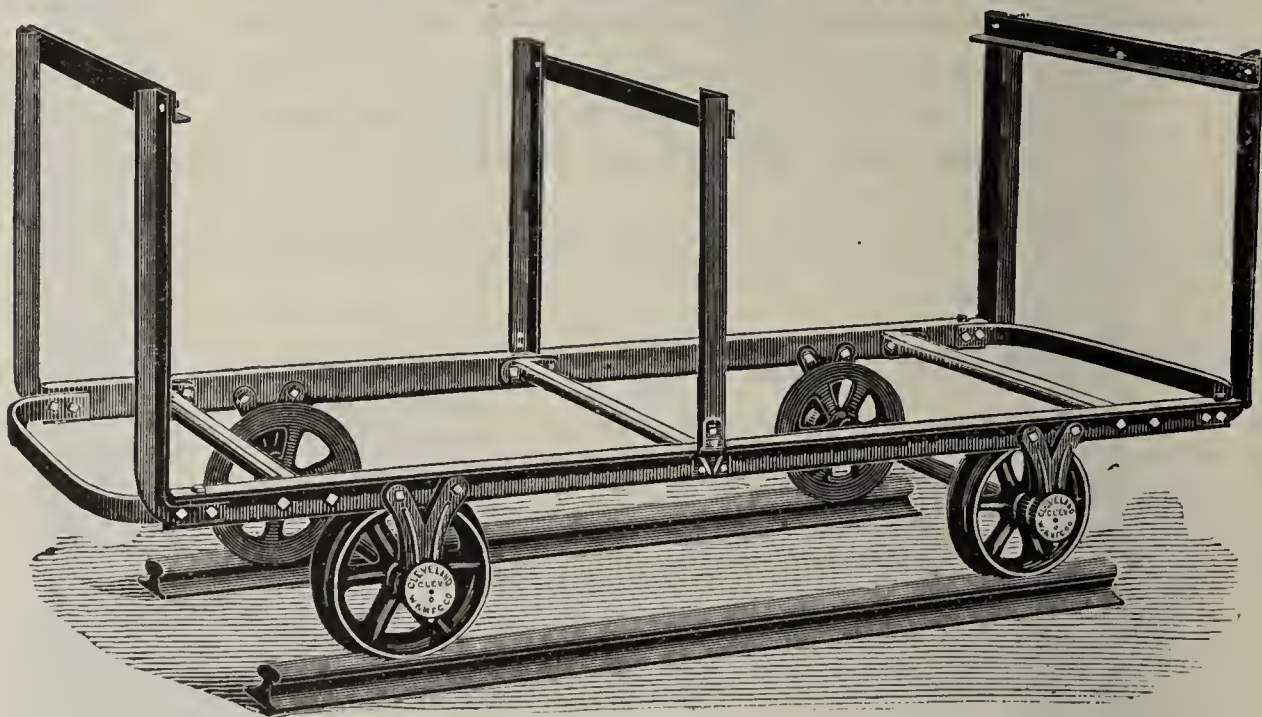
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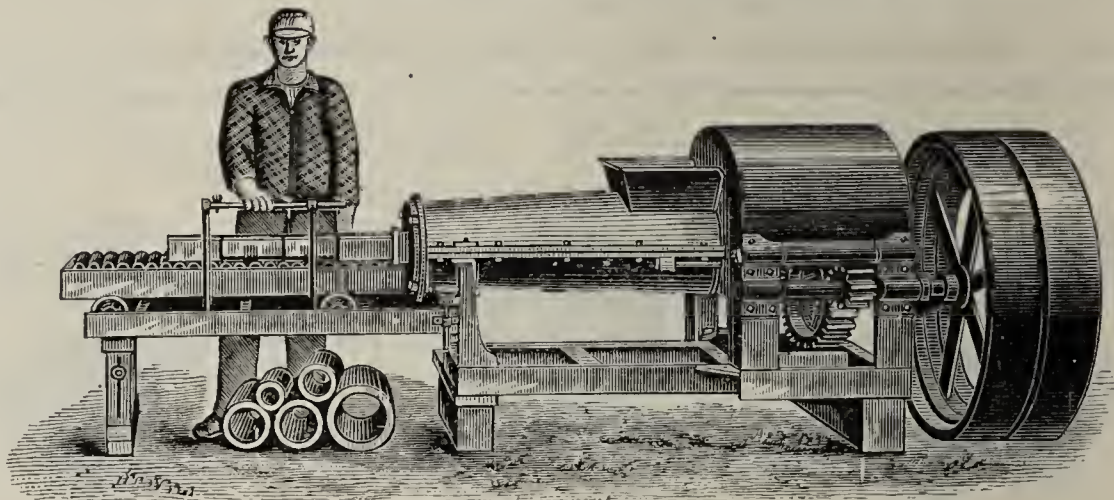
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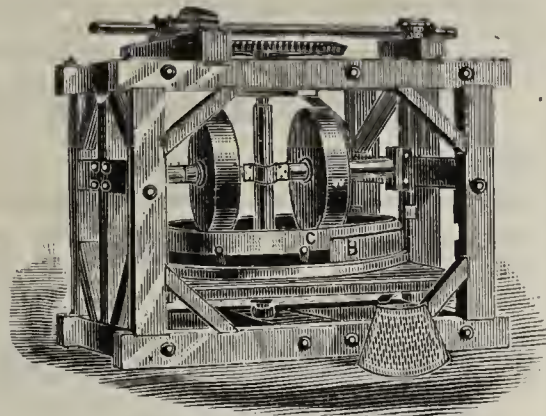
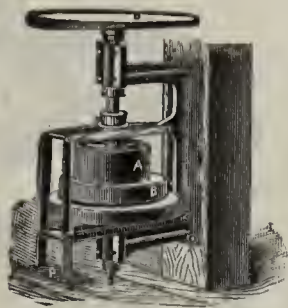
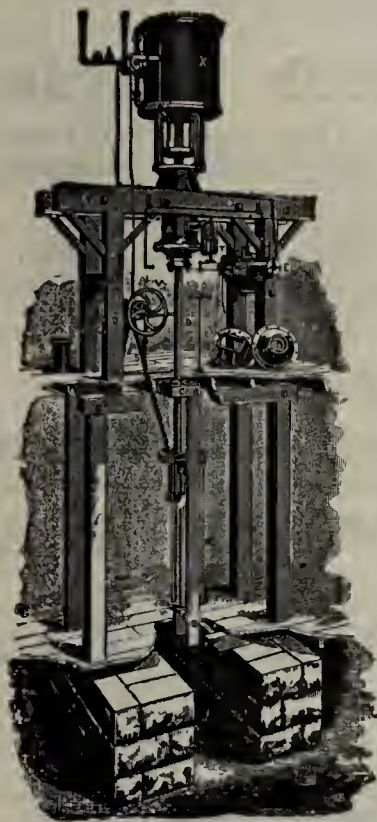


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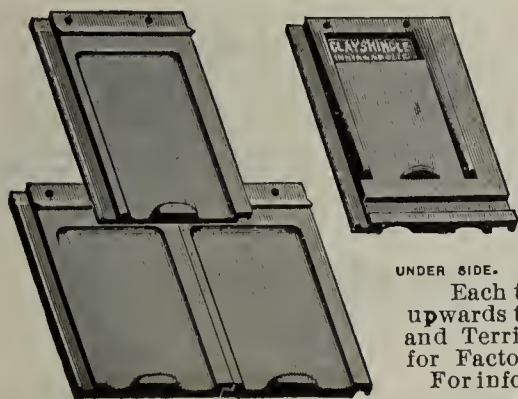
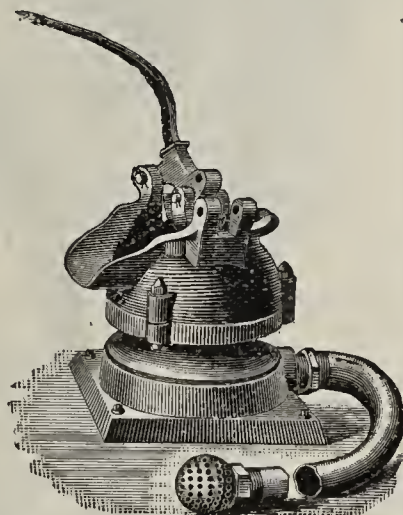
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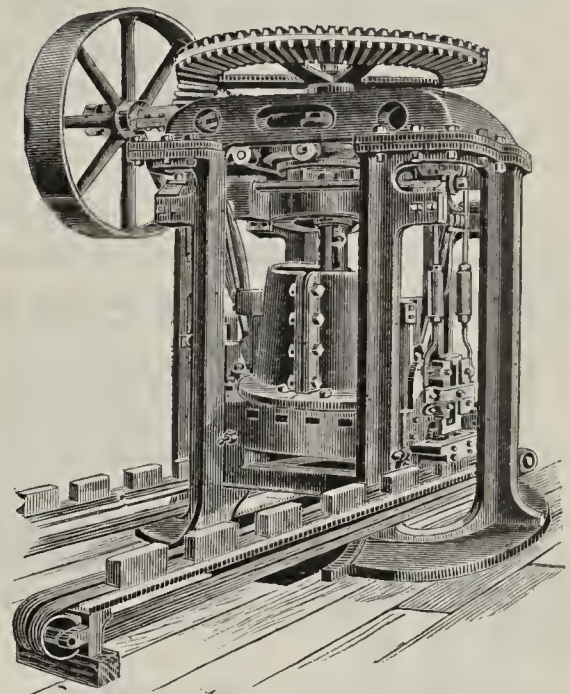
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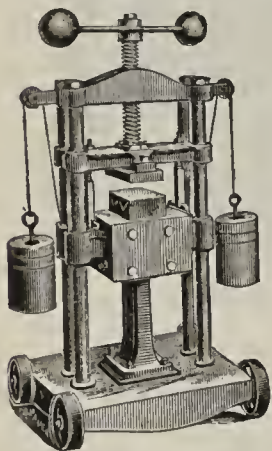


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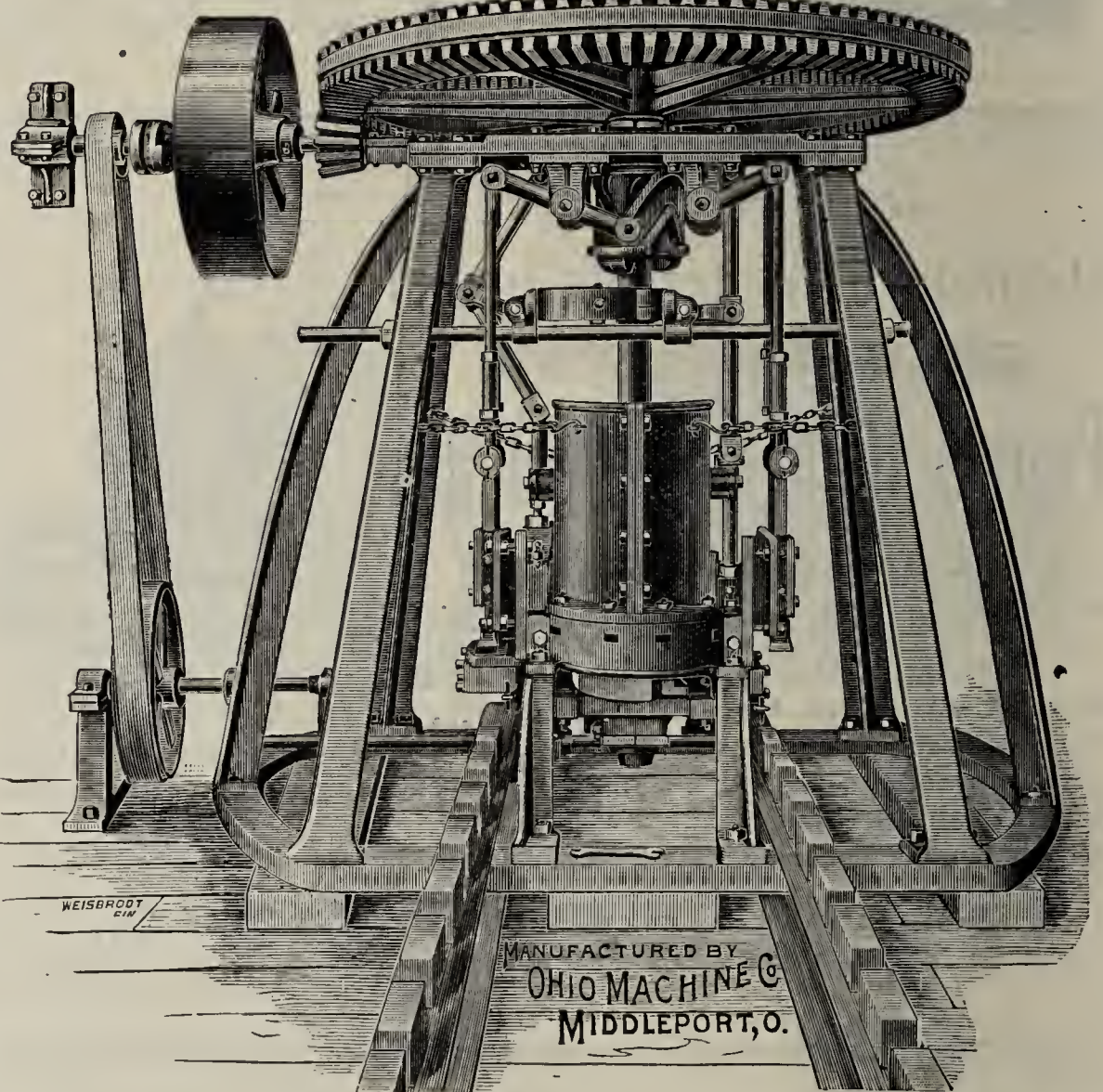
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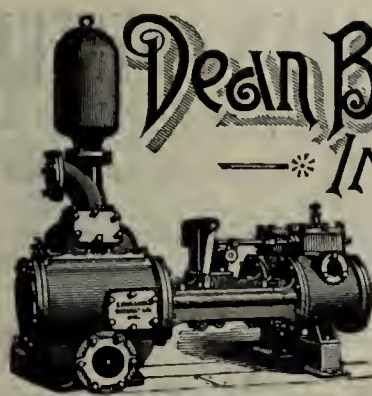
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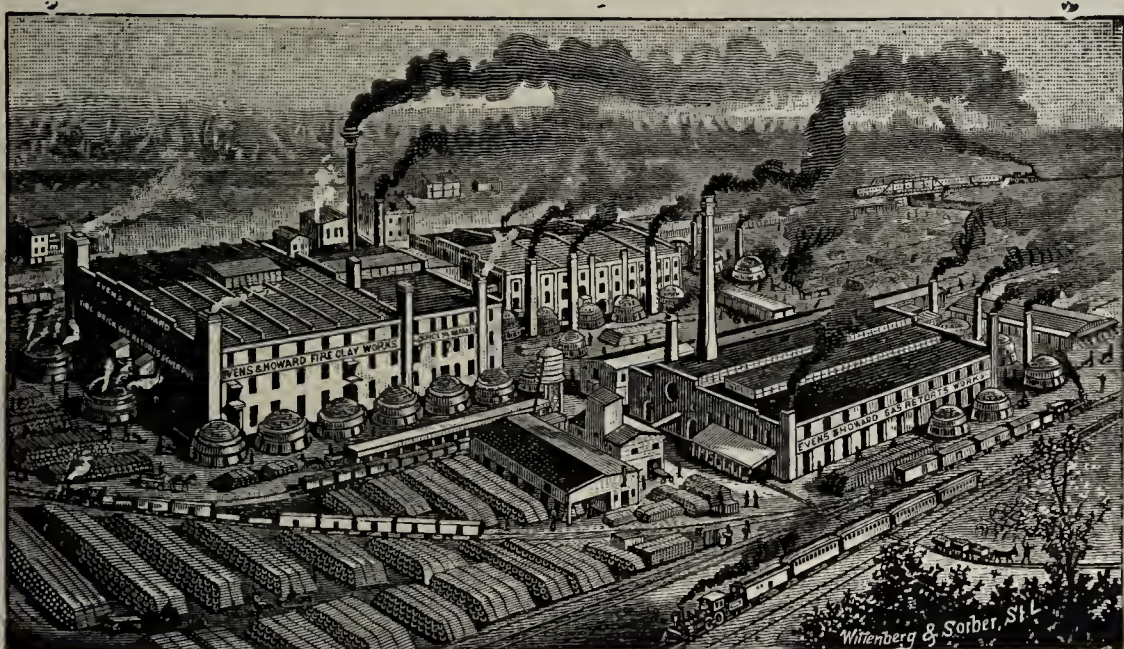
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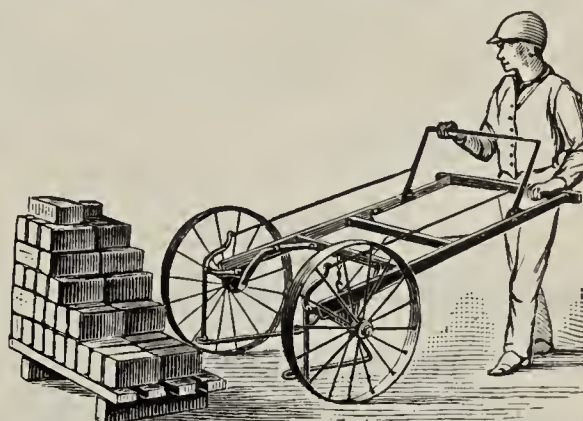
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 PIKE OPERA HOUSE (CINCINNATI,  
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 SPECIAL ATTENTION GIVEN TO  
**HALF TONE PROCESS**

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 BANK OF  
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 Indianapolis, Ind.

**STEELE'S IMPROVED**  
**Brick Truck & Portable Hack**



The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling an time in drying bricks. Can be used in any yard not too steep.

Extracts from Letters to J. C. Steele.

J. C. STEELE, ESQ.,      May 6, 1892.  
 STATESVILLE, N. C.

DEAR SIR—We have now been using your Hacking Trucks for the last month and we cannot speak too highly of them. They are perfect, and the greatest labor-saving machine ever put on a brickyard. With one man, and one of your Trucks, we take from the machine and put on the yard 25,000 bricks already hacked and ready to cover in case of rain. This is a saving of three men over the old style of using wheelbarrows. One man will also keep two setters and two tossers going with one truck. But the main thing is that the bricks do not have to be handled so much and they retain their shape so much better. We will gladly answer any enquiries concerning your Trucks who may refer to us. Respectfully Yours,  
 Florence, S. C.      COFFIN & PERRY.

MR. J. C. STEELE,  
 STATESVILLE, N. C.

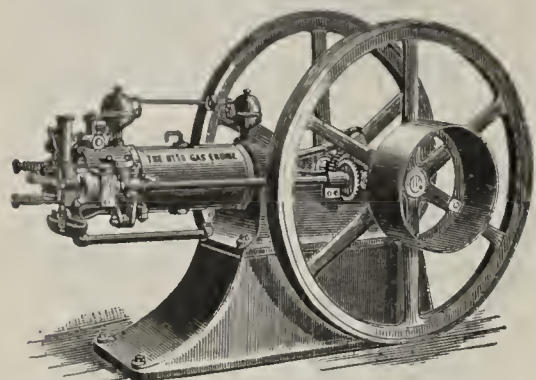
DEAR SIR—I agree with your many subscribing testimonials as to the merits of your Improved Brick Trucks. They are indispensable helpers on a brickyard. Yours Truly,  
 Monroe, N. C.      W. A. WATSON.

For further information address

**J. C. STEELE, Patentee,**  
**Statesville, N. C.**



OVER 35,000 SOLD.



## Otto Gasoline Engines.

Cheapest Power for the Trade.

NO ENGINEER. NO STEAM.  
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Starts at any time at once.

Costs only while running.

## Otto Gas Engine Works,

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## The Vandalia Line.

Is the direct and shortest route from Indianapolis to St. Louis and points in Missouri, Kansas, Texas, Colorado, California, the West and Southwest. It affords magnificent train service and superior facilities for the transportation of passengers. The physical condition of its property is fully up to the standard, making a journey over this route highly enjoyable. Prompt and sure connections are made with Western lines at St. Louis and other junction points. Trains for the West leave Indianapolis at 8:10 A. M., 10:45 A. M., 12:10 P. M. and 11:00 P. M. Arrive at St. Louis 5:15 P. M., 5:30 P. M., 7:30 P. M. and 7:00 A. M., respectively. In considering the many advantages offered by this popular route you will find it materially to your advantage to ask for, and see that you get, tickets over the Vandalia Line. Rates are always as low as by less important routes. Baggage checked through.

For detailed information regarding rates, time of trains, etc., address,

W. F. BRUNNER,  
District Passenger Agent,  
Indianapolis, Ind.

## THE ABRATED FUEL COMPANY'S SYSTEM

Gives the best oil fire. 200 plants in use. Adopted by large concerns on Terra Cotta, Brick, Pottery and Cement Kilns. Send for Catalogue to Hall Steam Pump Co, Pittsburgh, Pa.

GILBERT &amp; BARKER MFG. CO., Gen'l Agents for U. S., Springfield, Mass

## The J. R. Armstrong System

....OF....

## Burning Crude Petroleum.

The secret of burning oil successfully, lies in atomizing it and furnishing sufficient air at the right point to consume all the gases generated. The setting and equipping is therefore as important as the burner or the boiler.

## REFERENCES:

We cheerfully refer by permission to the following plants who are now using our burners to good advantage:

## STEAM PLANTS.

Gill Boiler Co., World's Fair Plant.  
Michigan Carbon Works, Detroit, Mich.  
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P. Lieber Brewing Co., Indianapolis, Ind.  
C. Maus Brewing Co., Indianapolis, Ind.  
Schmidt Brewing Co., Indianapolis, Ind.  
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Paper Mill, Defiance, Ohio.  
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## BRICK AND STEAM PLANTS.

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Wendle Brick Co., Chicago, Ill.  
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Wm. Weckler Brick Co., Chicago, Ill.  
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George Lill Brick Co., Chicago, Ill.  
Delothé Brick & Tile Co., Nappanee, Ind.  
F. E. Dickinson Brick Co., Walcottville, Ind.  
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Mace Marble, Glass & Lime Co., Menominee Falls, Wisconsin.

We are prepared to equip plants of any character. Our burners have demonstrated their superiority over all others. Send for Circular telling of the ADVANTAGES OF OIL as a fuel.

J. R. ARMSTRONG CO.,  
"The Temple," Room 616, CHICAGO, ILL.

## EAGLE BRICK MACHINE.

Steam and Horsepower.

THE BEST MACHINE IN  
THE MARKET.

The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

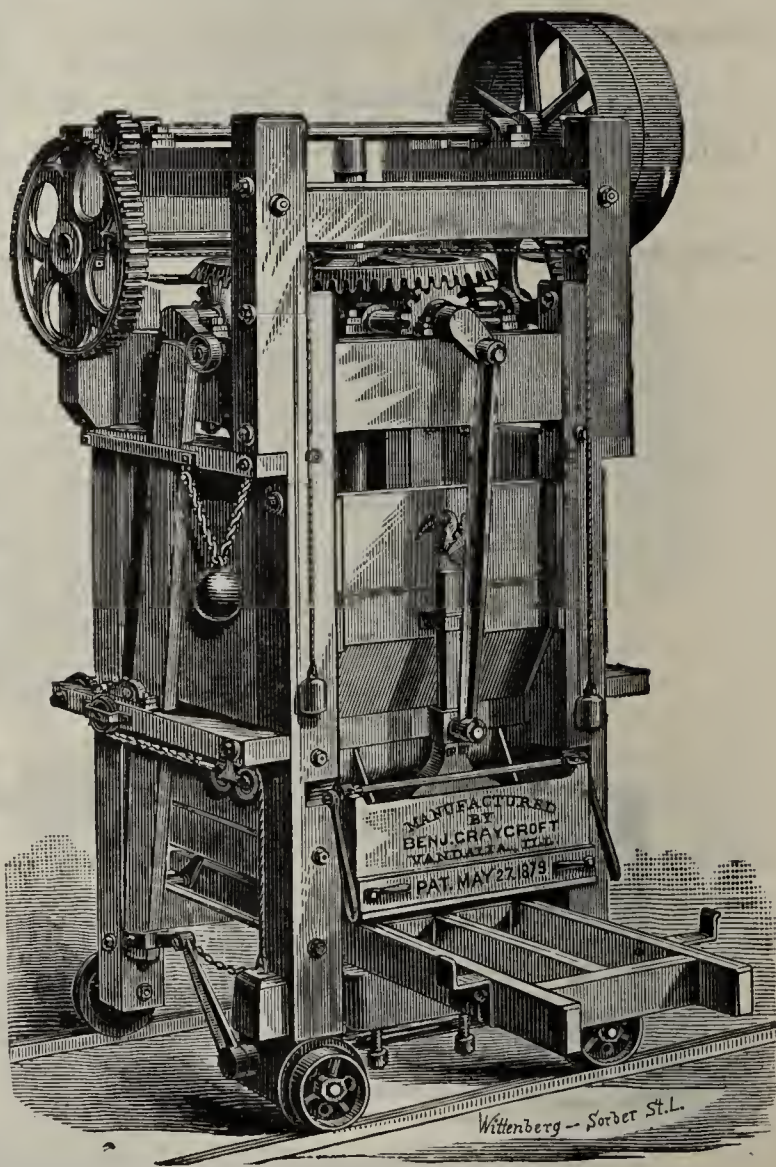
Send for Circular.

BENJ. CRAYCROFT

Manufacturer,

Vandalia, Ills.

C. J. CRAYCROFT, Fresno City,  
Cal., Gen'l Agent for Pacific Coast.



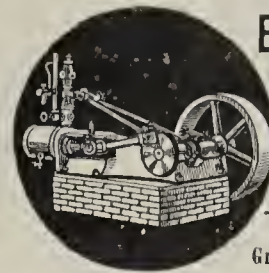




## RIGHT HAND AND LEFT HAND, 15 to 250 Horse Power EAGLE BALANCED VALVE ENGINES.

Center Crank 15 to 40 Horse-power. Complete Steam Plants. Great economy in fuel consumption. All sizes kept in stock.

**EAGLE MACHINE WORKS CO.,**  
INDIANAPOLIS, IND.



## ENGINES & BOILERS

Stationary & Semi-Portable.

8 to 25 HORSE-POWER.

High in Grade.

Low in Price.

Send for Pamphlet.

The **W. C. LEFFEL CO.**  
Greenmount Ave., Springfield, O.

## To CAPITALISTS: AND OWNERS OF CLAY BEDS, Etc.

**WILLIAM CLAYTON,**  
Potter's Chemist,

60 Butler Street, TRENTON, N. J.

**G**IVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between, New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

C. B. RYAN,  
Ass't Gen'l Pass. Agent.  
H. W. FULLER, Gen'l Pass. Agent, CINCINNATI, OHIO.  
WASHINGTON, D. C.



## LOCAL TIME TABLE

In Effect April 15, 1893,  
Solid Train Between

**Sandusky and Peoria**

—AND—  
INDIANAPOLIS and  
MICHIGAN CITY.

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

### DEPART.

|                        |             |
|------------------------|-------------|
| No. 10 Passenger.....  | 7:15 a. m.  |
| *No. 12 Passenger..... | 1:20 p. m.  |
| No. 14 Passenger.....  | 7:00 p. m.  |
| †No. 16 Express.....   | 11:10 p. m. |

### ARRIVE.

|                       |             |
|-----------------------|-------------|
| *No. 9 Passenger..... | 10:30 a. m. |
| No. 11 Passenger..... | 2:50 p. m.  |
| No. 13 Passenger..... | 6:20 p. m.  |
| †No. 17 Express.....  | 3:20 a. m.  |

Trains not marked run daily except Sunday, \*daily, †daily except Saturday.

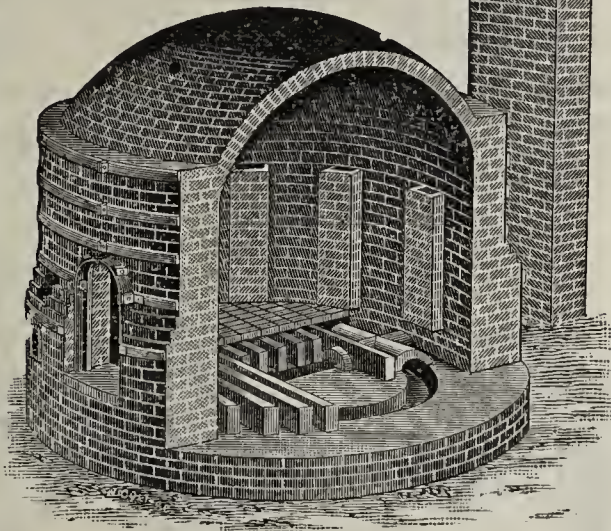
No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west. Trains Nos. 16 and 17 have elegant free reclining chair cars to all passenger making direct connection at Peru with the Wabash fast trains for Fort Wayne, Toledo, Detroit and Chicago.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass. Agt. Traffic Manager, Indianapolis, Ind.

## NEW DISCOVERY KILN.

### It Heads the Procession!

Patented April 13, 1866.  
" Nov. 17, 1891.



The New Discovery is THE KILN you are looking for if you want THE BEST KILN EXTANT for burning ALL KINDS of clay products.

ITS SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES AND SYSTEM IN USE. Those who are using it, and they are many, THINK SO TOO.

If you will investigate and learn what the NEW DISCOVERY CAN DO you will be WITH US.

This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The New Discovery has PROGRESSED and is still at it.

I don't KNOW IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

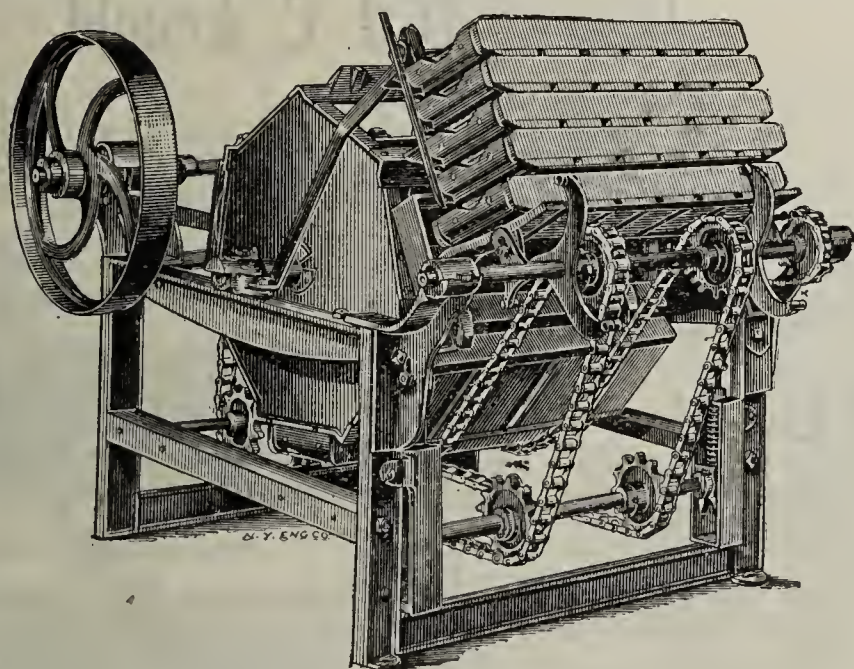
For circulars, address,

**E. M. PIKE, Chenoa, Ills.**

## J. A. BUCK'S NEW CHAMPION BRICK MOULD

### ✠Sanding Machine.✠

J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton, to Letters Patent for said machine.



The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing and being much more simple and durable.

Several of the machines have been in use the past season, giving the best of satisfaction. Address all communications to

**J. A. BUCK,**

No. 76 Oneida Street,

COHOES, N. Y.



## Steubenville Foundry & Machine Works,

Established in 1820.

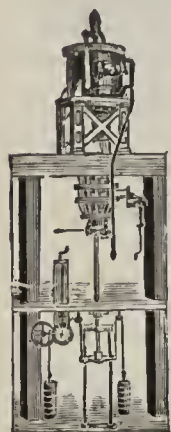
—Manufacturers of—

### STEAM SEWER PIPE PRESSES

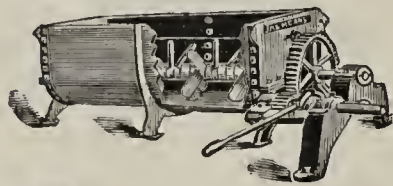
OF DIFFERENT SIZES,  
Making From 2 to 30-Inch  
Pipe Inclusive.

Pipe, Brick, Tile, Coping,  
Fire Proofing, and  
Building Block Dies.

Clay Grinding and Tempering  
Pans and Pug Mills.



FEED  
SCREWS  
FOR  
MINING  
CLAY.



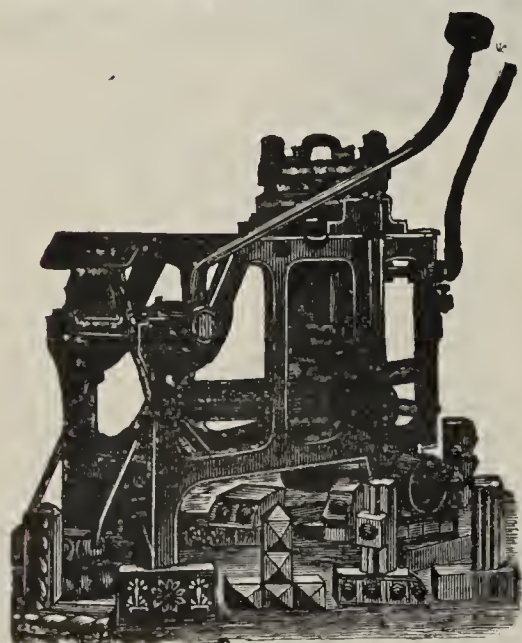
STEAM —  
— ENGINES  
— AND —

Every Variety of Iron and Brass Castings  
Shafting and Pulleys.

Send for Circulars and Estimates.

**JAS. MEANS & CO.,**  
Steubenville, Ohio.

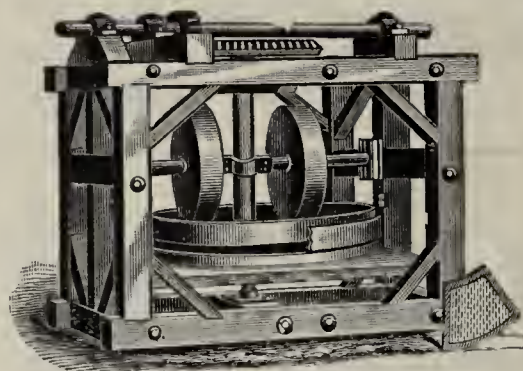
## N. M. KUENY, MANUFACTURER OF Brick Presses



Cor. 21st and Point Breeze Avenue,  
PHILADELPHIA.

Mention the Clay-Worker  
When writing to Advertisers  
Mention the Clay-Worker

## EAGLE IRON WORKS, DES MOINES, IOWA.



FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.

ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

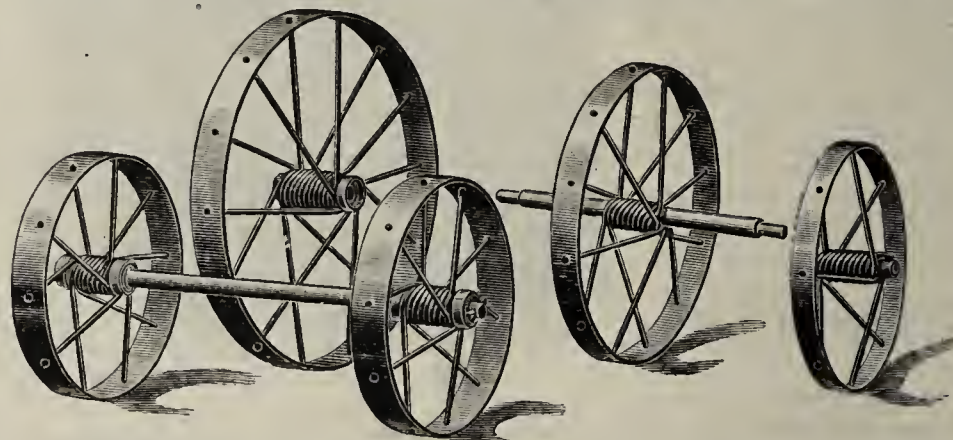
Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold  
Wheels." Circulars and prices sent on application. Address,  
**THE ARNOLD METAL WHEEL CO., New London, O.**

Headquarters for Brickyard Supplies in 1893 will be at the  
same place it was in 1892, at

**New London, Ohio,**  
**ADDRESS. D. J. C. Arnold.**

Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all  
of the very best quality. Besides these he has Revolving Dumping Tables (all  
iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and  
Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Com-  
plete outfits for round down draft kilns.

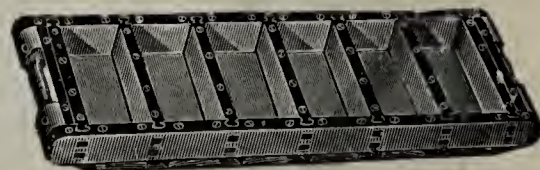
## MOULDS.



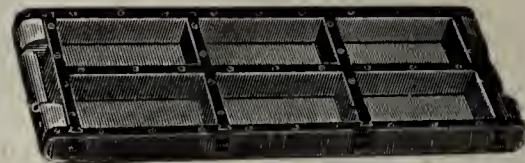
**See!** You can  
buy them  
for less money now than ever  
before. Prices reduced but the  
standard of quality is main-  
tained. Order now for future  
delivery. Satisfaction guaran-  
teed. Standard sizes carried  
in stock.

Some odd sizes at about  
half price. Send for list.

B. MACHINE MOULD.



C B. HAND MOULD.



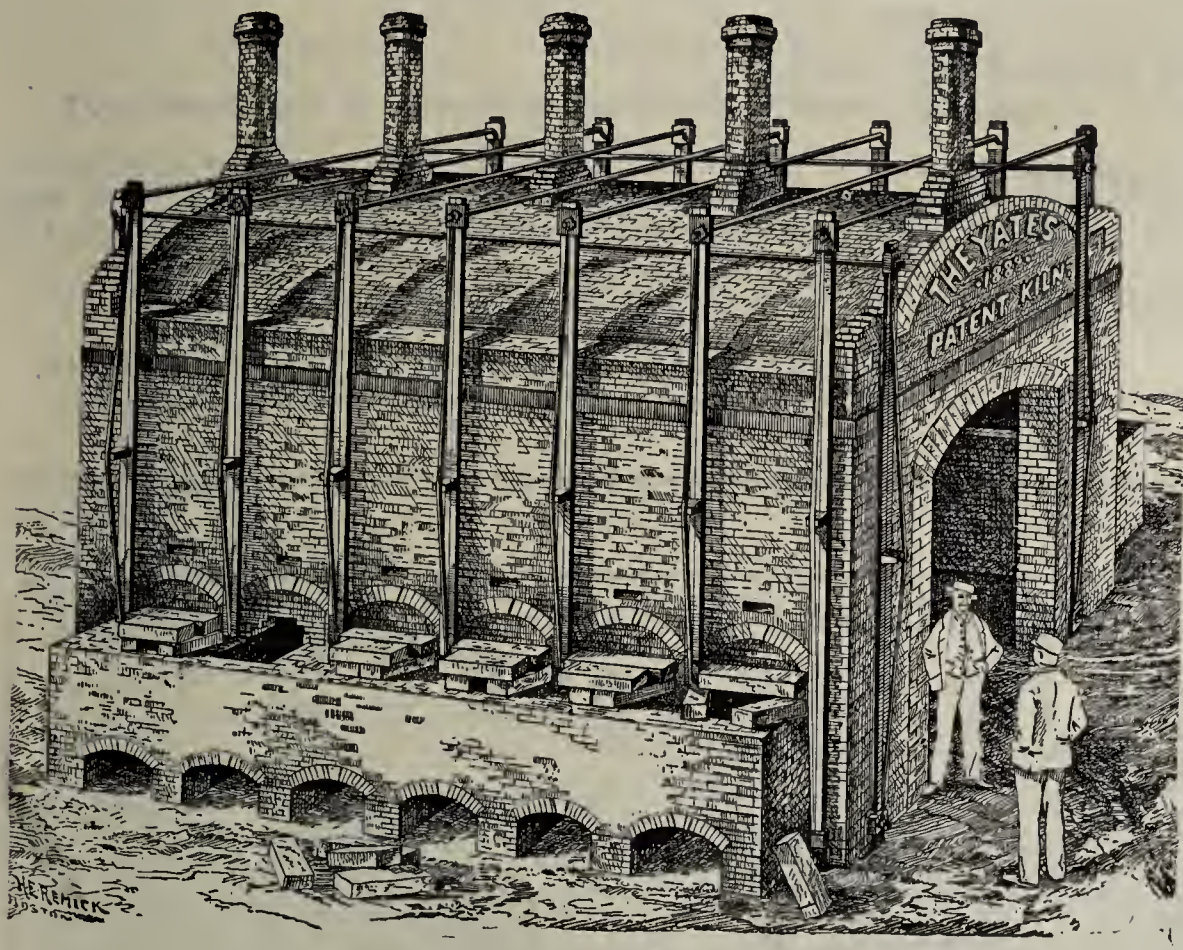
D B. HAND MOULD.





# THE YATES IMPROVED DOWN DRAFT KILN

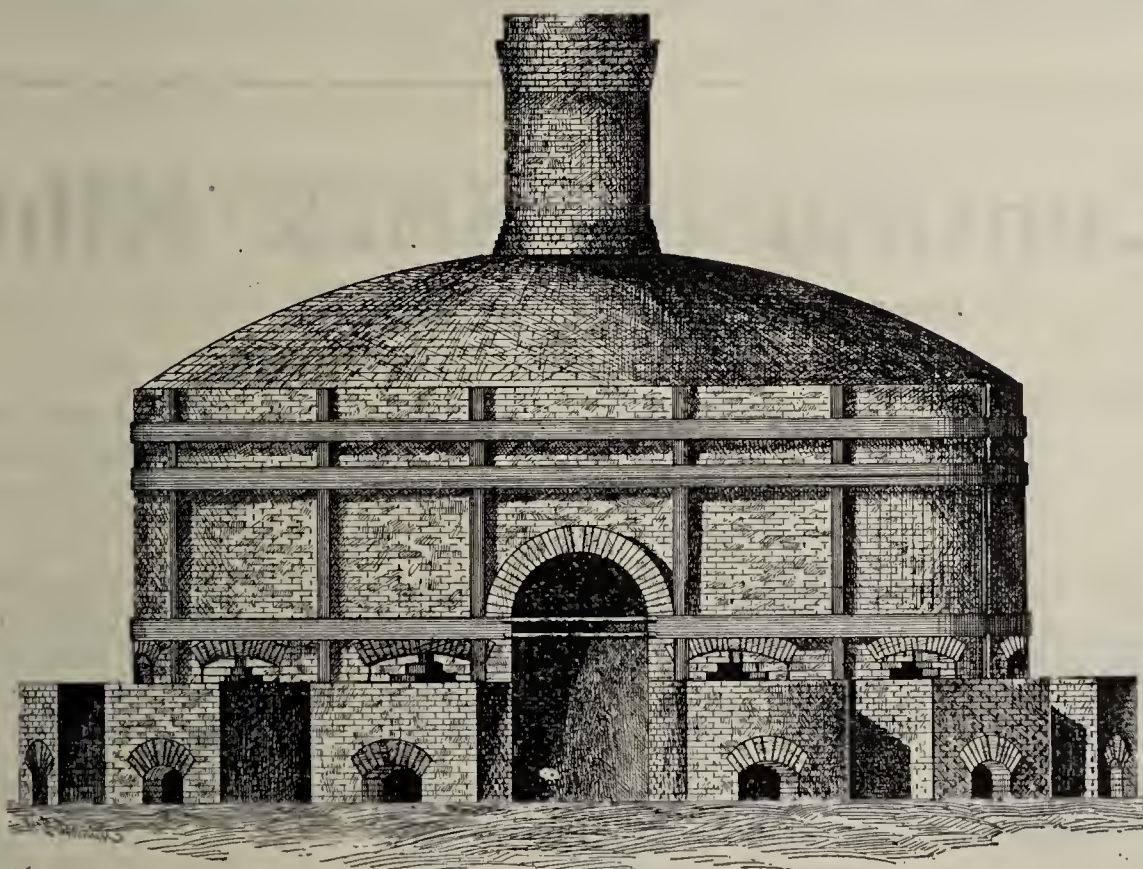
FOR BURNING BRICK OF ALL KINDS.



FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty.

❖ WE STAND ON OUR MERITS. ❖



**ALFRED YATES,**

Write for full description. NORTH CAMBRIDGE, MASS.

## COLORIFIC.

For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of  
WESTBROOK & WELLS,  
Ogdensburg, N. Y.

46 d.

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## THE SHORT LINE TO CHICAGO

Milwaukee, St. Paul, Minneapolis,  
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The only line running Solid Pullman Perfected Safety Vestibuled Trains.  
The only line running Dining Cars between Indianapolis and Chicago.

Magnificent Pullman Sleeping and Parlor Cars  
For rates, maps, time tables, etc., apply to

**I. D. BALDWIN, D. P. A.,**

No. 26 S. Illinois St., Indianapolis, Ind

**JAS BARKER, G. P. A.,** Chicago.



THE  
PULLMAN CAR  
LINE  
Between  
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The Favorite and Best Line

With DINING CAR between

**CHICAGO and CINCINNATI.**

**ST. LOUIS and CINCINNATI**

Best Line to Cincinnati, Dayton, Lima  
Toledo, Detroit and Canada.

Through Cars Line between DECATUR  
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KUK and CINCINNATI.

Pullman Sleepers on Night Trains and Palace  
Parlor Cars on day train

Direct Connections without Transfer

IN **CINCINNATI** FOR

Points in Kentucky, Tennessee, Alabama  
Florida and the South, Washington, Phila-  
delphia New York and Points East.

Ask for tickets and see that they read via  
C.H. & D. On sale at all stations.

**H. J. RHEIN, General Agent.**

Indianapolis.

**M. D. WOODFORD, E. O. McCORMICK**

President. Gen. Pass. Agt.  
Cincinnati, Ohio.



# THE ARNOLD CLAY STEAMER.

==PREPARE YOUR CLAY PROPERLY.==

Do You use a Dry or Semi-Dry Press Brick Machine?

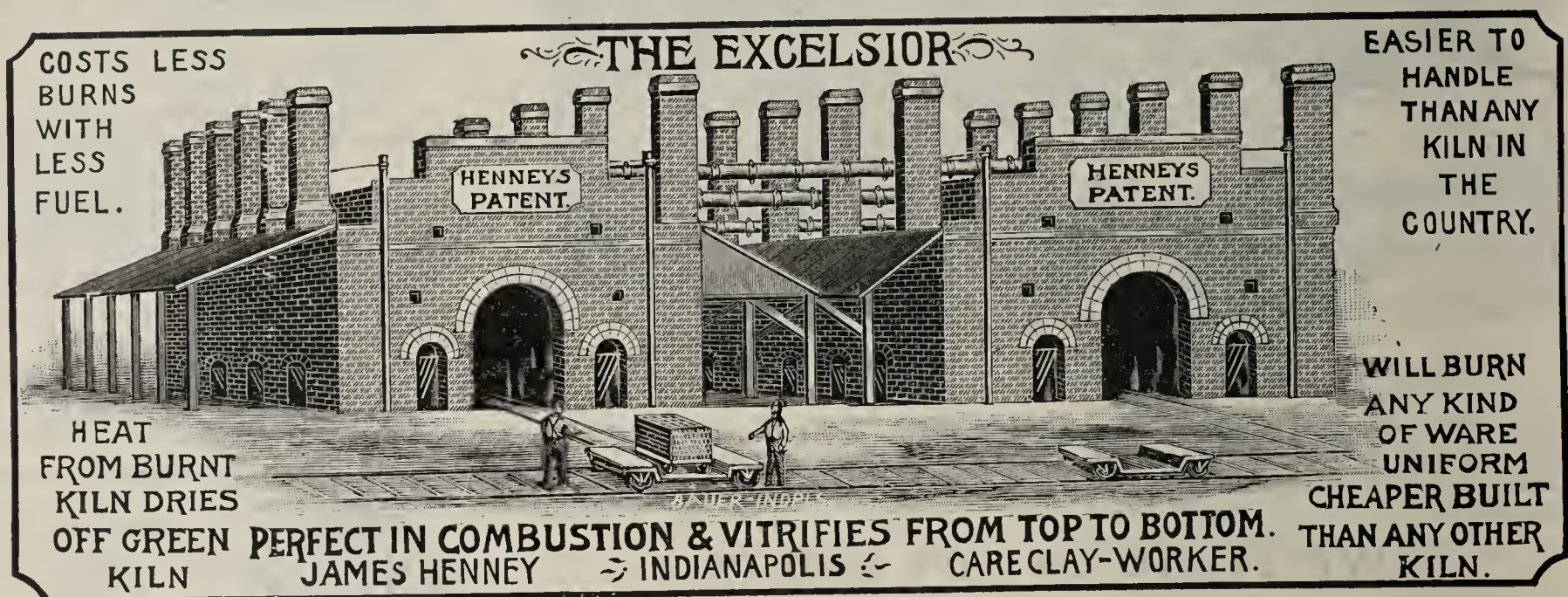
Are Your Results Entirely Satisfactory?

## The Arnold Clay Steamer

prepares the ground clay to any degree of moisture required, furnishes a regular, automatic feed to the machine, makes brick dense and compact, insures a perfect bond and smooth, unchecked surface, saves one-third in grinding, and results from kiln show the minimum per cent. in breakage.

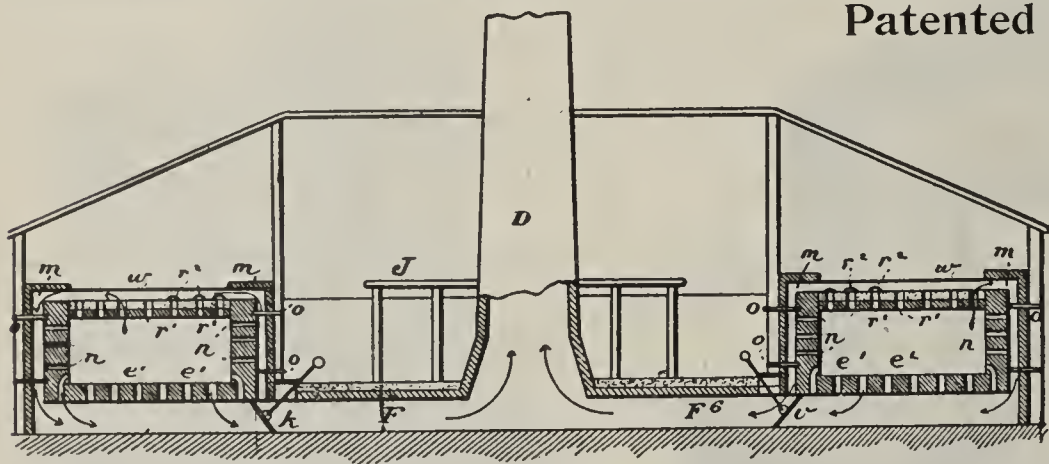
THE ARNOLD CLAY STEAMER is in successful use in connection with the dry press machine.  
For particulars and terms address

*P. ARNOLD, Canal Dover, Ohio.*



# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

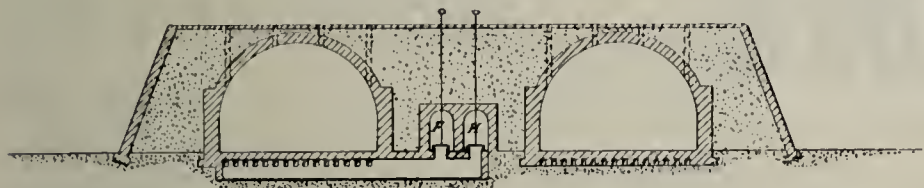
I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

**CARL F. KAUL, Madison, Neb.**

[Mention the Clay-Worker.]



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



Office of SAN JOSE BRICK CO.  
SAN JOSE, Cal., Feb. 11, 1893.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR: In reply to yours of the 13th inst, will say that the Continuous Kiln you erected for us last winter is giving us great satisfaction, having turned out all good brick on the first round, something we did not look for. We are now shutting down our B-ke kiln and contemplate applying your improvements on it. Please forward estimate cost of same if it can be done. We will give you statement in regard to fuel consumption of new kiln later.

Yours very truly,

D. CORKERY, Manager.

**SIMPLICITY, DURABILITY and the highest EFFICIENCY**  
Are the Characteristics of this Kiln.

It has taken the lead and will remain there. Burns all kinds of brick more uniform and economical than any other kiln. I mean what I say and am prepared to erect kilns under the highest guarantee, covering the entire cost of kiln. Its superior work is due to the peculiar features which are the result of a careful and systematic consideration of the continuous system of burning.

Competitors are warned from using my inventions as I will protect my claims at all hazards.

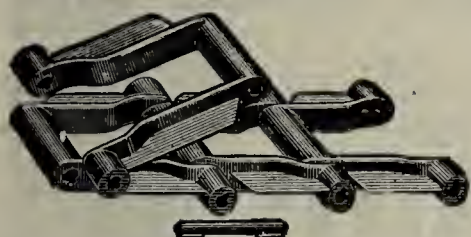
Applications for unpatented portions of my improvements now pending.

All first-class plants will soon be compelled to adopt the continuous method of burning, so it is no use spending good money for poor kilns, but get the best at once. It does not require a millionaire to own one of my kilns as my large experience in building these kilns has enabled me to reduce the cost of same down to an exceedingly low figure.

Write for description and estimate, cost of kilns for your capacity.

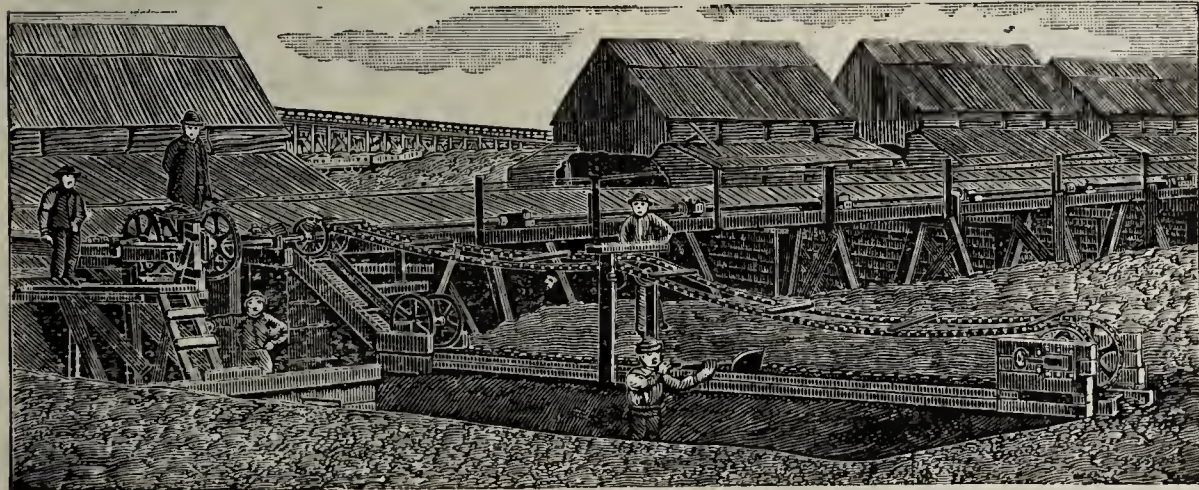
Address communications to

**P. L. YOUNGREN, Oakland, Cal.**



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

**Elevating, Conveying & Transmission of Power**

64 to 68 Columbia St., BUFFALO, N. Y.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



## A LONG FELT WANT SUPPLIED.

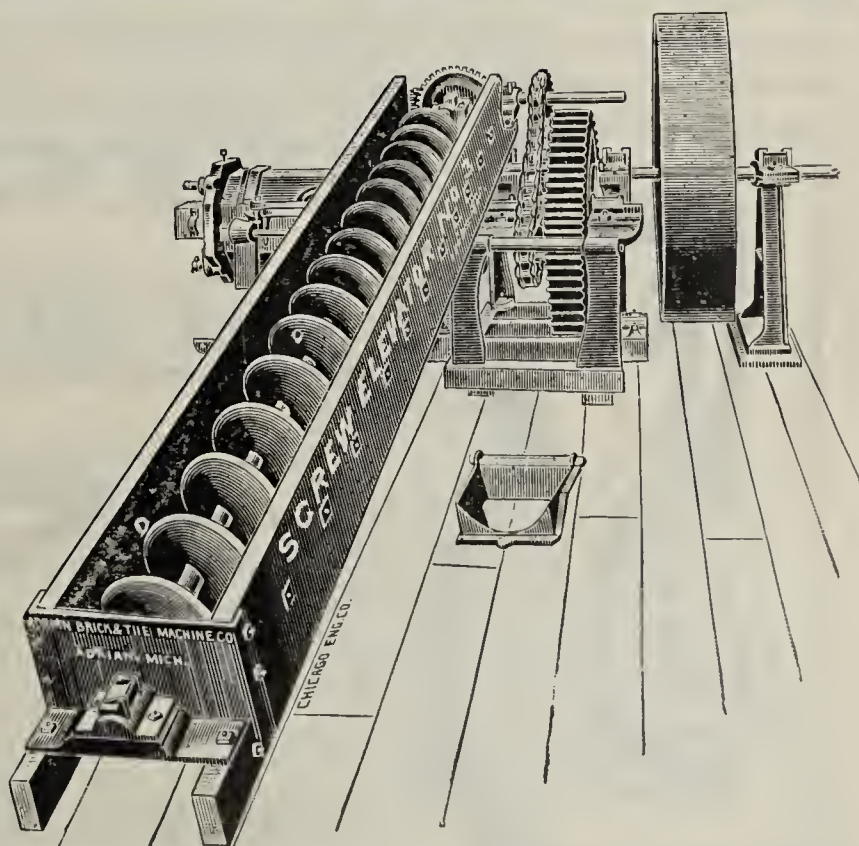
A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

ADRIAN. - - MICHIGAN.





# BRICK MOLD LINERS.

Do YOU know that...

**BRANCH-CROOKES SAW CO.,**

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

**Branch-Crookes Saw Co.,**  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

**A. M. & W. H. WILES,**  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



**BRICK**

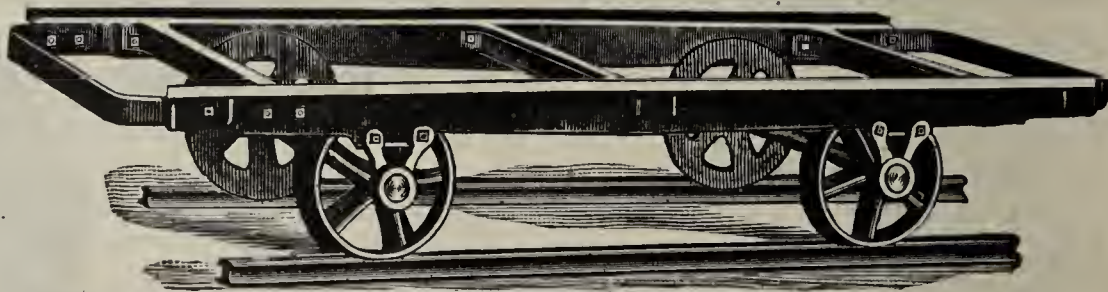
**48 Styles.**

Also  
Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



**CARS**

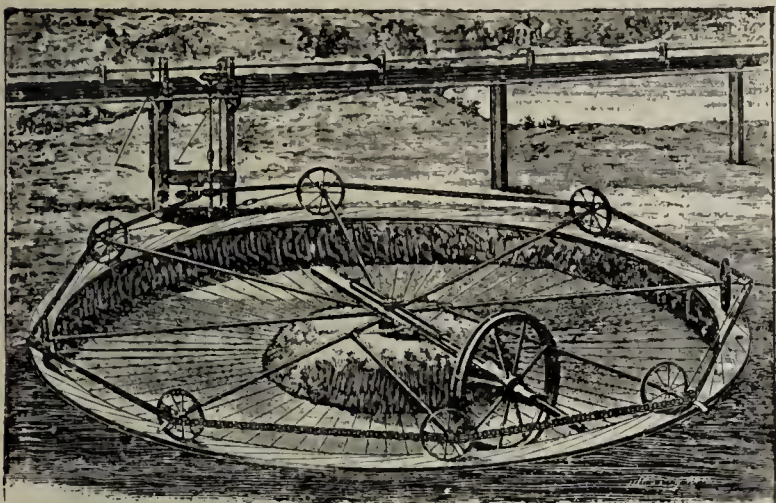
Send For Price List.



STYLE 28.

**THE WALWORTH RUN FOUNDRY & MFG. CO.,**  
Cleveland, O.



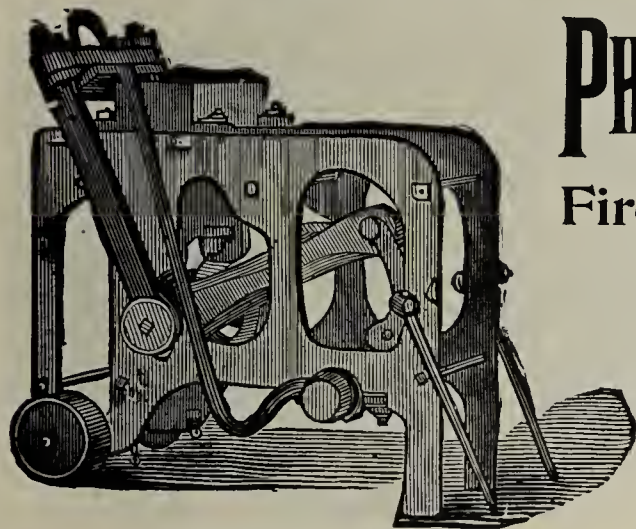


# DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,  
Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

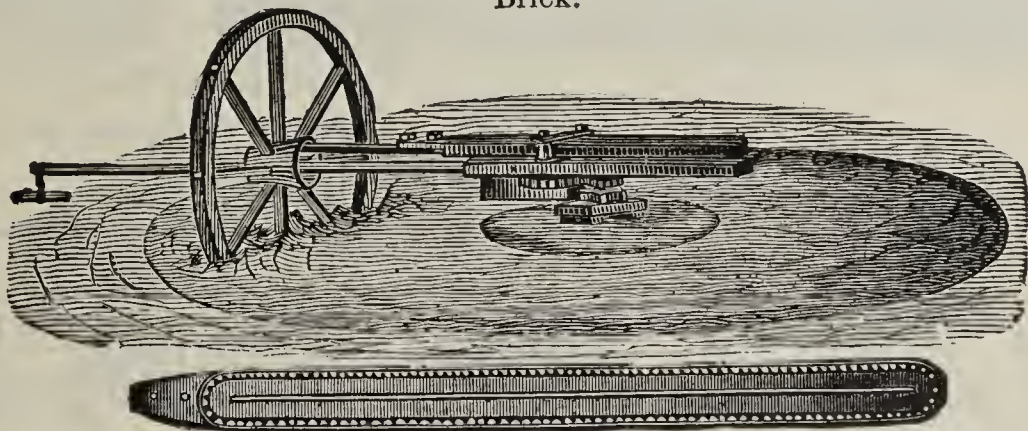
Send for Circular and Price-List.

# PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

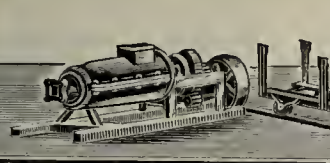
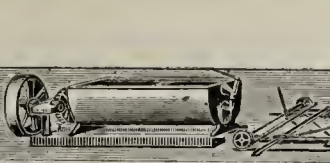
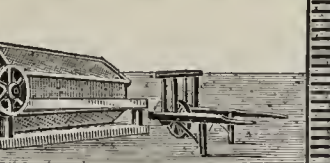
....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red  
Brick.

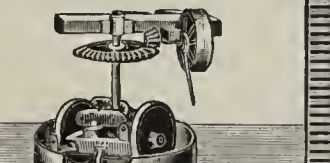


These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

THE BONNOT COMPANY  
CANTON, OHIO.









BRICK  
&  
POTTERY  
PLANTS  
EQUIPPED  
COMPLETE  
READY FOR  
OPERATION  
UNDER  
ONE CONTRACT

H.E. VOTAW  
CANTON, OHIO.





J. A. SMITH, NEW CUMBERLAND, W. VA.,

MINER AND SHIPPER OF

# WEST VIRGINIA CLAYS.

In bulk or barrel, ground or unground, flake or dust. Correspondence solicited with Manufacturers desiring color and form in high grade building bricks.

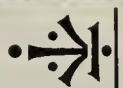
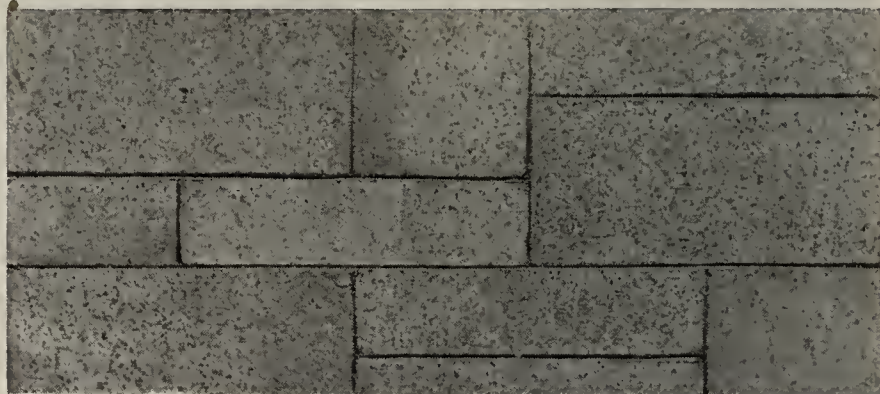
## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.



TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.

## Your Attention, Please, Regarding CLAY DISINTEGRATORS!

SINCE WE CAN PROVE WHAT WE CLAIM  
LET US STATE SOME HARD FACTS.....

That the "Creager" Disintegrators are being adopted by the best known manufacturers because of their correct scientific principles—excellent mechanical construction—generous capacity and great durability. These machines are perfectly balanced, are arranged to drive with one or two belts and can be regulated to any condition of material. They will and are grinding wet clay and mud with equal rapidity. The **Cutting Bars** are hard and tough, have one and one-half inches wearing surface, being quickly and easily set out (as to the truth of this last item we refer to those who have been using the machines for the past three years). Blue prints, cuts and specifications of the various sizes will be furnished on application.

Kindly allow us to submit some letters from those who have thoroughly tried their merits.

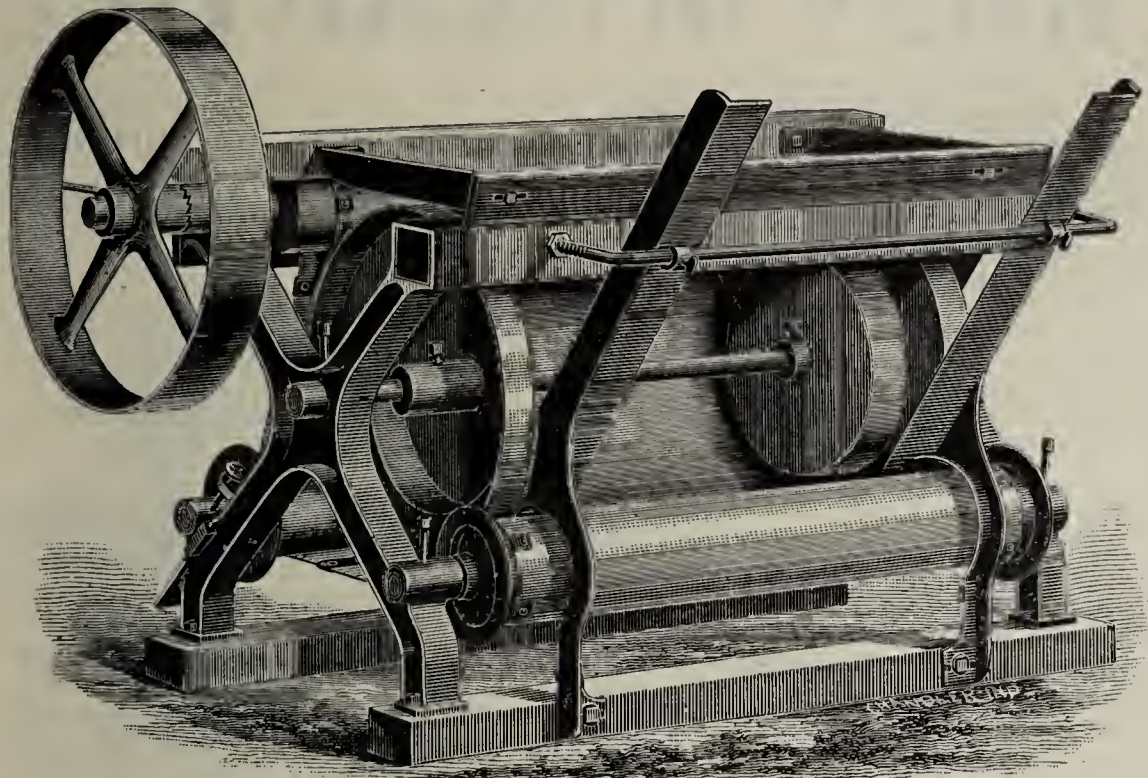
Jonathan Creager's Sons,

Sole Manufacturers,

CINCINNATI, OHIO.



# The POTTS MOULD SANDER



PATENTED FEBRUARY 5, 1889.

Is the only machine made that will sand the moulds better than can be done by hand; at the same time

---

**SAVE LABOR AND SAND.**

---

It has no light complicated parts to wear or break, no place for the moulds to catch and cause delays.

It does not waste or spill the sand. It is easily and quickly adjusted to any size mould. It is simple, strong and durable. We guarantee it to do as claimed and ship on trial.

Write for prices to

**C. & A. POTTS & CO., Indianapolis, Ind.**



## "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

### MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for  
Leather, Rubber and Canvas Belting.**

**No user of Belting can afford to be without it.**





# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

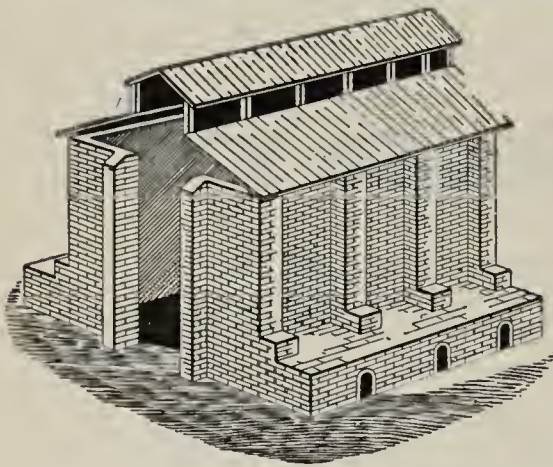
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOI

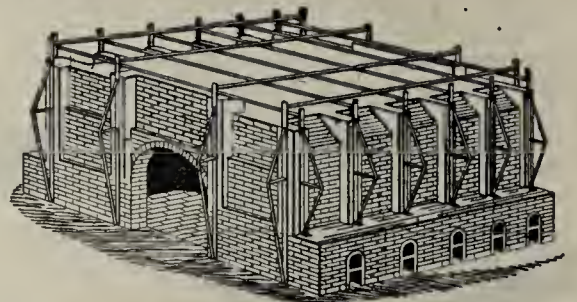


The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ VITRIFIED PAVING BRICK. ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

## TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,  
DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.  
Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.  
DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.  
Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

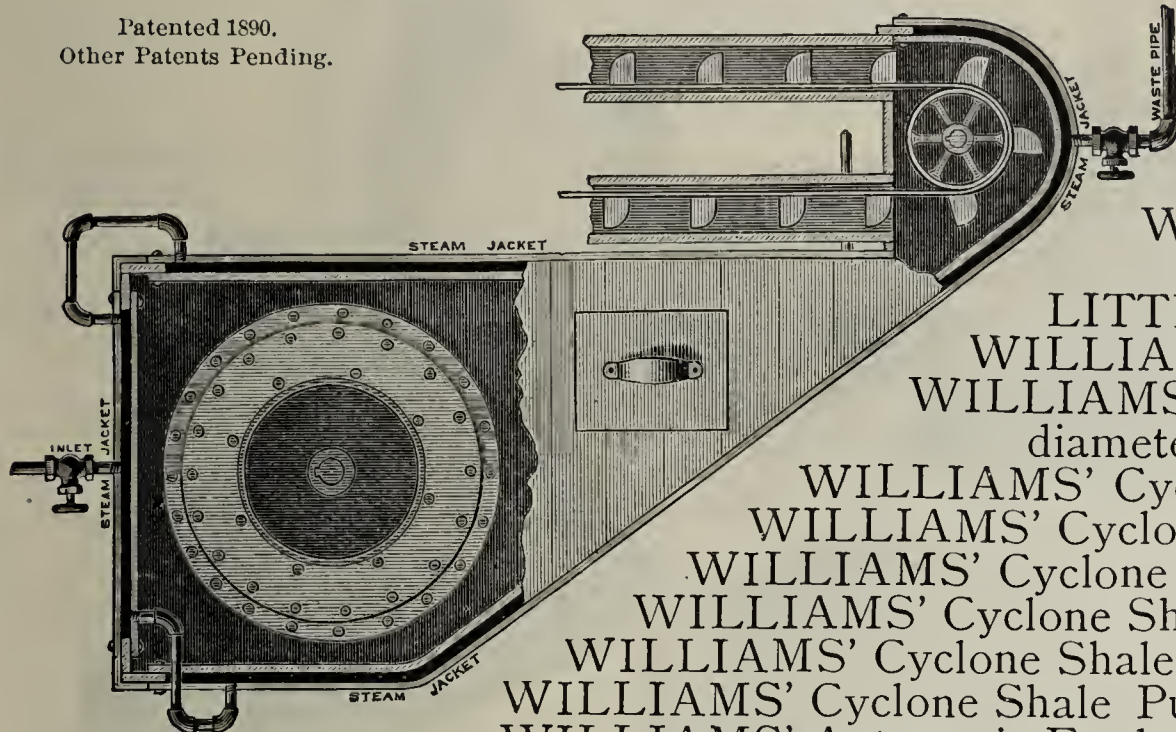
1,913 Indiana Ave.

KANSAS CITY, MO.



# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**



TARKIO,  
Mo.

#### OFFICERS :

DAVID RANKIN, PRESIDENT. JOSEPH CONLEY, VICE PRESIDENT,  
TARKIO, MO. ST. JOSEPH, MO.

W.F. RANKIN, SECRETARY, J.M. WOLFE, TREASURER,  
TARKIO, MO. TARKIO, MO.

H.J. BOWEN, GEN'L MANAGER, W.O. MILLER, ASS'T MGR.,  
ST. JOSEPH, MO. ST. JOSEPH, MO.

#### PATENTS :

No 477,993, JUNE 28, 1892.

No 477,994, JUNE 28, 1892.

No 487,174, NOV. 29, 1892.

No 491,037, JAN. 31, 1893.

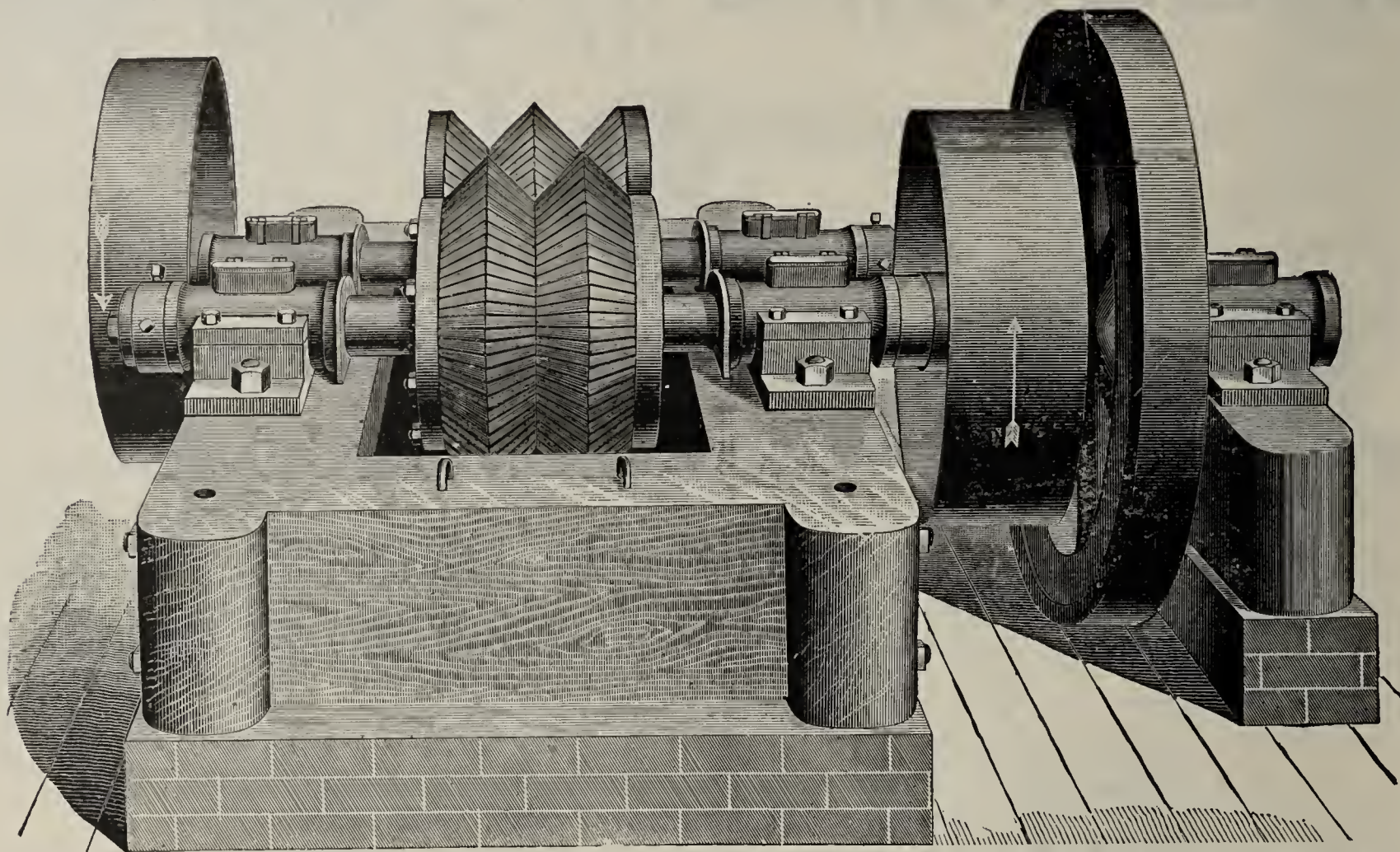
No 491,038, JAN. 31, 1893.

THIS kiln is cheap to construct, simple in operation and permanent in character. It has no crown to fall in, or braces to keep in repair. The dampers in the bottom give you complete control of the draft. You can burn your brick evenly and thoroughly. It heats the brick gradually and cools them the same way, producing a tough and thoroughly ANNEALED brick. It requires less than 200 lbs. slack per M. to make the very best vitrified shale paving brick. One man can fire the largest sized kiln. The slack is converted into gas and ALL the heat energy of the coal is utilized. It is a smoke consumer and a profit producer. Please write our General Manager at once for full information.



# NEWELL IMPROVED CLAY PULVERIZER

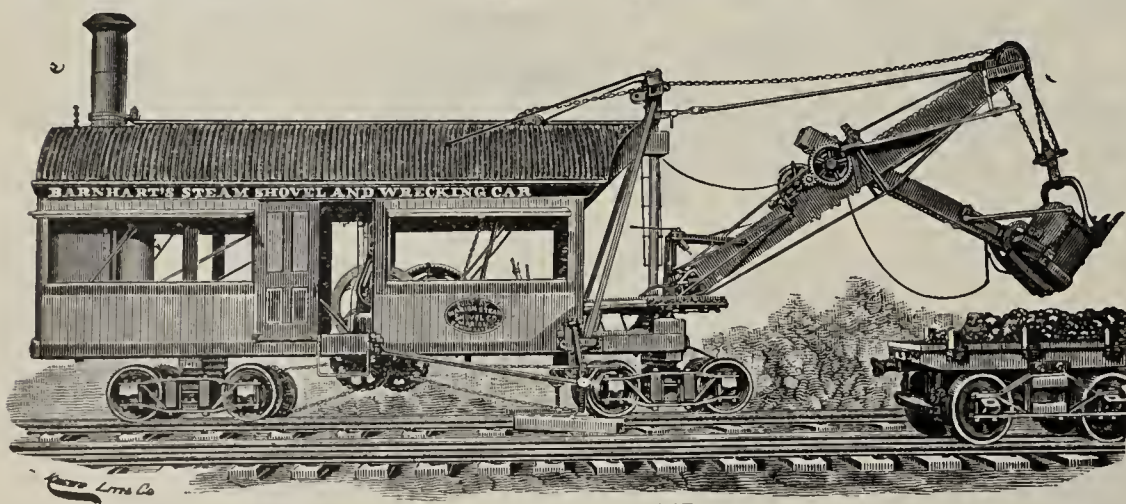
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A-1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION. OHIO.**

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C-¾ YD



If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

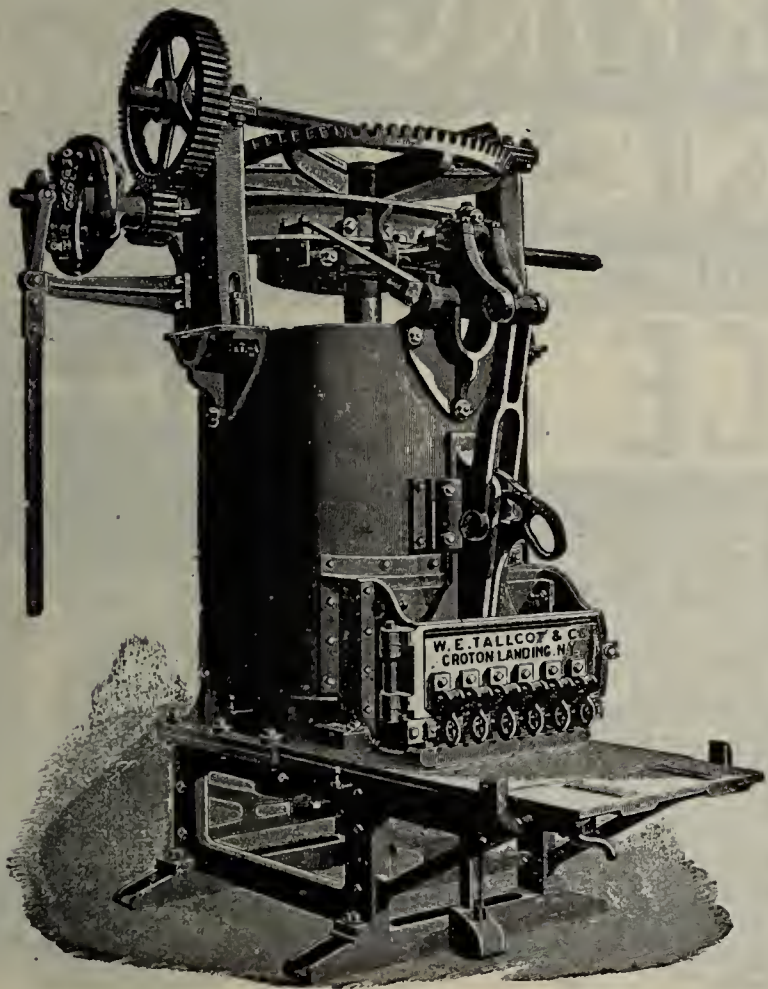
**Jonathan Creager's Sons,**

127 W. SECOND STREET,

**Cincinnati, Ohio.**

P. S. If you do not ask we cannot tell you of several very important improvements.

## The "I. X. L." Brick Machine. A Modern Type of Machine.



Extra Strong,  
Handy to Operate,  
Large Tempering and  
Pressing Capacity.

Made in two sizes:

The "Standard" for ordinary brick.

The "Special" for large brick.

Especially Adapted For

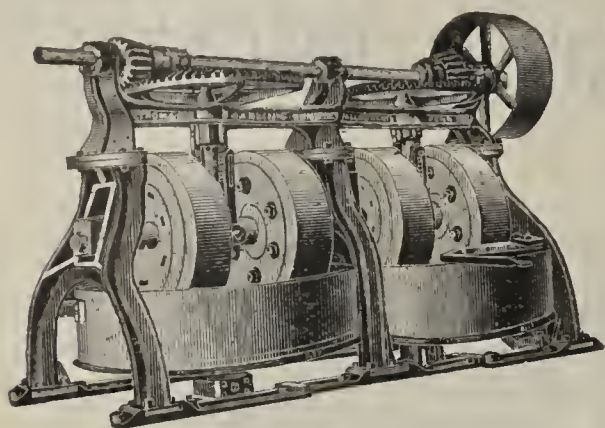
**PALLET BRICK WORK.**

Write for Illustrated Catalogue, stating size of brick to be made and if wanted for pallet work.

**W. E. Tallcot & Co.,**

**CROTON-ON-HUDSON, - NEW YORK.**





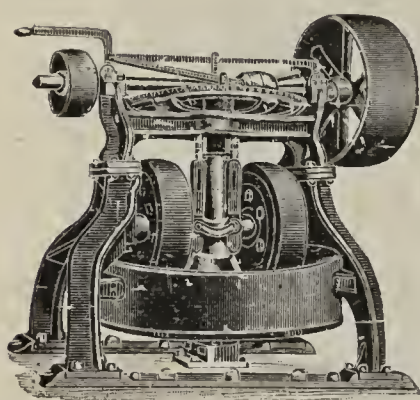
OUR SPECIALTY.

# GRINDING AND MIXING PANS

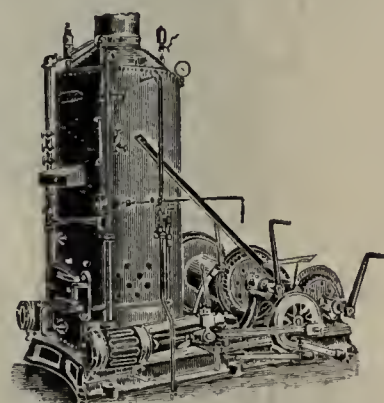
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF  
 IMPROVED

# CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

## TAPLIN RICE & CO.

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

# AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



## Waplington's Regenerative Gas Furnaces

Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of **Pottery and Fire Bricks**, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

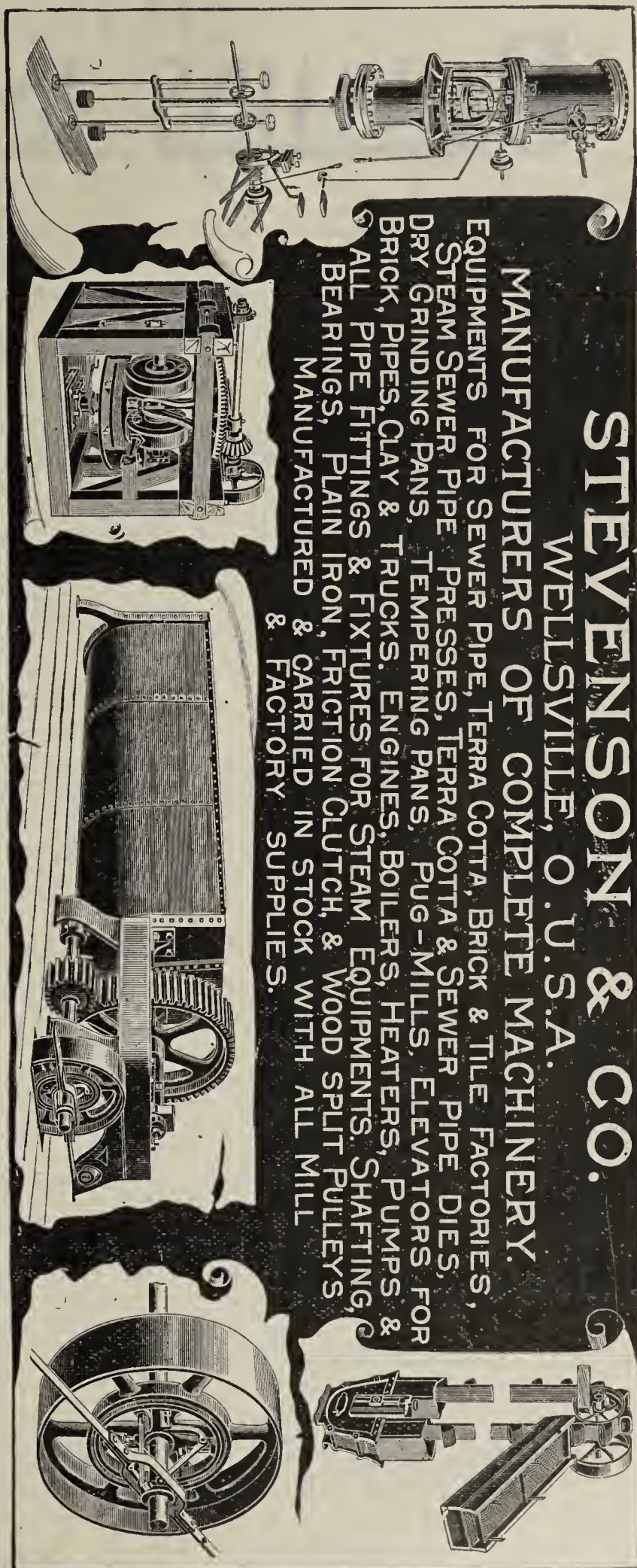
Estimates, specifications and plans on reasonable terms. Plants contracted for on approval to good, responsible parties. Sets of blue prints, 25 cents per set, showing the application of gas to any of the above mentioned purposes.

Send stamp for pamphlet "**Natural versus Artificial Gas.**"

Address,

**WILLIAM WAPLINGTON,**

Westminster Ave., PHILADELPHIA, PA.



**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



# **BARGAINS IN MACHINERY.**



Owing to disagreement of partners I have been appointed Receiver of the well-known firm of Nolan, Madden & Co., and in order to get a settlement at once, that the business may be continued with as little interference as possible, I will offer for sale **AT A GREAT REDUCTION IN PRICE** all the **BRICK AND TILE MACHINERY** and **BRICKYARD SUPPLIES** now on hand which includes steam and horse-power Brick Machines, Auger and Plunge Tile Machines, Clay Crushers, Disintegrators, Endless-Belt Cut-off Tables, Side-Cut Board Delivery Tables, Side and End-Cut Lubricating Dies, and Side and End-Cut Solid Dies, Brick Moulds, Grate Bars, and all kinds of Brickyard Supplies, and a full line of repairs for all their machinery.

For prices, etc., address,

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

The business will be continued and patrons will be furnished repairs and supplies promptly as heretofore.

❖ **RUSHVILLE, IND.**

SEE LIST OF MACHINERY ON FOLLOWING PAGE.



# NOLAN & MADDEN'S RECEIVER'S SALE.

The Following Machinery Now on Hand  
.... Must be Sold at Once:

Six No. 1 Steam Power soft clay Brick Machines.

Five No. 2 Horse Power soft clay Brick Machines.

Ten No. 6-B. Stiff clay Auger Machines for Brick or Tile.

Ten No. 5-B. " " " " " " " "

☞ The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut, any and all of which will be sold at unheard-of prices.

In addition to the above new and improved machinery, we have a large line of second-hand brick and tile machinery that will be sold **very cheap.**

If you want anything in the line of clay machinery or supplies write at once for prices.

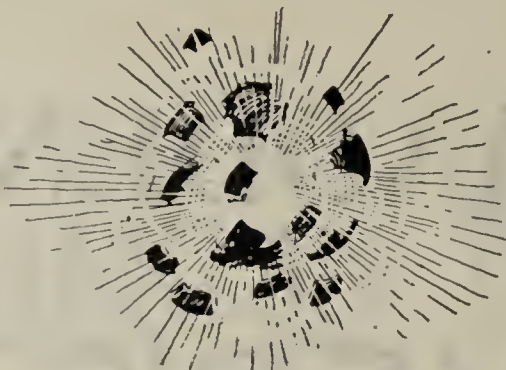
## JNO. F. SCANLAN, RECEIVER,

For NOLAN, MADDEN & CO.,

RUSHVILLE, . . . . . INDIANA.



THE LATEST

FROM BERLIN, CONN.

*All Clays passed through a Disintegrator which Separates and Throws out all Stones.*

OFFICE OF

Berlin Brick Company,

MANUFACTURERS OF AND DEALERS IN FINEST QUALITY OF

Pallet Face, Pallet Building and Pallet Sewer Brick.

Berlin, Conn., April 18, 1893.

MESSRS. C. &amp; A. POTTS &amp; Co., Indianapolis, Ind.

GENTLEMEN—In reply to your letter of recent date in which you ask us to state fairly our experience with the No. 3 "A" Disintegrator which we purchased of you in May 1889, we will say that the same was purchased on condition subject to trial and approval, and after a thorough and complete test, in which its capacity, strength and economy in running were fully demonstrated, we accepted and paid for the same. We have operated it almost constantly in our brick works during the four consecutive years since, and are pleased to be able to report that our entire experience with the Disintegrator has been eminently satisfactory. Although our average speed is 42,500 brick per day, still we have operated it at 65,000 per day for an entire day, which, considering the tough, tenacious quality of our clay, requires a machine of unquestionable strength and capacity with a minimum amount of friction, and at all times we have found this Disintegrator fully up to the requirements. It has caused us no delays and the expense for repairs has been practically nothing—except for parts actually worn out with hard work. During its phenomenally successful run of over four consecutive years, it has exceeded under trying conditions our most ardent anticipations. Wishing you continued success, we remain,

Very truly yours,

BERLIN BRICK CO.  
Per W.

The above letter is an honest expression and not one given as part payment for Disintegrator furnished.

REMEMBER the machine which has done this wonderful work is our No. 3 A. for which we claim only a capacity of 45 M. Brick. You will find every machine to do all and more than claimed for them.

They are simple in construction having no gear to rattle or break.

The bolts which hold the steel bars in place are not exposed on surface of the roll, which causes them to wear, so that in a short time you have to take the roll to the shop to have the bolts removed.

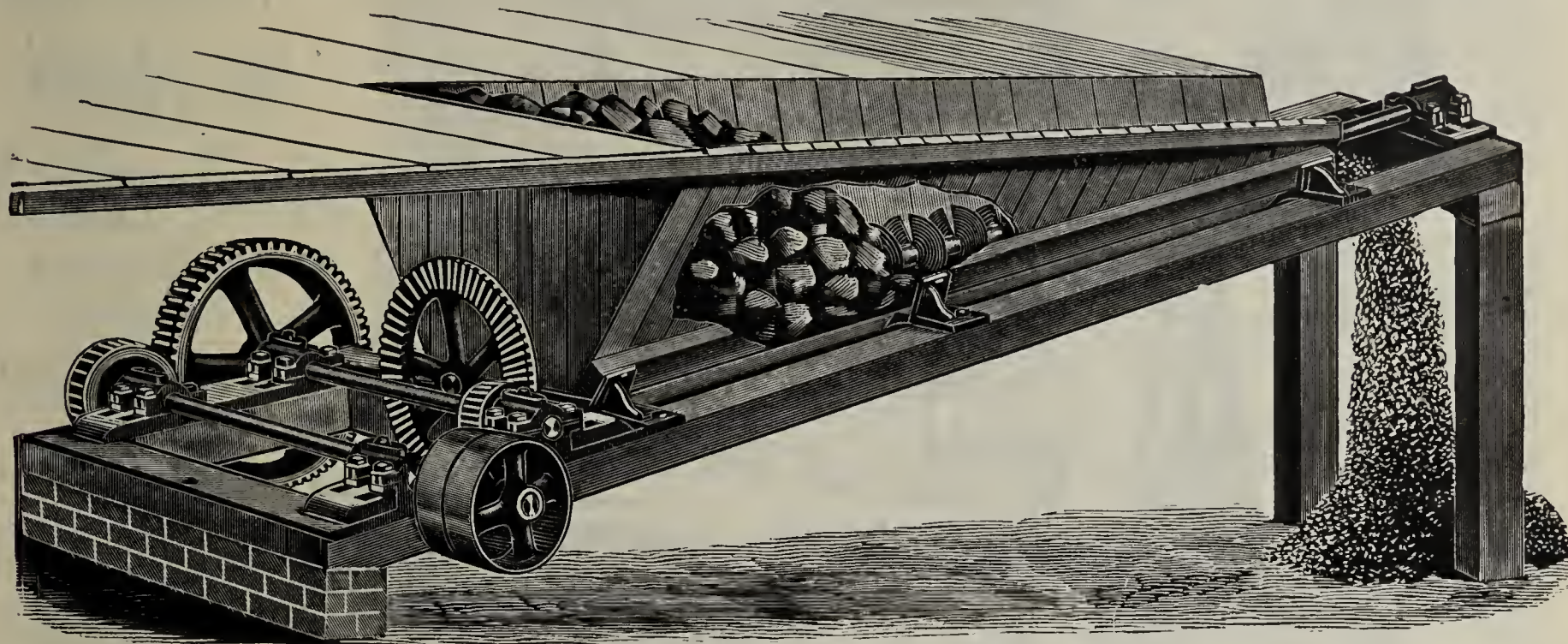
Every machine is guaranteed and shipped subject to trial.

Prices lower than any, quality of machinery taken in consideration.

C. &amp; A. POTTS &amp; CO., Indianapolis, Ind.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

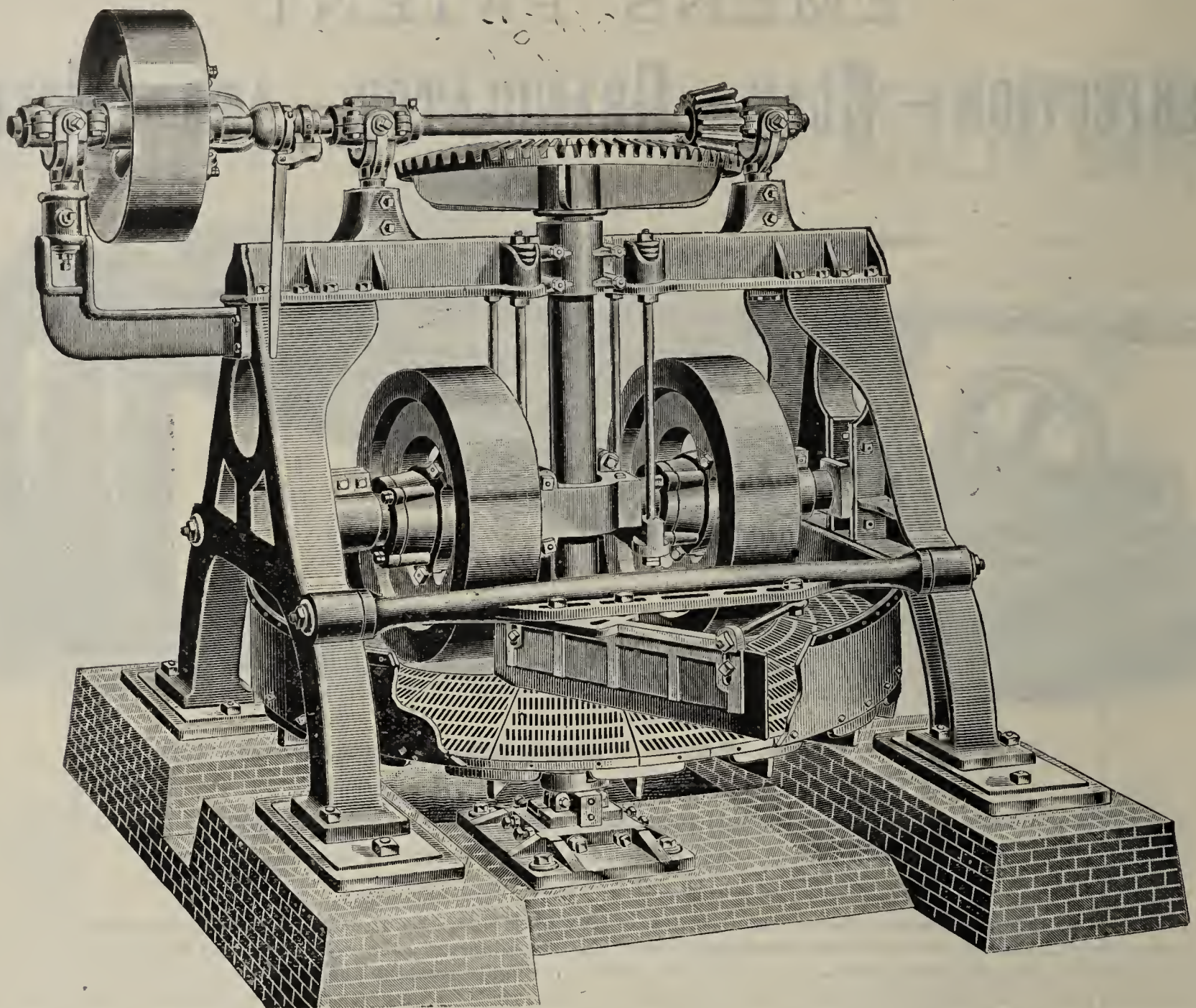
Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

MUSKEGON, MICH.

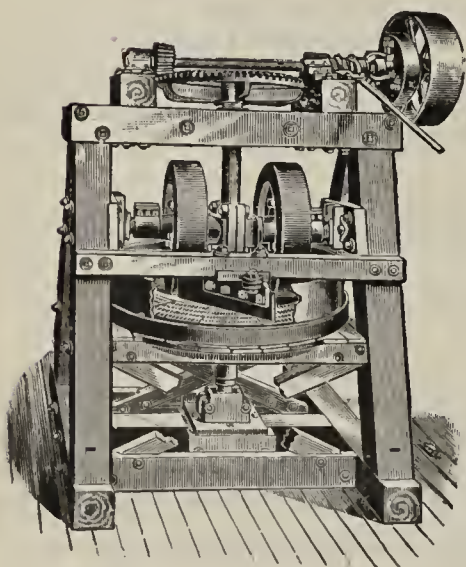
Mention Clay-Worker.





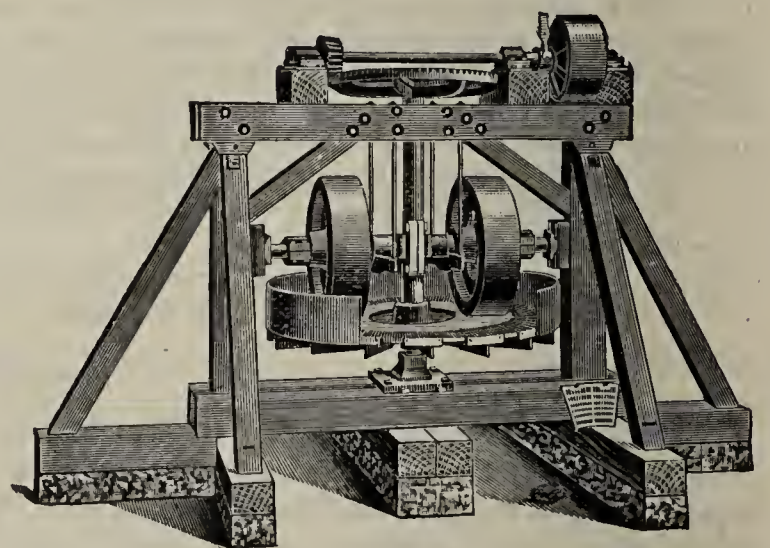
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

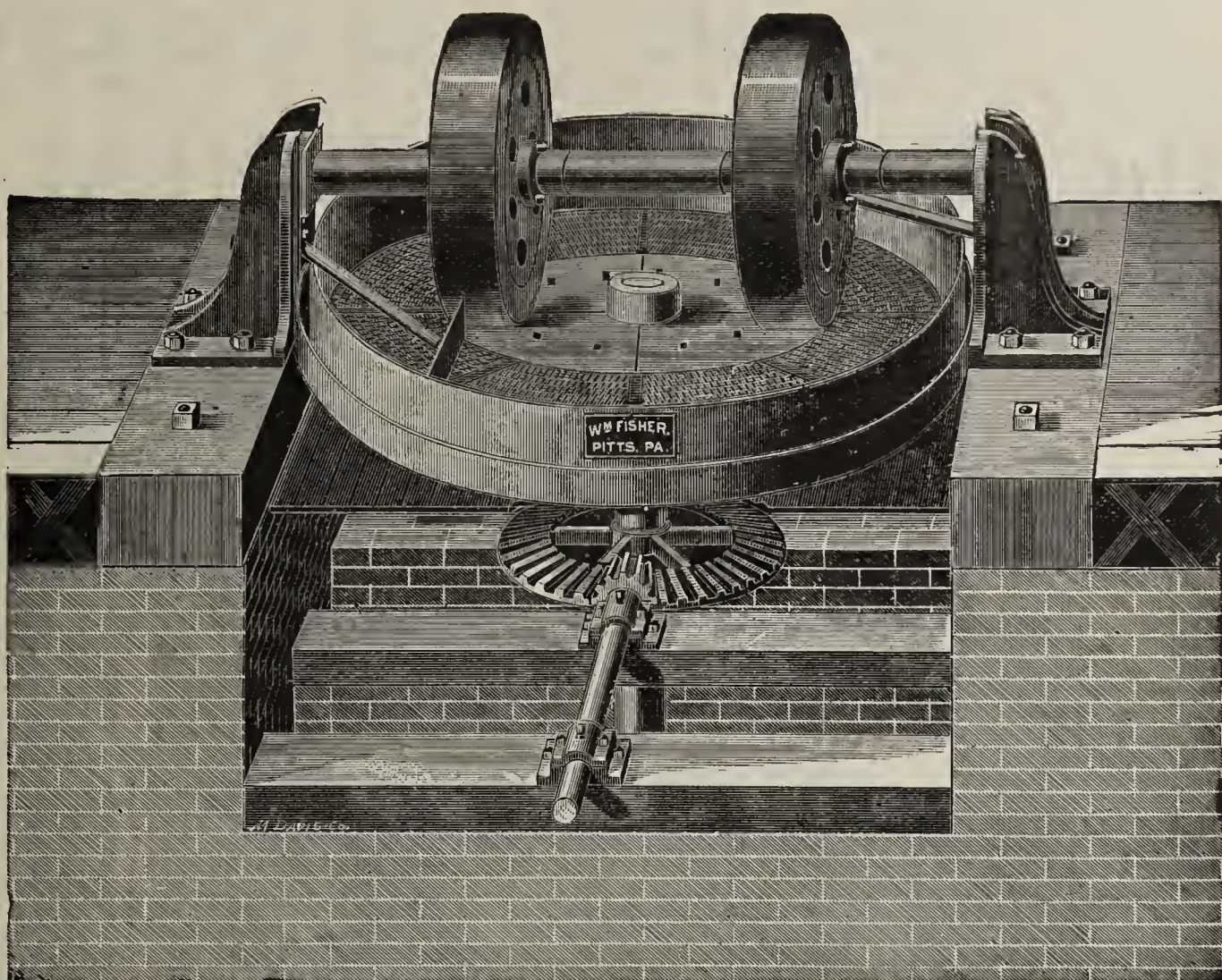
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

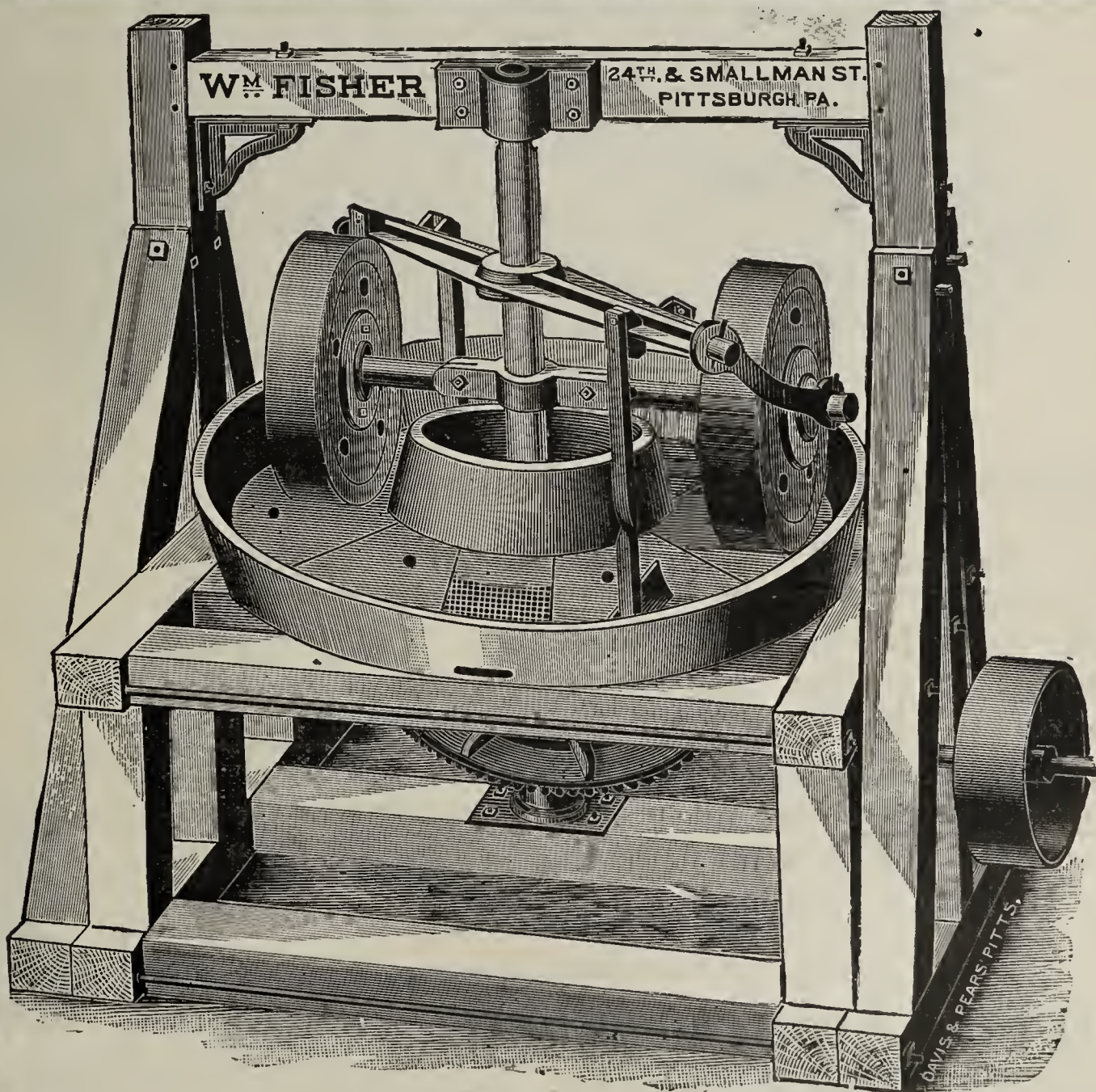
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.

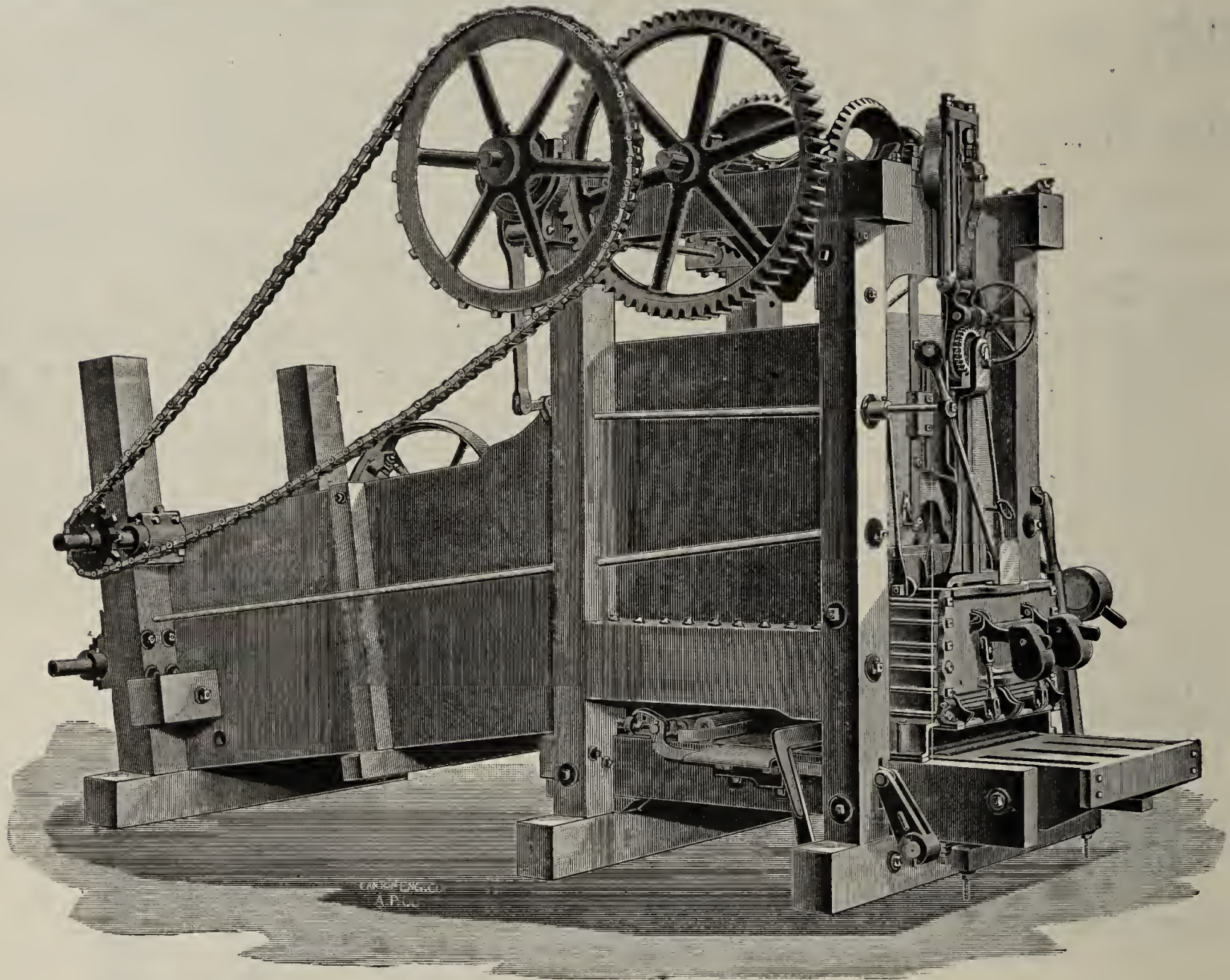


When writing for prices, state kind of material and capacity required.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



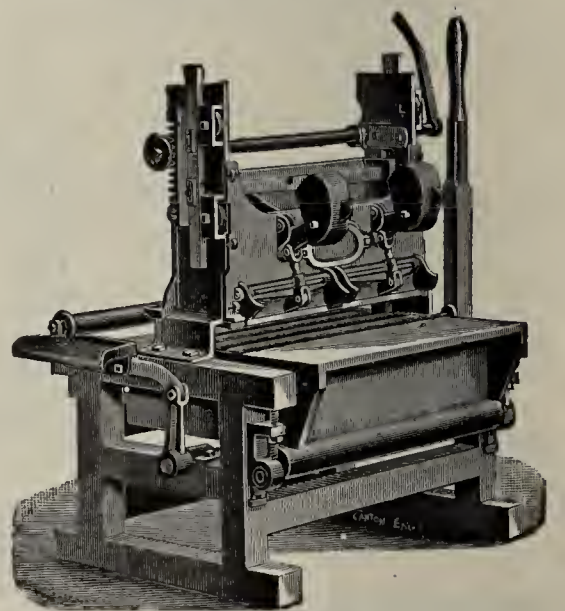
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# SECOND YEAR ENDORSES THE OPINIONS OF THE FIRST.



WEIGHT

15,500

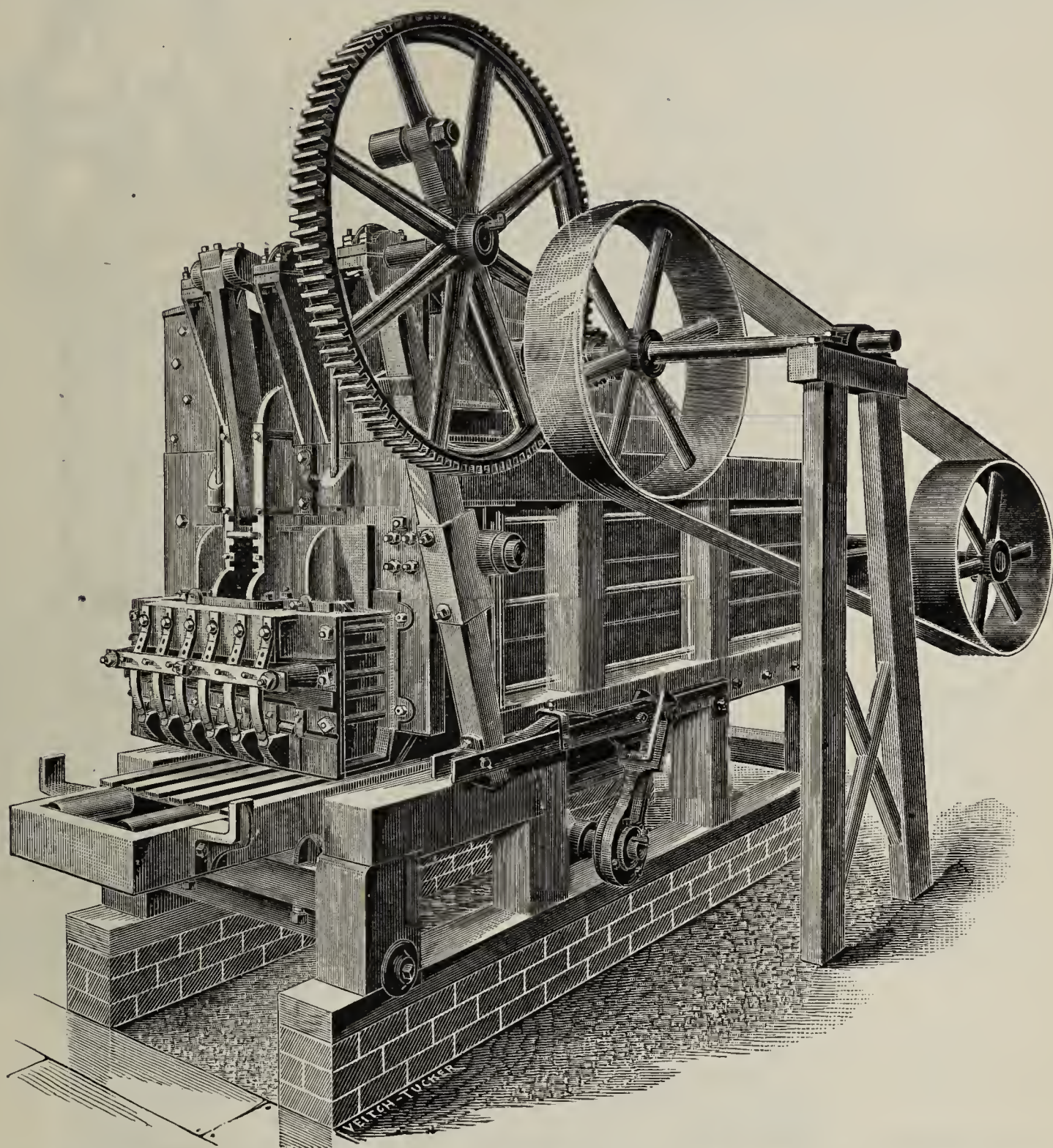
POUNDS.

WILL

OUTWEAR

ANY

OTHER.



**HEAVIEST AND STRONGEST MACHINE BUILT FOR MAKING SAND MOULDED BRICK.**

BINGHAMTON, N. Y., Nov. 4, 1892.

THE McLAGON FOUNDRY CO.:

GENTLEMEN—After two years' trial of your "New Haven" Brick Machine I most cheerfully endorse my testimonial of 1891, and will also say that we did not lose a single day the past season by breakage.

Yours truly,

OGDEN BRICK CO.,  
W. P. PRATT, Manager.

FOR PROOF WRITE

**The McLAGON FOUNDRY CO., New Haven, Conn.**

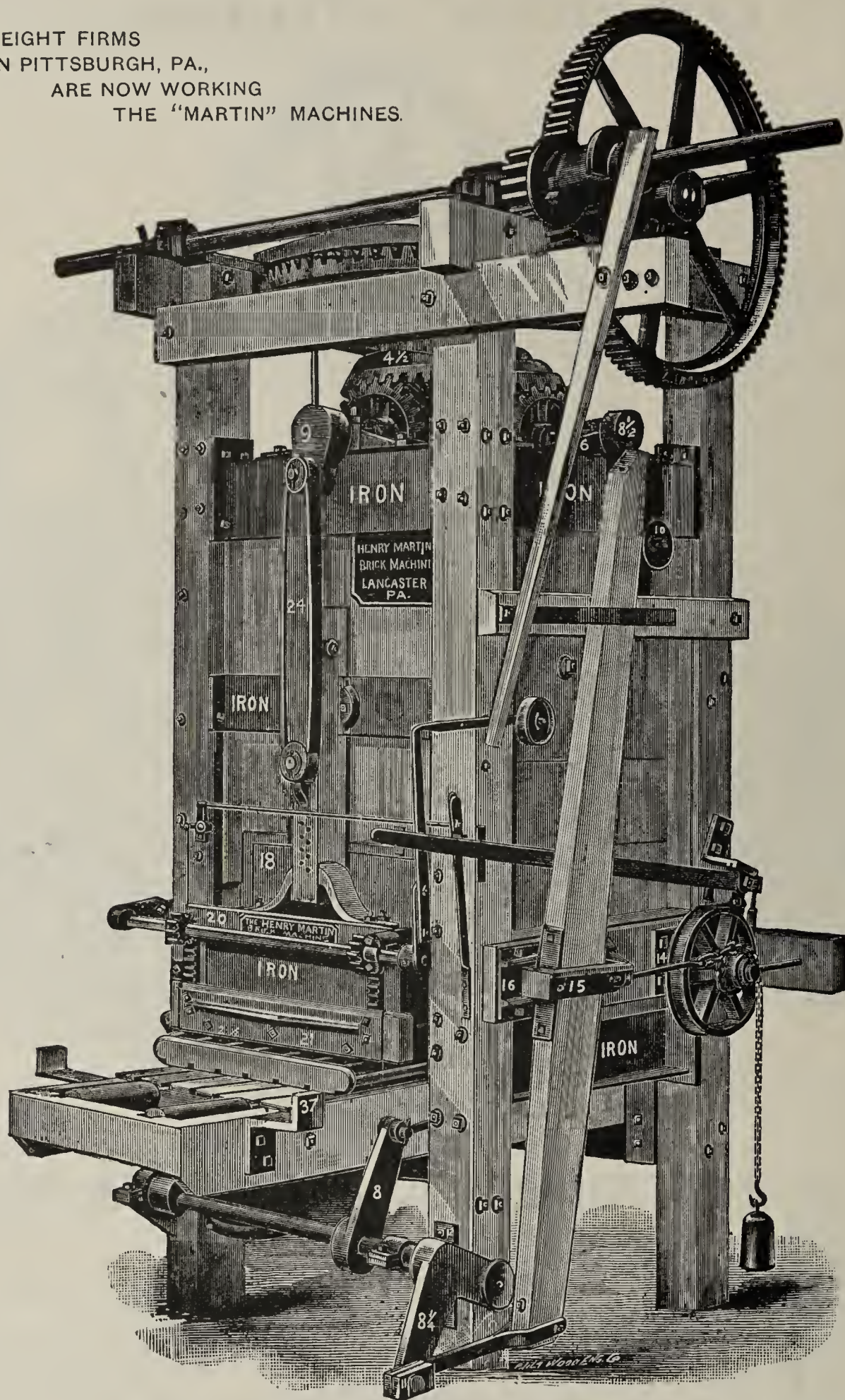


THE  
OLD.....  
RELIABLE

# Martin Brick Machines.

SEVENTY-EIGHT FIRMS  
IN PITTSBURGH, PA.,  
ARE NOW WORKING  
THE "MARTIN" MACHINES.

Each  
and  
Every  
Machine  
is  
Built  
Under  
the  
Personal  
Supervision  
of  
its  
Inventor.



We  
Manufacture  
all  
the  
Latest  
and  
Best  
Improved  
Brick  
Machinery  
and  
Supplies.

## ...The Henry Martin Brick Machine Mfg. Co...

ESTABLISHED  
1857.

LANCASTER, PA., U. S. A.

INCORPORATED  
1887.

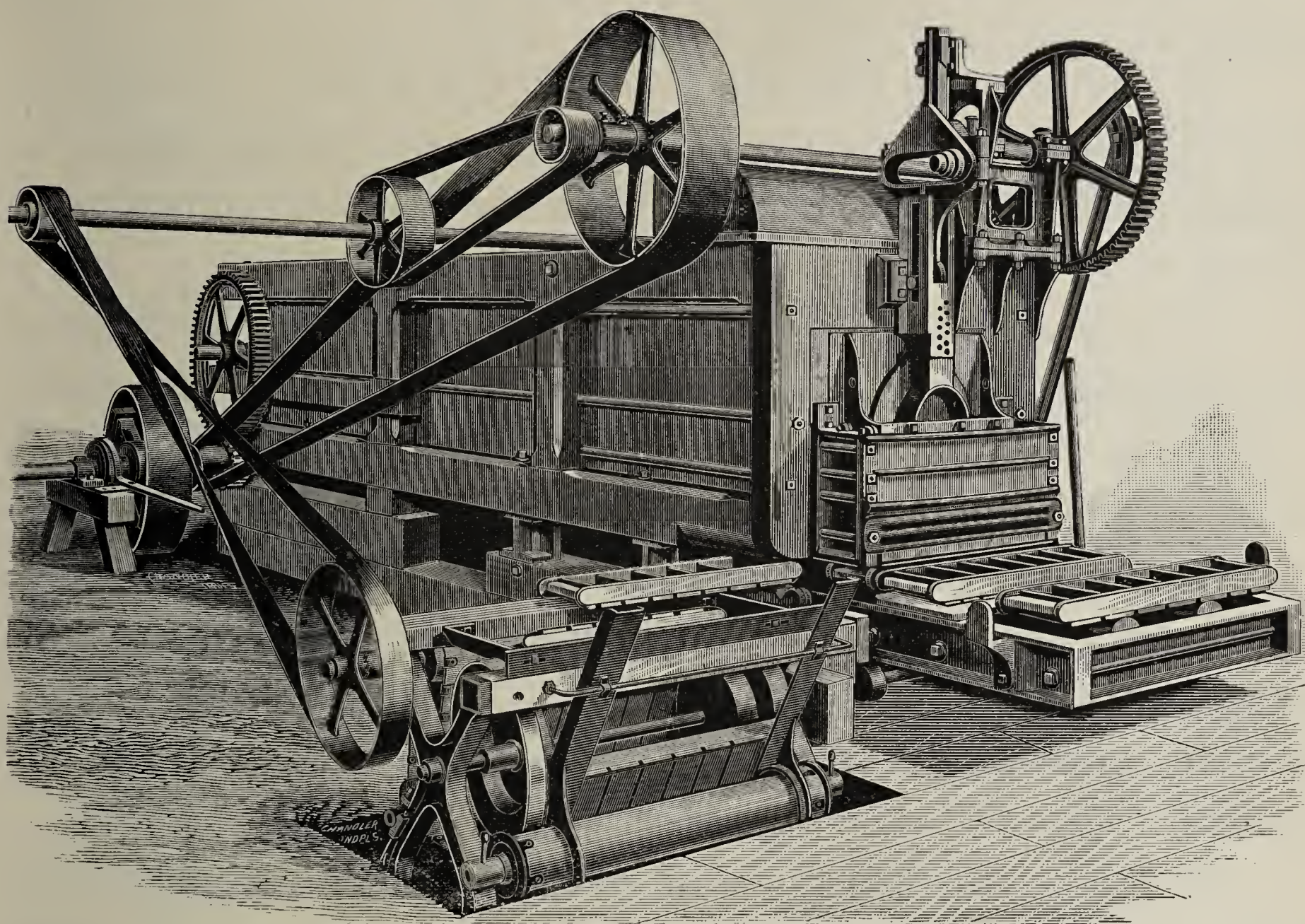
WRITE US  
FOR ANY INFORMATION DESIRED.



# THE POTTS

## HORIZONTAL STOCK

### BRICK MACHINE.



This is the largest and strongest machine made. It will work any clay direct from the bank without the use of an extra Pug Mill.

It has one-half more tempering capacity than any vertical machine and extra Pug Mill made.

The Brick made have clean **smooth surfaces** and **sharp corners**.

It has no equal for strength, durability, quantity and quality of Brick made.

We manufacture a complete line of clayworking machinery and are prepared to erect complete plants of any capacity.

Write for prices.

## C. & A. POTTS & CO.,

INDIANAPOLIS IND.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.



# BRICKMAKERS MADE HAPPY

At this writing (May 3rd) we have heard from the following parties who have started their "Monarchs" for the season. In two weeks there will be nearly 50 going.

*We do not sell these machines, they sell themselves.* That is why we urge so strongly for you to **SEE IT AT WORK.**

It has new principles and new ideas in it, and *you must see it to fully appreciate its important advantages.*

McGraw Bros., Pittsburgh, Pa.  
McWilliauss & McConnell, Shamokin, Pa.  
E. H. Snyder, Hanover, Pa.  
F. G. Pfeffer & Co., Gettysburg, Pa.  
Tobias Bros., Hamburg, Pa.

Simon Kline, Reading, Pa.  
Rowland & Co., Mansfield, Ohio.  
McCausland Bros., Akron, Ohio.  
Akron Fire Brick Co., Akron, Ohio.  
A. E. Macomber, Toledo, Ohio.

Jno. A. Horsman, Idlewild, Ohio.  
Callahan & Doyle, Utica, N. Y.  
Adams Brick Co., Buffalo, N. Y.  
Wickham Bros., Council Bluffs, Ia.  
Newman Bros., Des Moines, Iowa.  
J. M. Crabill, Clarinda, Iowa.

**GO AND SEE THE NEAREST ONE.**

## Office of Rowland, Mulcahy & Carmichael.

MANSFIELD, OHIO, March 17th, 1893.

THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO.

DEAR SIR:

Yours of the 14th inst. is at hand and contents noted. In reply will say that we are running nearly every day and find the machine DOING ALL YOU EVER CLAIMED FOR IT. In fact so far as we have tested it, it has proven MORE THAN SATISFACTORY.

Mr. Carmichael has just returned from Cleveland, Tiffin and other points and says, "WE HAVE MADE NO MISTAKE IN BUYING THE 'MONARCH'." Any parties you wish to have see the machine running we would take great pleasure in showing it to them, and can cheerfully say to any one wishing a soft mud machine that they will make no mistake in buying your improved "MONARCH." Hoping we may in some way be able to serve you in the future, we remain,

Yours truly,

ROWLAND, MULCAHY & CARMICHAEL.

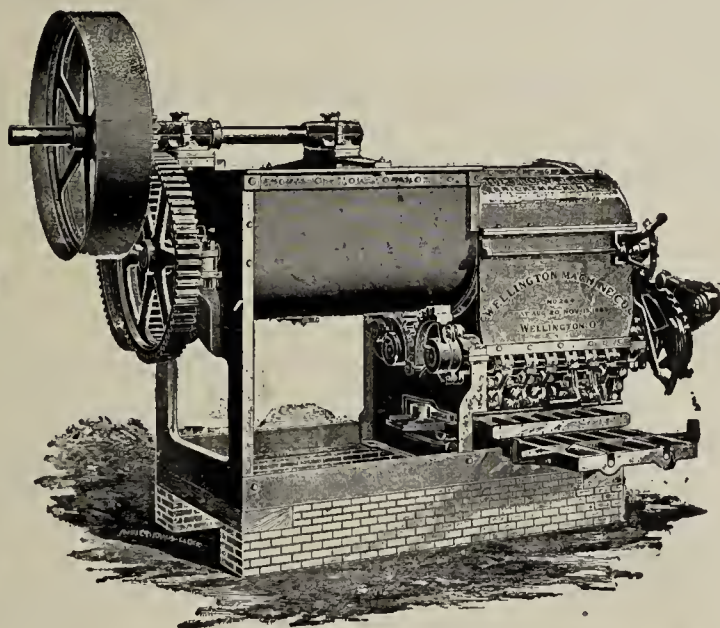
By PARKER

### A Brickyard Conversation Where a Monarch is used

OWNER TO VISITOR:—"There it is! You did well to come and SEE it, for that is the only way its advantages are fully appreciated. When first I read the description of it, I had a kind of a hazy, dreamy impression that it contained some vital improvements, but like yourself I did not realize the immense money value to the user until I actually saw it in operation."

## The Wellington Machine Co.,

Wellington, Ohio.



Watch this page next month. Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y. January, from Utica, N. Y. February, from Pittsburgh, Pa. March from Toledo, O. April from Akron, O.

"The procession is passing by." Get in it.



✂ ED. H. CALLAWAY, ✂

CONSTRUCTING ENGINEER AND BRICK MANUFACTURING EXPERT,

— WITH —

PHŒNIX FOUNDRY & MACHINE CO.

Manufacturers of Brick Drying Cars, Transfer Cars, Turn Tables,

and full Dryer Equipments. Engines and Boilers and General Machinery.

SYRACUSE, NEW YORK.



General Agent for Sharer's Improved Brick Dryers and Calorific Kilns. Will construct Brick Manufacturing Plants Complete, furnishing all necessary Machinery. Plans and Estimates furnished. CLAYS TESTED. NO TROUBLE TO ANSWER INQUIRIES.

Ten years practical experience.

PAVING BRICK PLANTS A SPECIALTY.

We are wedded to no particular Brick Machine or system of manufacturing bricks, but will examine your clay, location and all conditions, and put in the machinery on system best adapted to your clay and locality. We will build the plant and turn it over to you and guarantee it to make first-class bricks, as economically as they can be produced in that particular section.

WE TAKE ALL THE RISK.

New beginners should not fail to consult us before erecting a plant.

And "old timers" might get some good points from us.

Correspondence solicited.

500 EAST WATER STREET,

SYRACUSE, N. Y.



ED. W. CALLAWAY, President

FRED. S. NAUGLE, Superintendent

WAS. C. RANN, Sec'y & Treasurer

## The Onondaga Vitriified Brick Co.

(Trade Mark "ONONDAGA")

—MANUFACTURERS OF—

VITRIFIED PAVING, BUILDING AND SEWER BRICKS,  
FRONT BRICKS, HOLLOW BRICKS AND FIRE PROOFING.

Factory at Warners, N. Y., on West Shore R. R.

Office, No. 34 Grand Opera House Block.

*Syracuse, N. Y.,* Nov. 17, 1892.

J. W. Penfield & Son,

Willoughby, O.

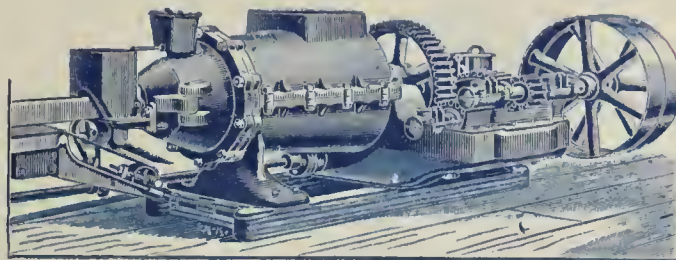
Gentlemen, -

Replying to your valued favor of Oct. 27th inquiring as to the working of your #10 Augur Machine and automatic cutter that we have recently put in, will say that it is giving entire satisfaction and while the machine is only guaranteed for 30,000 brick per day, we would have no difficulty in making from 45 to 50,000 per day with it if we could only give it sufficient clay, but at present we have only two 7' Wet pans to feed it with and we find that they will not begin to feed it as much clay as it will take. In our opinion it is the best machine of the kind on the market and we cheerfully recommend it, and will be glad to show any party looking for machinery this machine in operation.

Very truly,

ONONDAGA VITRIFIED BRICK CO.,

By *E. J. Hallaway*  
President



The No. 10 Augur Brick Machine.

## Well-Founded Conclusions

If such letters as those presented herewith mean anything, they conclusively prove that we are at least not **over**-rating our machinery, but, if any, thing, setting the mark below what it will actually accomplish.

Why we need explain the merits of our machinery, when our customers can do it so much better, and from a standpoint which admits of no controversy or doubt?



## J. W. PENFIELD & SON,

Brick and Sewer Pipe Machinery Makers,

WILLOUGHBY, OHIO, U. S. A.

CATALOGUES FREE.

## The Western Pipe and Brick Company.

CAPITAL, \$200,000.00.

Fire, Coke Oven, Dry Pressed & Building Brick.

*Golden, Colo.,* Feb. 13th, 1893.

Messrs. J. W. Penfield & Son,

Willoughby, Ohio.

Gentlemen:-

The No. 10 Augur Machine we purchased of you last Spring is a machine of which we are proud. We make on it Fire Brick; also Paving Brick: it will easily turn out 30,000 brick per day, all well made and cut off perfectly square by your automatic cut-off.

The machine is strong and substantially built, -requires comparatively but little power to operate it, in fact is giving us entire satisfaction

Yours truly,

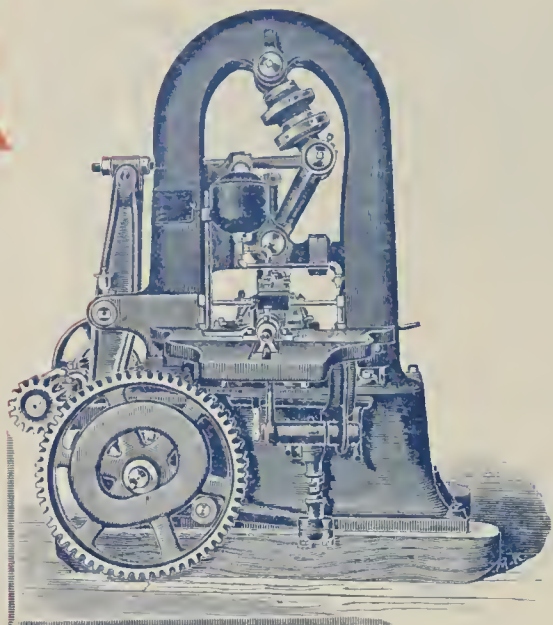
THE WESTERN PIPE & BRICK COMPANY,

per *John A. Steger*  
Treasurer.

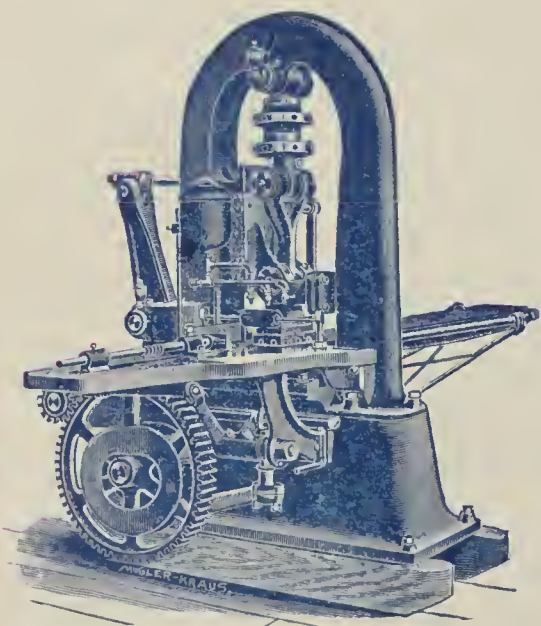
J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY  
WILLOUGHBY, O.

J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY  
WILLOUGHBY, O.





PENFIELD  
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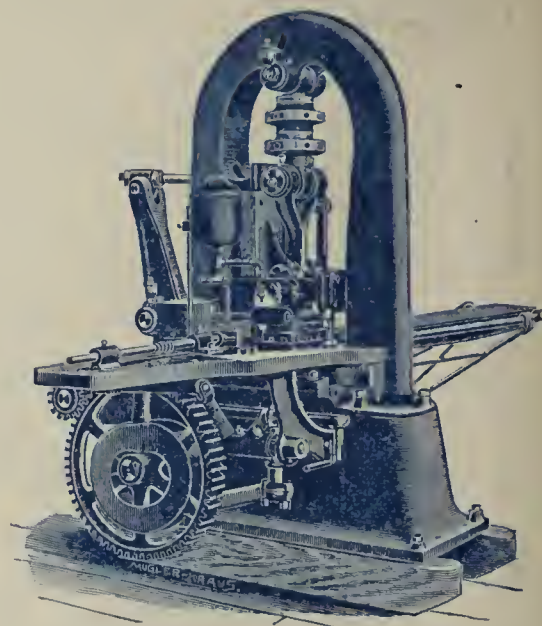


—PENFIELD—POWER—PRESS—  
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—PENFIELD—POWER—PRESS—  
—PENFIELD—PQWER—PRESS—  
—PENFIELD—POWER—PRESS—

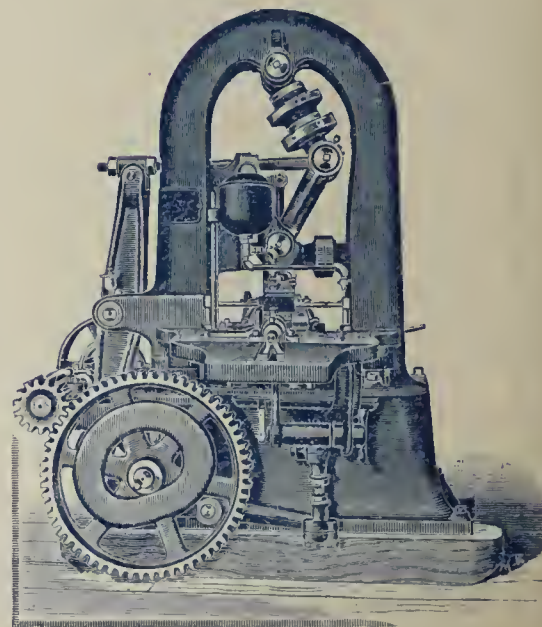
Every time you press a brick by hand, you waste money; your money would go twice as far by using a Power Press. It will do all a hand press can, and do it easier, quicker and cheaper.

But don't buy a poor power press—it won't pay you. There are different grades of power presses as of everything else. The Penfield is the simplest, least complicated and strongest; will last longest and cost least for repairs; is up-to-date; fully guaranteed. A postal card will bring full particulars. Address J. W. PENFIELD & SON, Willoughby Ohio.

—PENFIELD—POWER—PRESS—  
—PENFIELD—POWER—PRESS—  
—PENFIELD—POWER—PRESS—  
—PENFIELD—POWER—PRESS—  
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# BRICK PALETTES.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

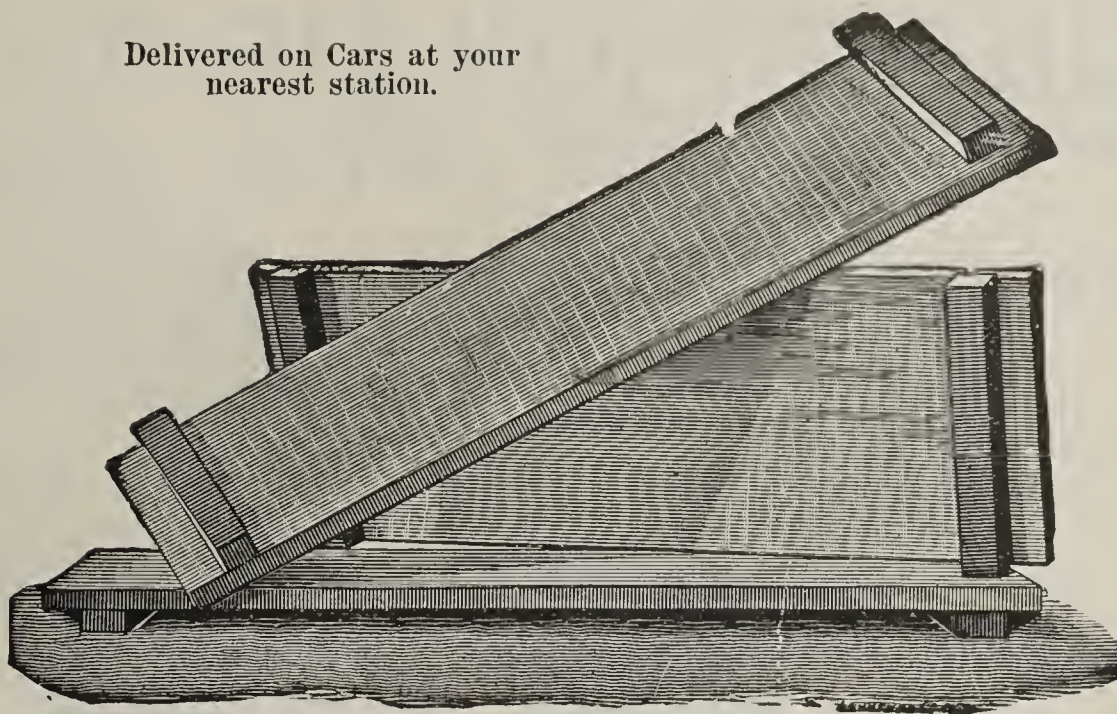
W. B. MERSHON & CO.,

East Saginaw, Mich.

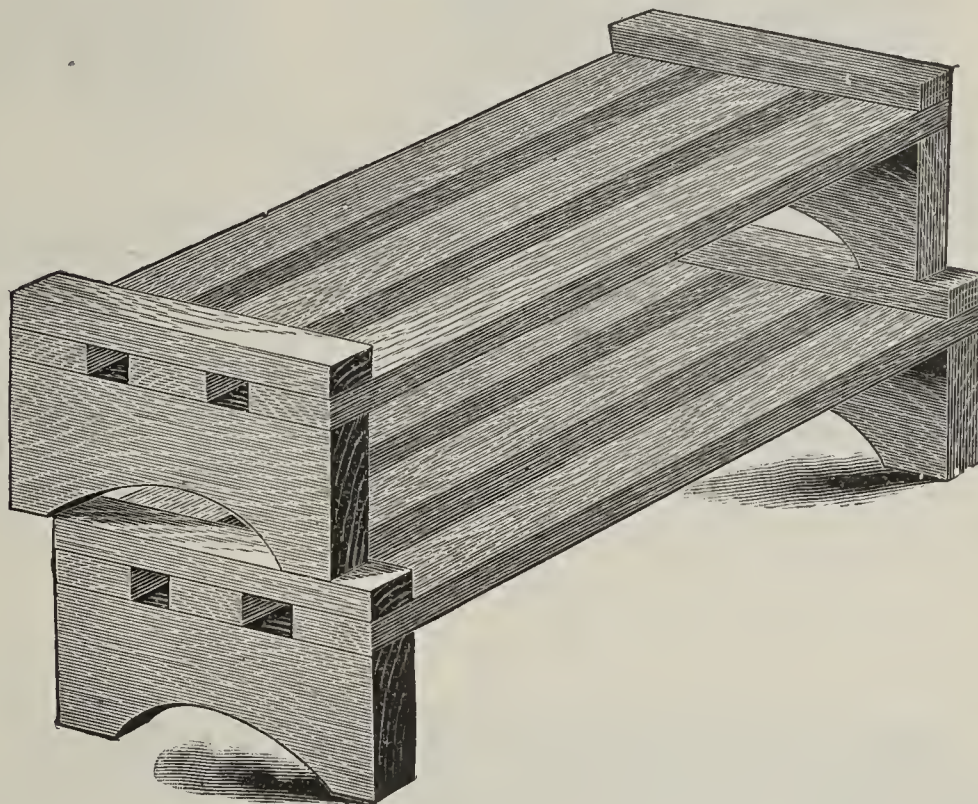
THE CLAY-WORKER.

661

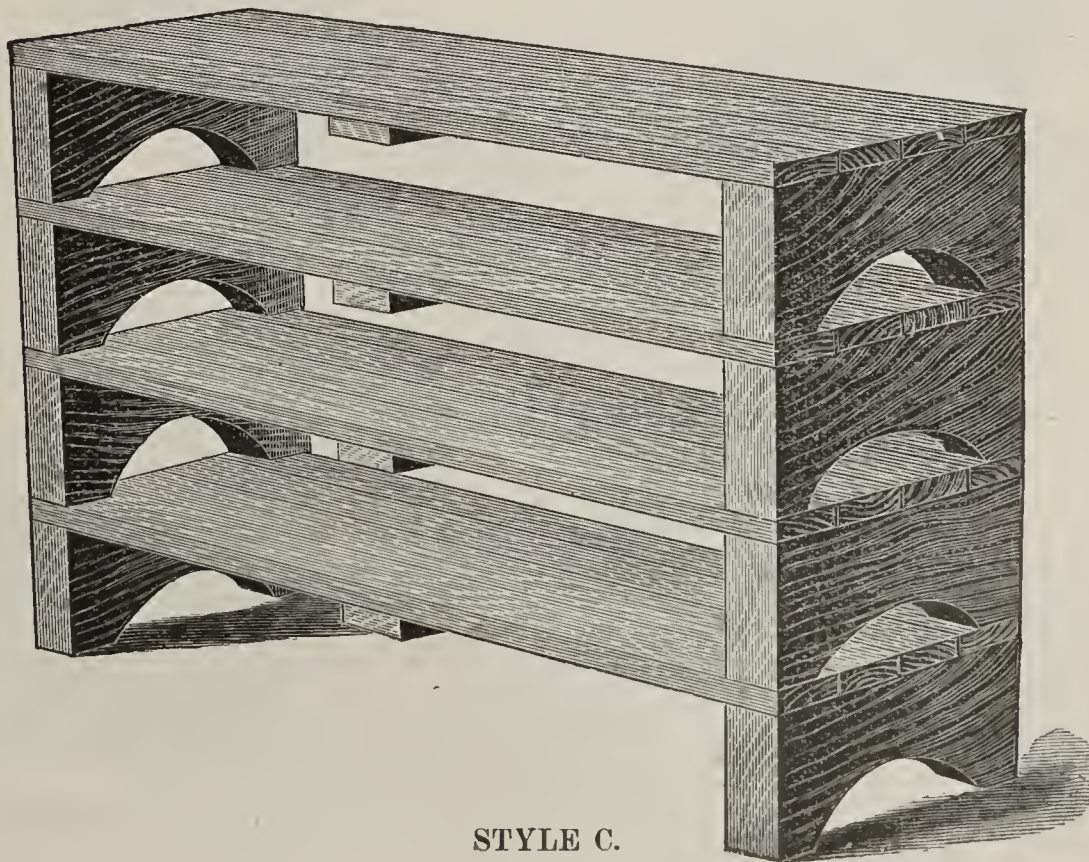
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.

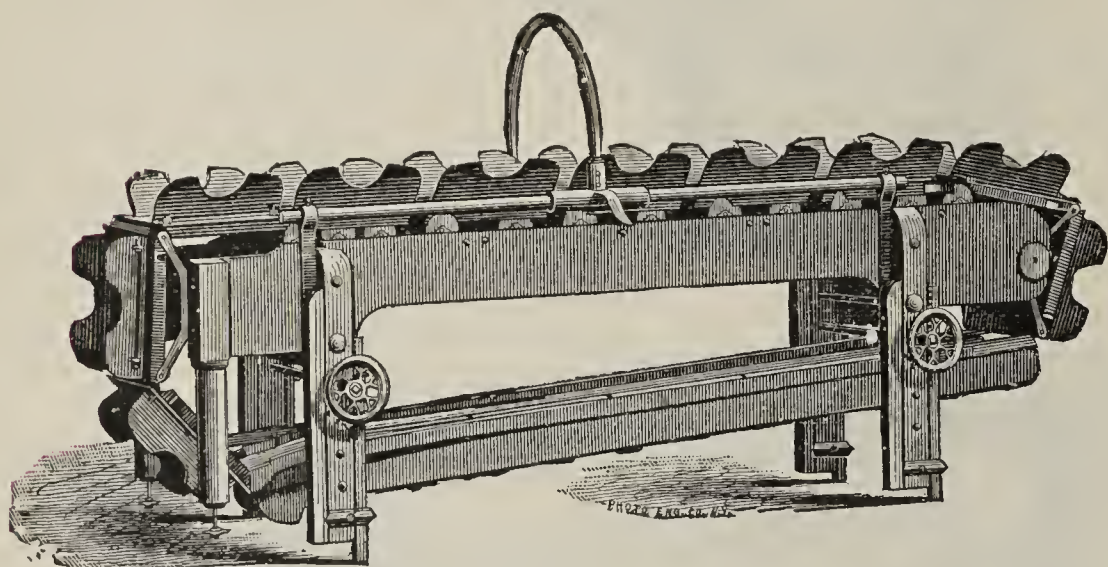
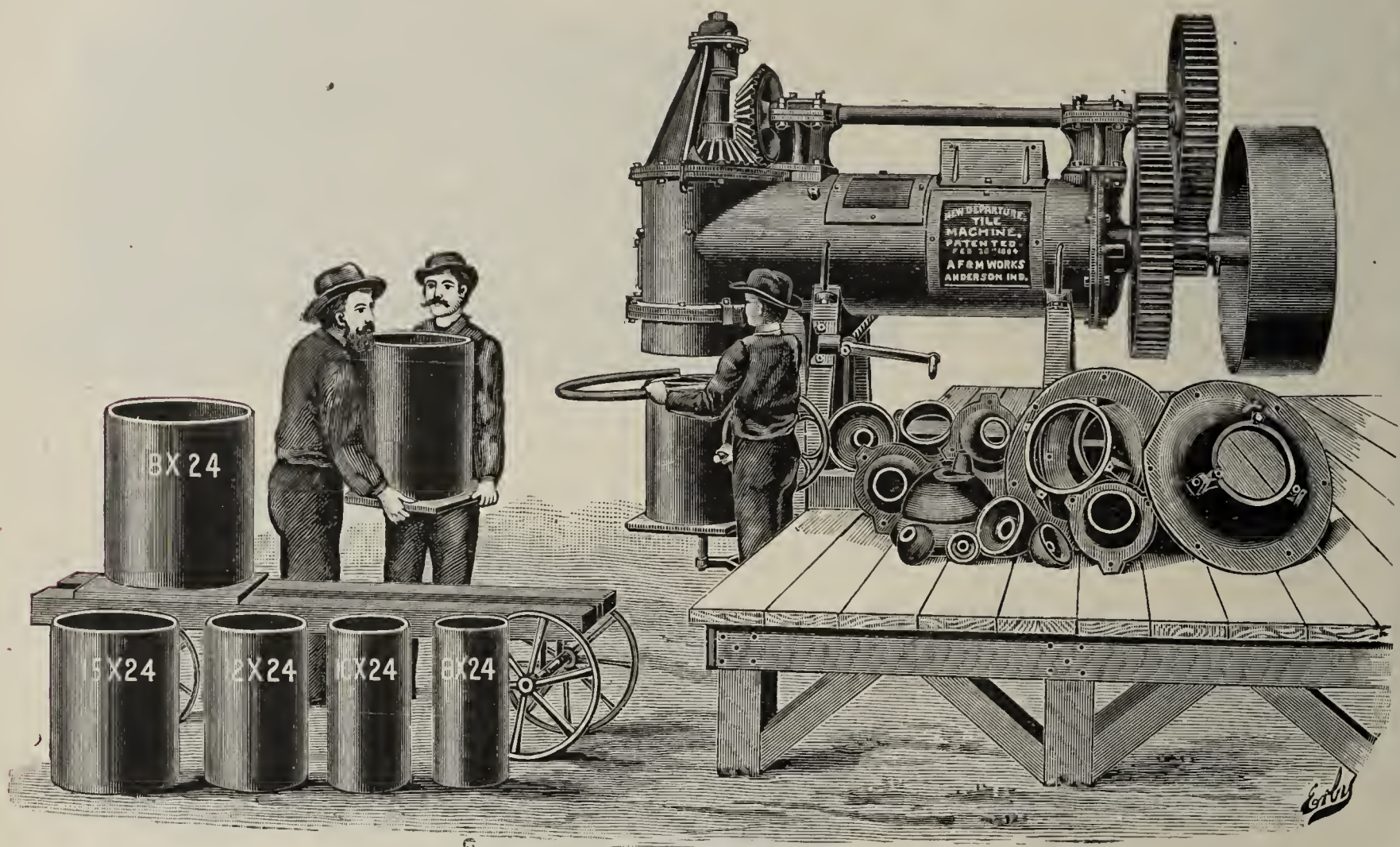


STYLE C.



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

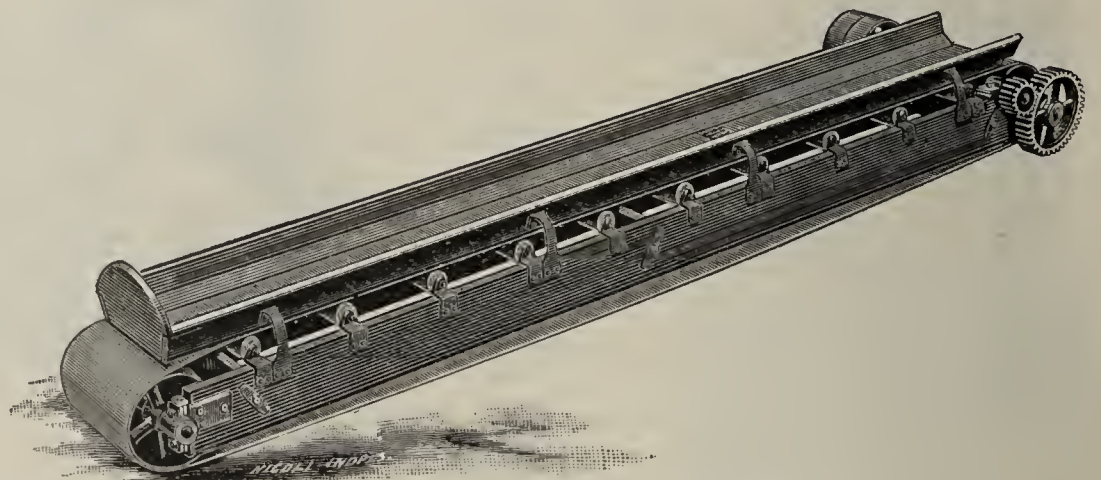
[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

**Down Delivery for Large Tile.**

**Side Delivery for Small Tile.**

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**

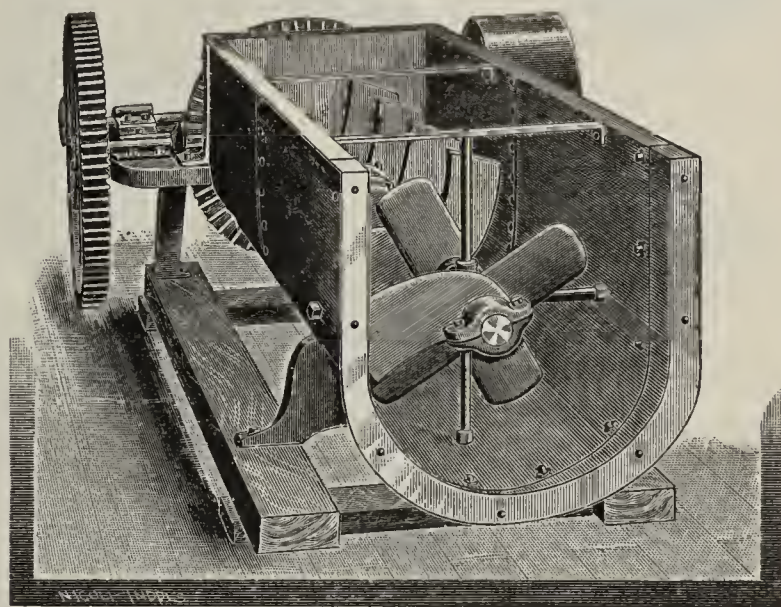
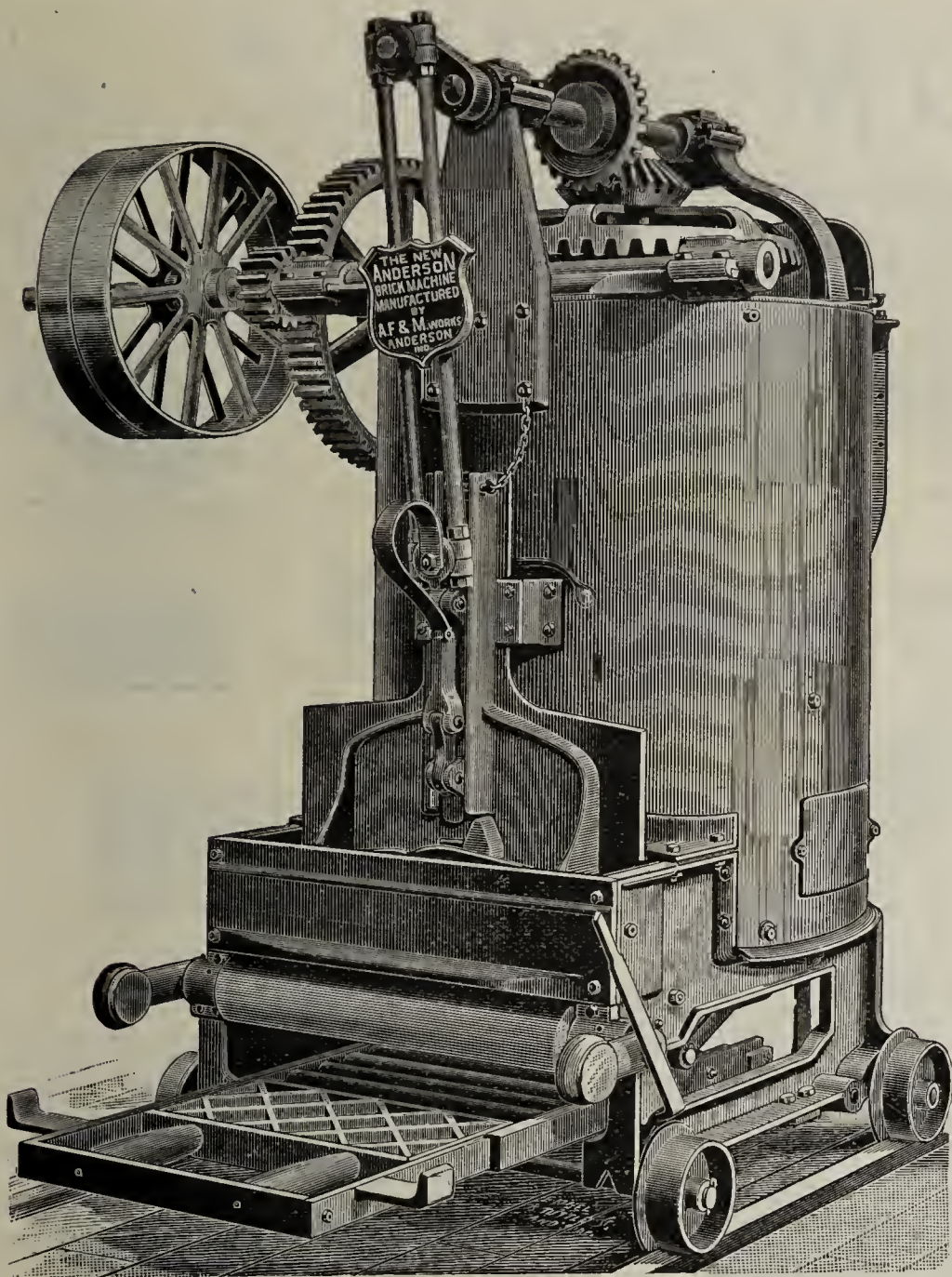


## THE New Anderson Brick Machine

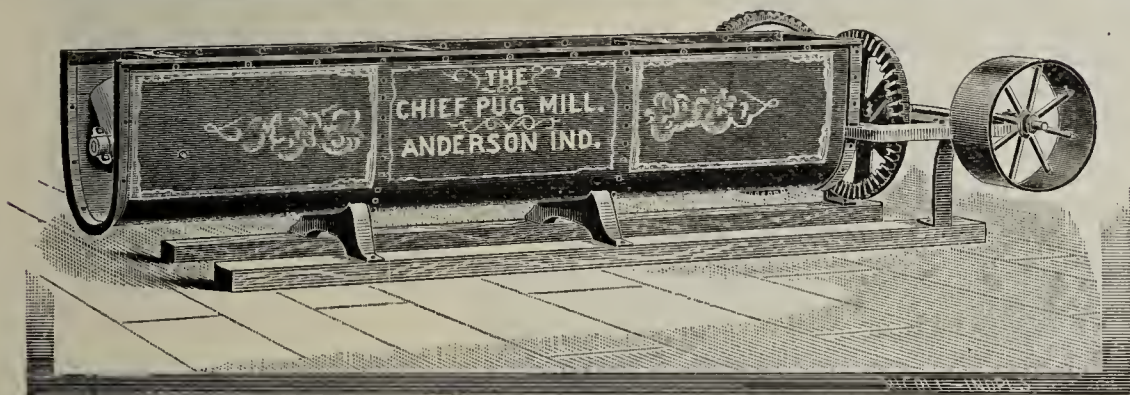
MANUFACTURED BY

THE Anderson Foundry & Machine Works  
ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



End View of Pug Mill.

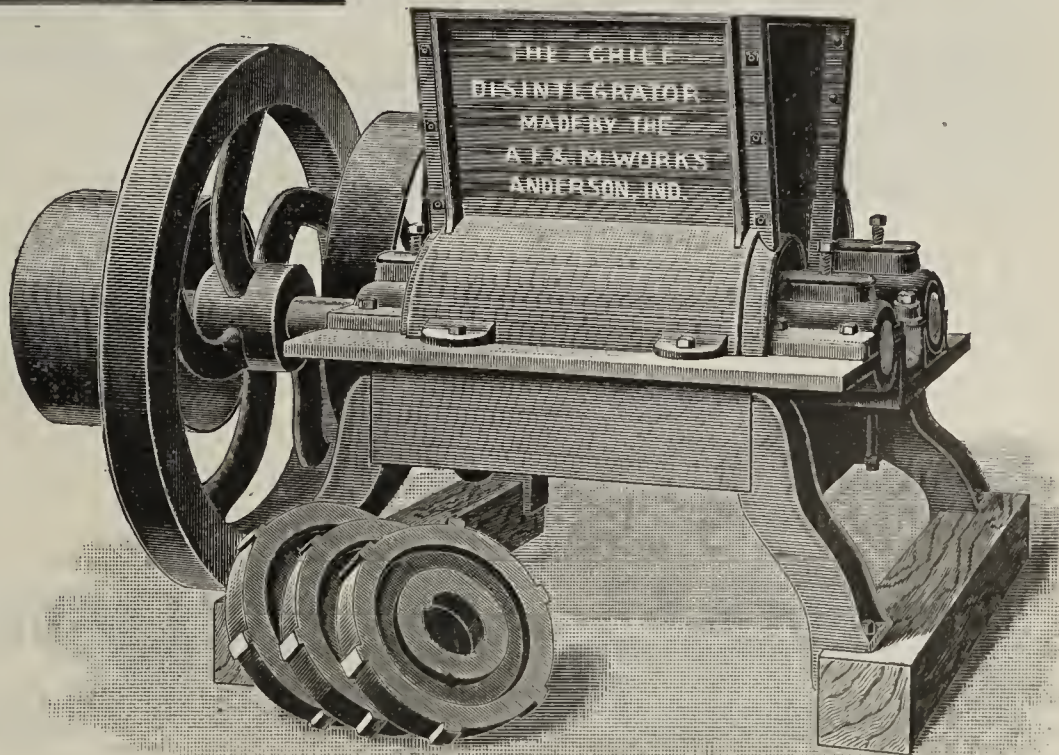


We also manufacture the  
**NEW IMPROVED CHIEF BRICK MACHINE.**

## The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 1/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

**PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.**



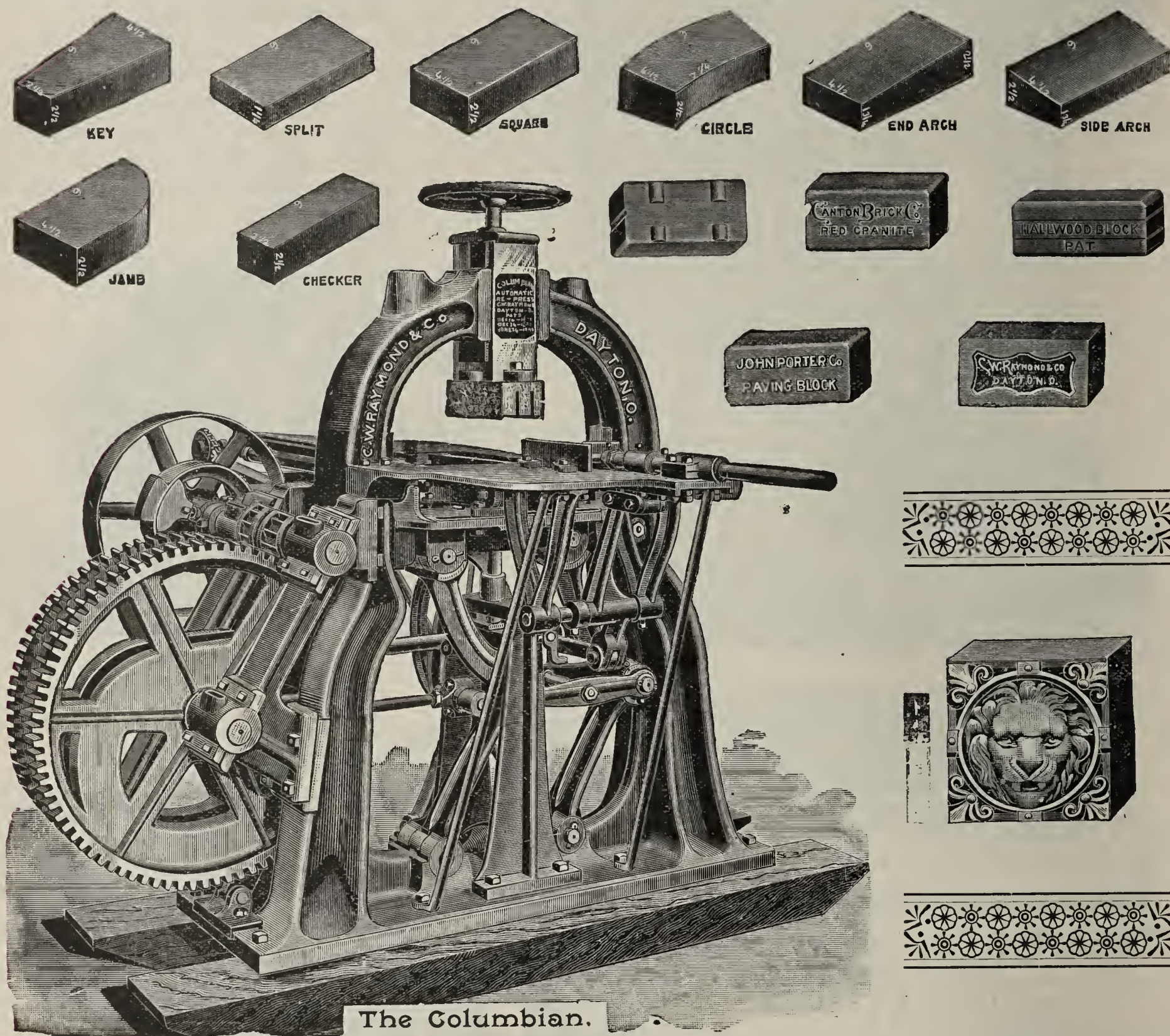
[Mention the Clay-Worker.]

Correspondence Solicited.



# The COLUMBIAN.

⚡ The One Press Will Press Them All. ⚡



**"That Tired Feeling"** which a brickmaker experiences when he has invested \$600 in an experimental re-press and \$2,580.32 in repairs can be entirely obviated by purchasing

**== A COLUMBIAN, ==**

The only press that made a record of its own, hence, the only one that offers a secure investment for a practical brickmaker.

**Manufactured by C. W. Raymond & Co.,**

[Mention the Clay-Worker.]

**Dayton, Ohio.**

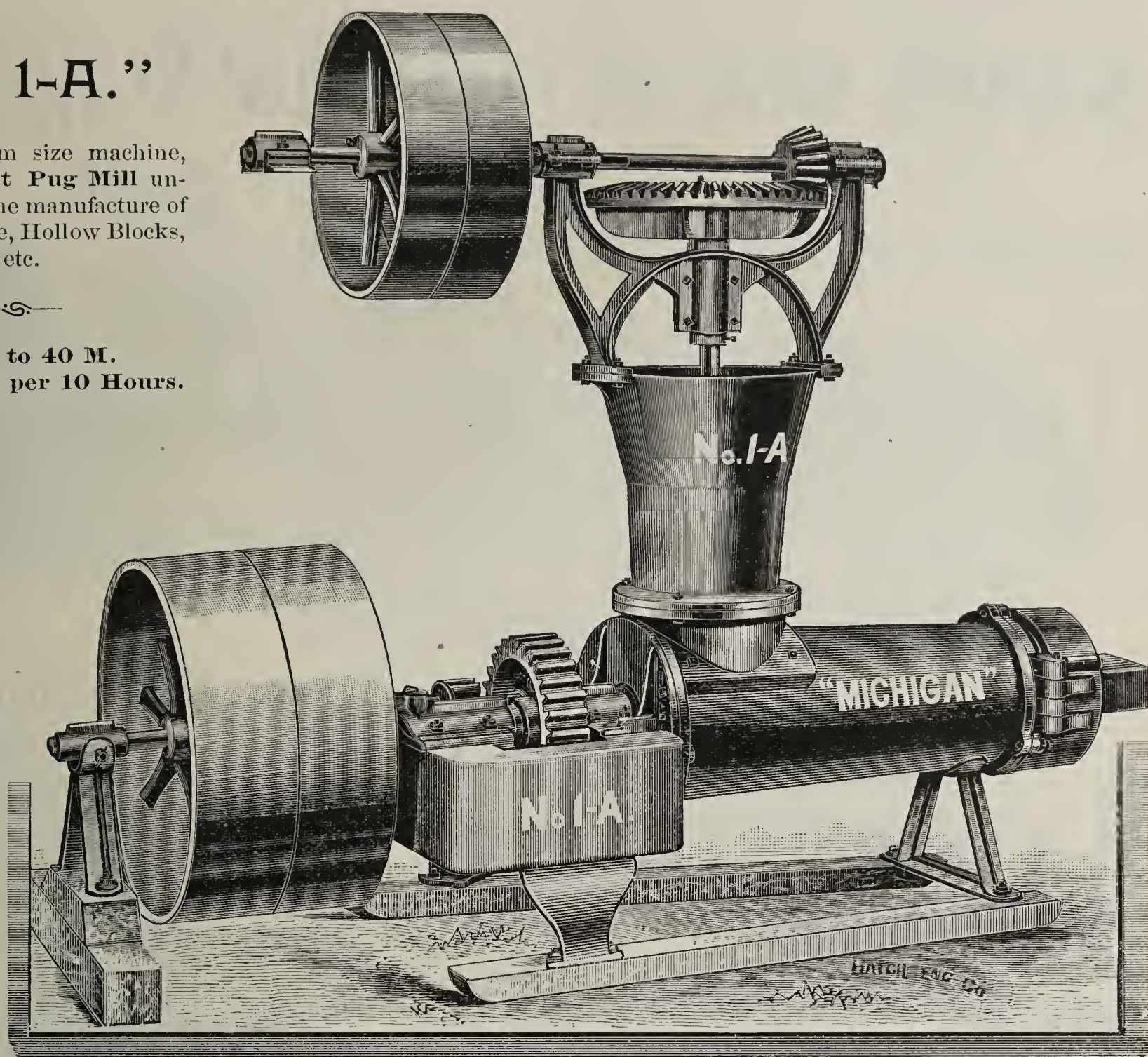


## "No. 1-A."

Our medium size machine, with Upright Pug Mill unexcelled for the manufacture of Brick and Tile, Hollow Blocks, Fire Roofing, etc.

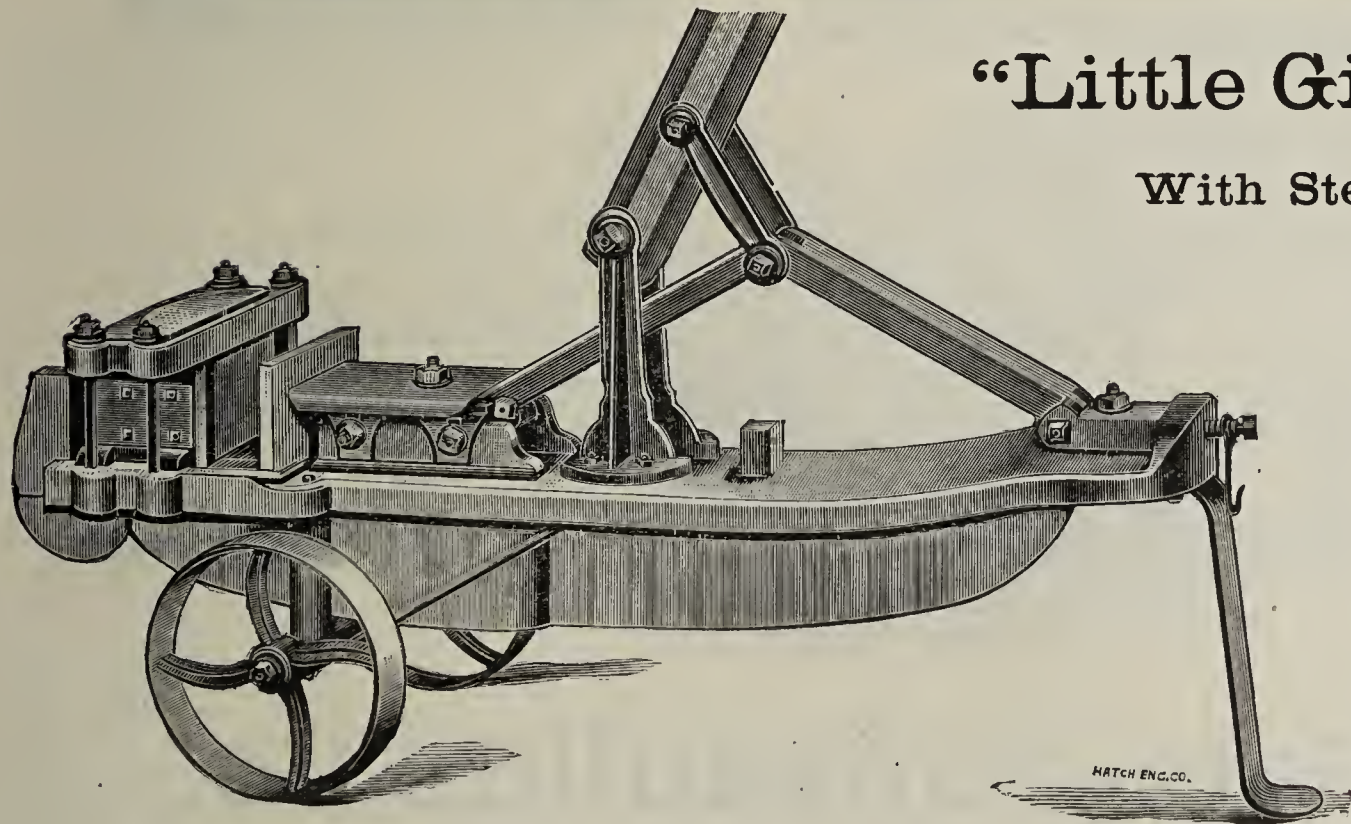


Capacity 25 to 40 M.  
Brick per 10 Hours.



## "Little Giant" Re-press

With Steel Lined Die.



The strongest, most accurate working and largest capacity hand Re-press on the market. Over 1,500 in use. Price reasonable.



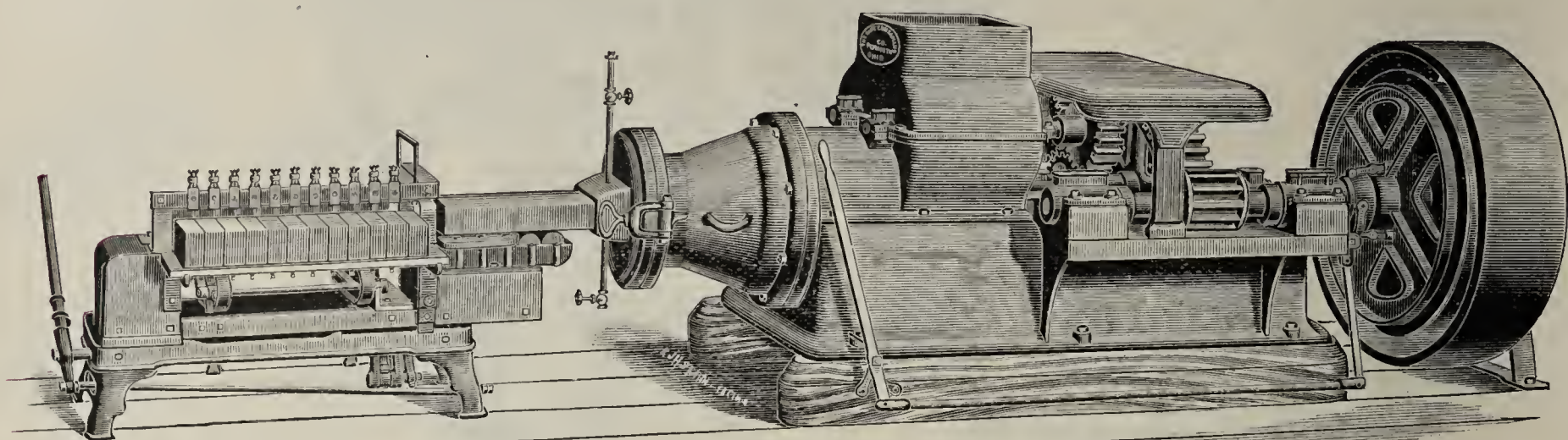
Write for anything you may want in the line of Clayworking Machinery, and do not forget to tell us to send our 1893 Catalogue.

**MICHIGAN BRICK & TILE MACHINE CO., Morenci, Mich.**

Manufacturers of a Full Line of Clayworking Machinery.



# SAVE YOUR MONEY BY BUYING THE BEST.

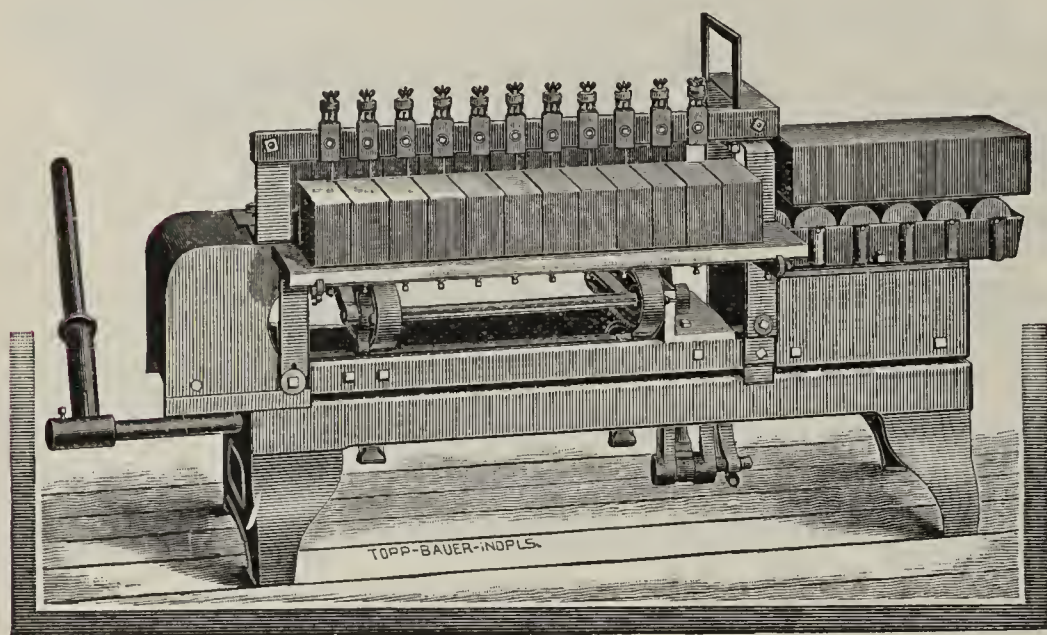


## THE "PLYMOUTH"

Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and pugging device.

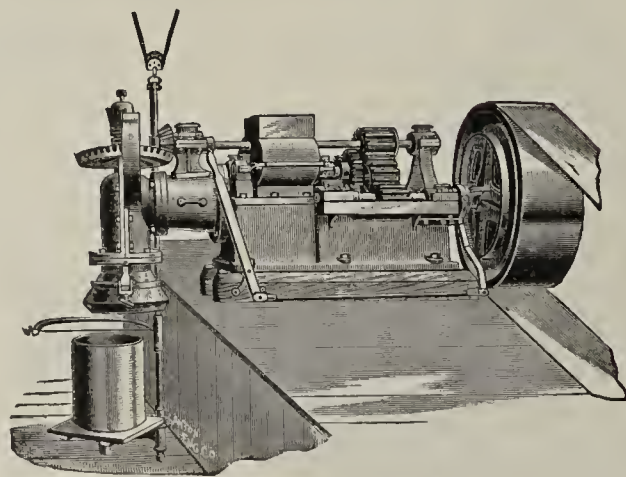


We build our Machines  
for

STRENGTH

... and ...

DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

It will Tell You  
All About It.

# The Fate-Gunsaulus Co.,

PLYMOUTH, OHIO.

[Mention the Clay-Worker.]

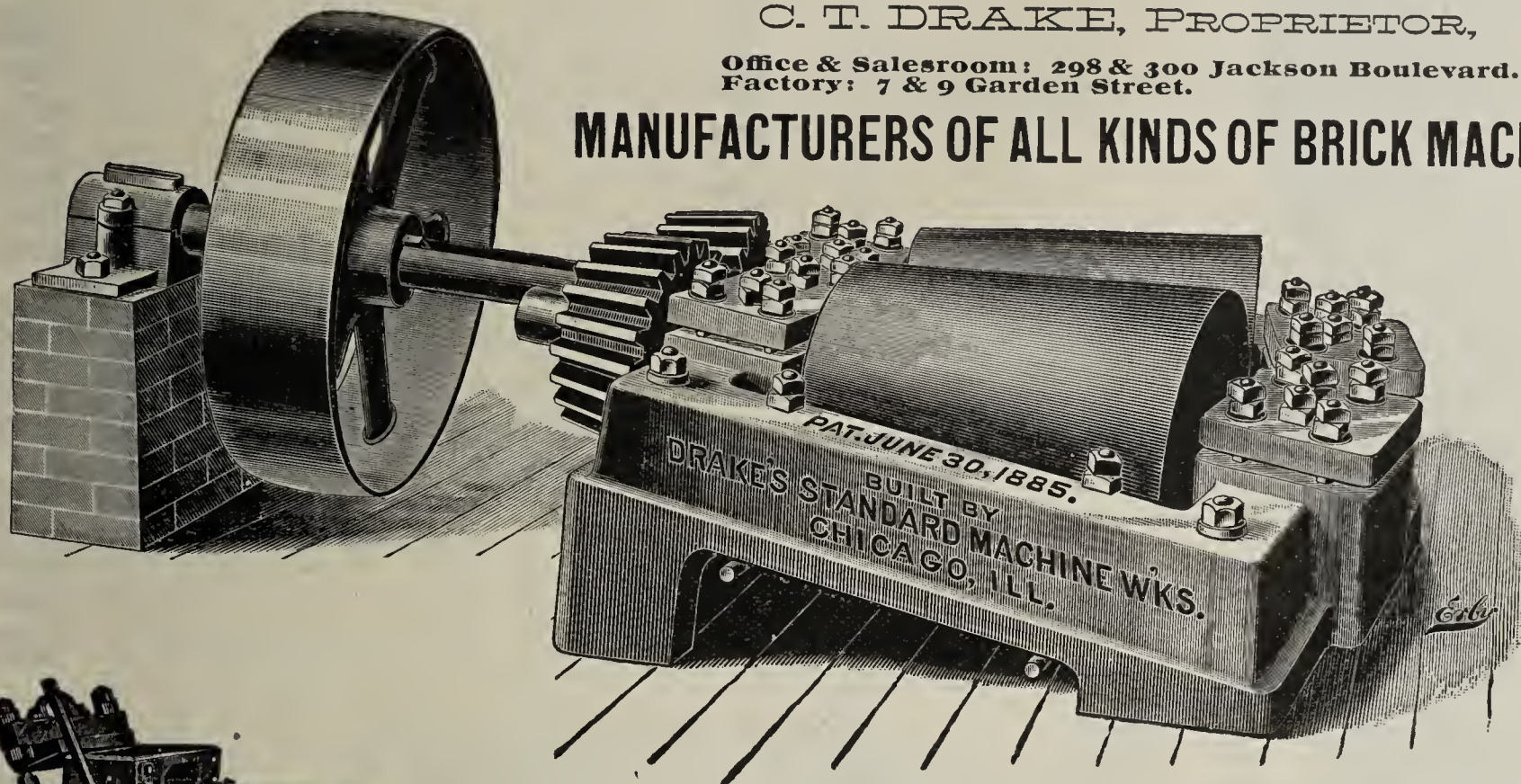


# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

## MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY

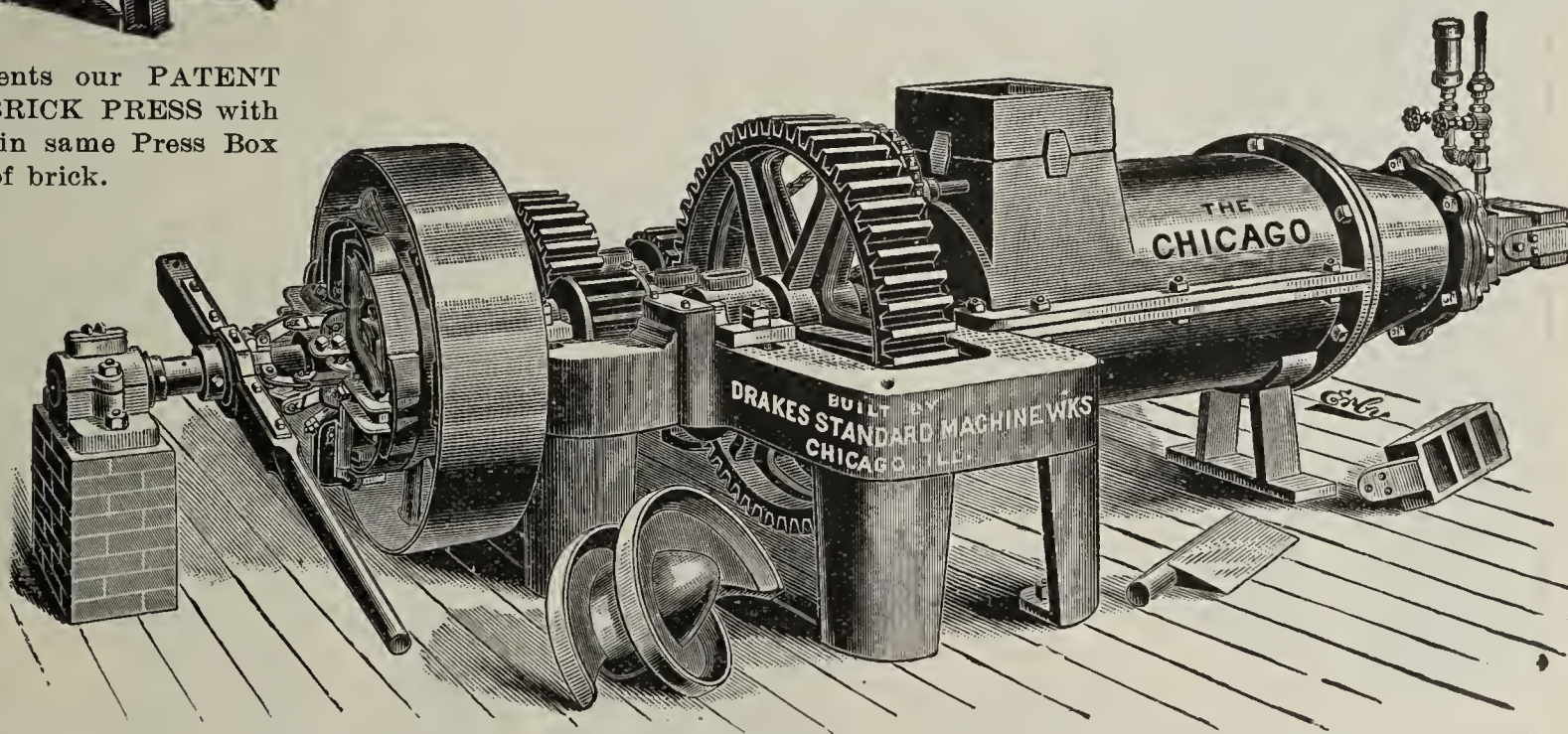


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 6 Crushers; Hayt & Alsip Co. is running 4 Crushers; Purington, Kimbell Brick Co. is running 8 Crushers; May, Purington & Bonner B. Co. is running 4 Crushers; J. B. Legnard is running 4 Crushers; Weckler Brick Co. is running 1 Crusher; Adam J. Weckler is running 1 Crusher; Weckler Prussing Brick Co. is running 1 Crusher; Chicago Brick Co. is running 3 Crushers; Union Brick Co. is running 2 Crushers; M. Myers is running 2 Crushers; Wahl Bros. is running 2 Crushers; Pullman Brick Co. is running 2 Crushers; Fred Zapel is running 1 Crusher; Myers & Toll is running 2 Crushers; Harms & Schlake Brick Co. is running 1 Crusher; L. Wehrheim & Son is running 1 Crusher; Alexander Burke is running 1 Crusher; John Sexton is running 1 Crusher; John Busse, Jr., & Co. is running 1 Crusher; Star Brick Co. is running 1 Crusher; John Busse is running 1 Crusher.

**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

This cut represents our PATENT RED and FIRE BRICK PRESS with change of liners in same Press Box for different style of brick.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 40,000 brick per day. Surpassed by none.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, ETC., ETC.

Send for circular of our GRANULATOR, it is the leader in Chicago, so says: Alsip Brick Co., Hayt & Alsip Co., May, Purington & Bonner Brick Co., Kimbell Brick Co., Purington-Kimbell Brick Co., and others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED.**



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

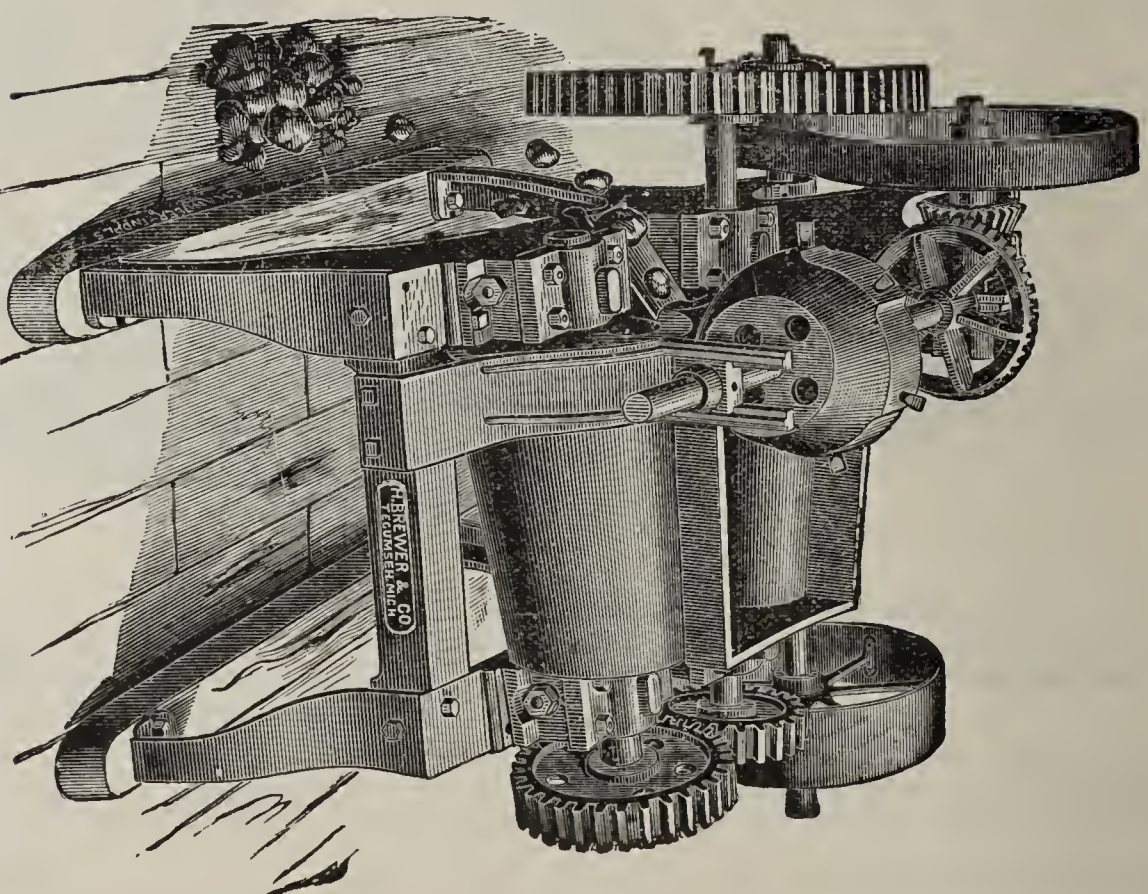
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

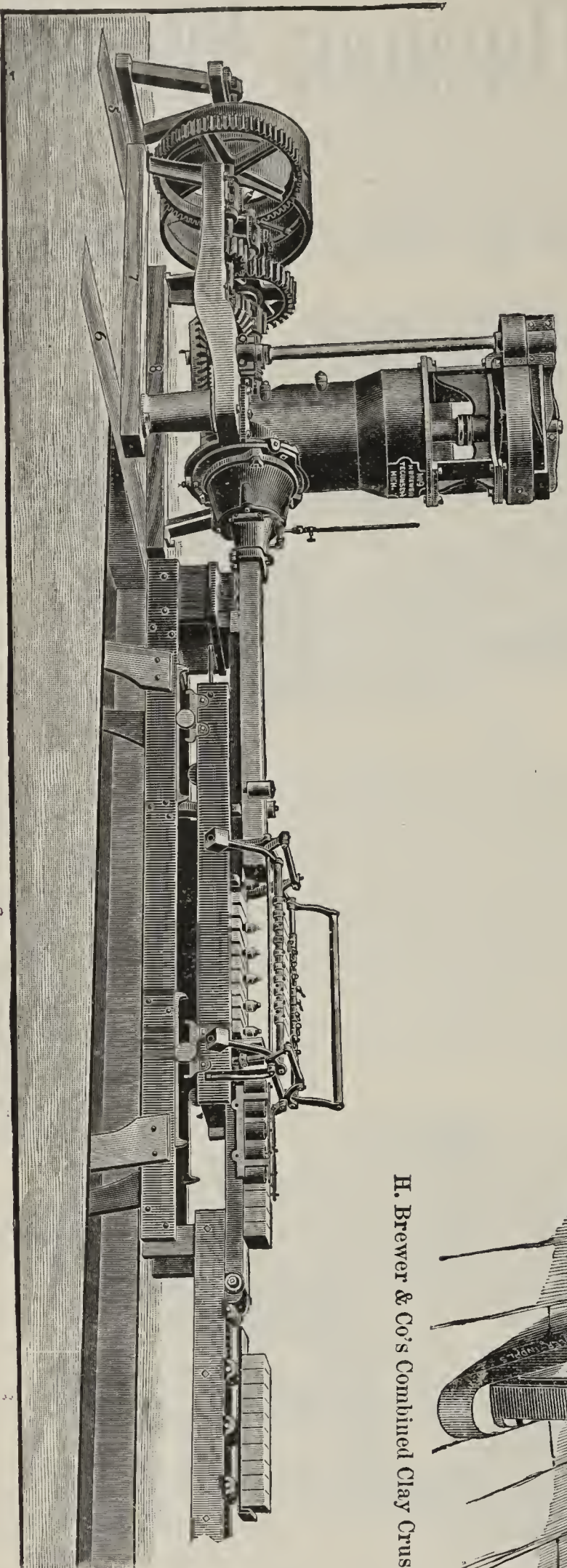
**H. BREWER & CO.,**

**Tecumseh, Mich.**

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.



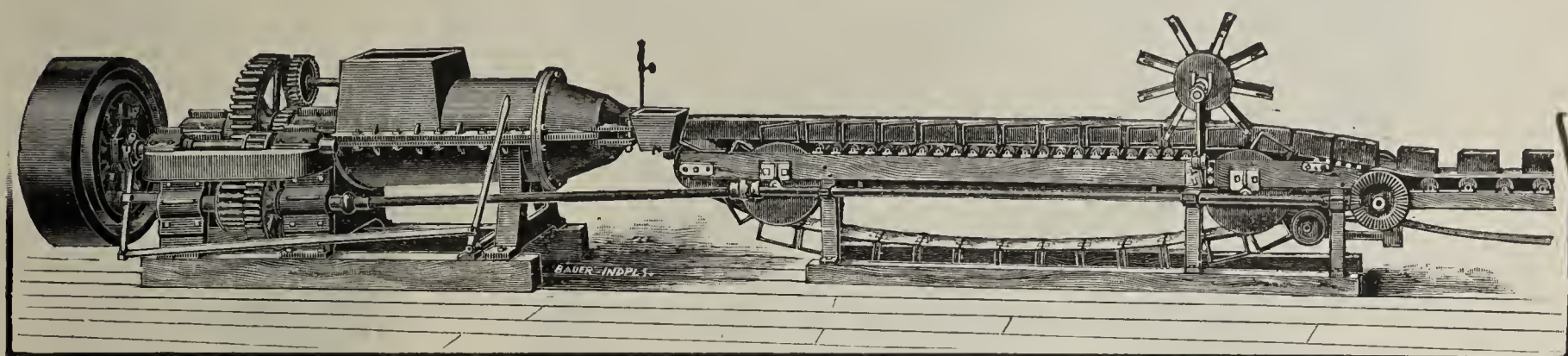
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



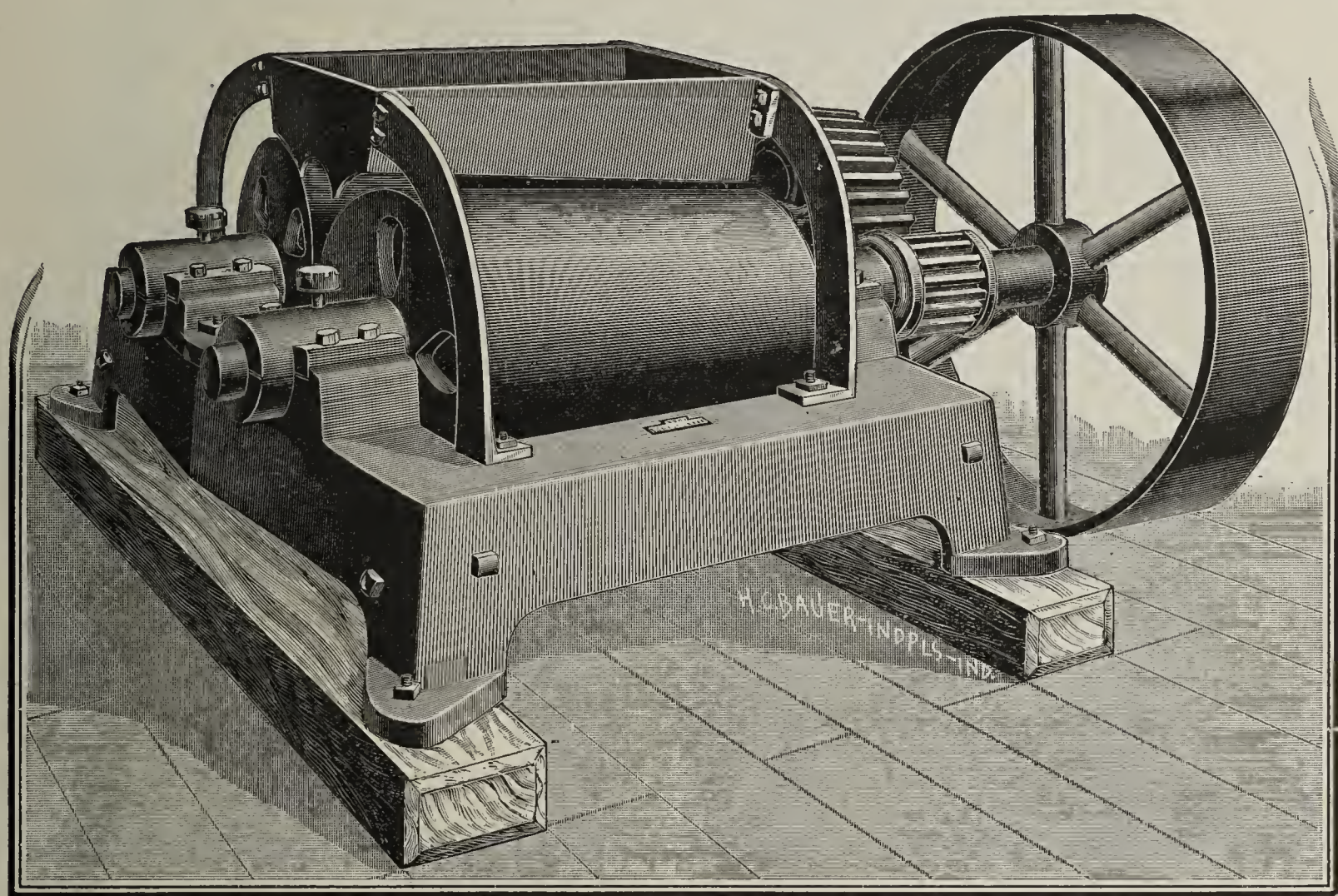
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

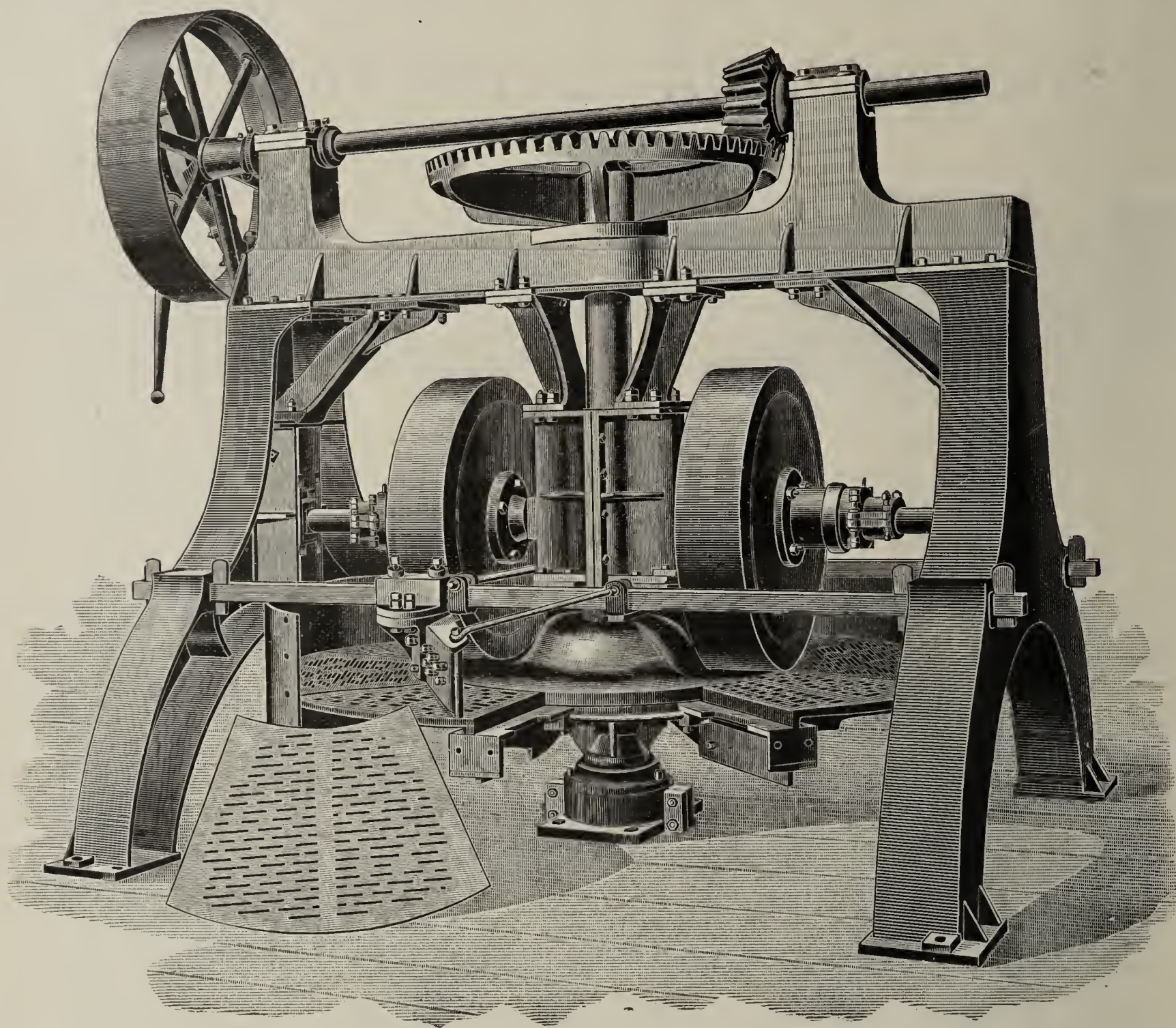
THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# The Frey-Sheckler Co.



We manufacture the best of Dry and Wet-Pans. The numerous testimonials on file in our offices prove it.

We are manufacturers of everything needed in the Clayworking business. Six sizes of Brick and Tile Machines, Pug Mills, Represses, Hand and Automatic Cutting Tables, Screens, Crushers, Elevators, Conveyors, Dry Houses, Etc., Etc.

Get our prices before investing a cent.

## The Frey-Sheckler Co.,

Send for Catalogue.

— Bucyrus, Ohio, U. S. A.



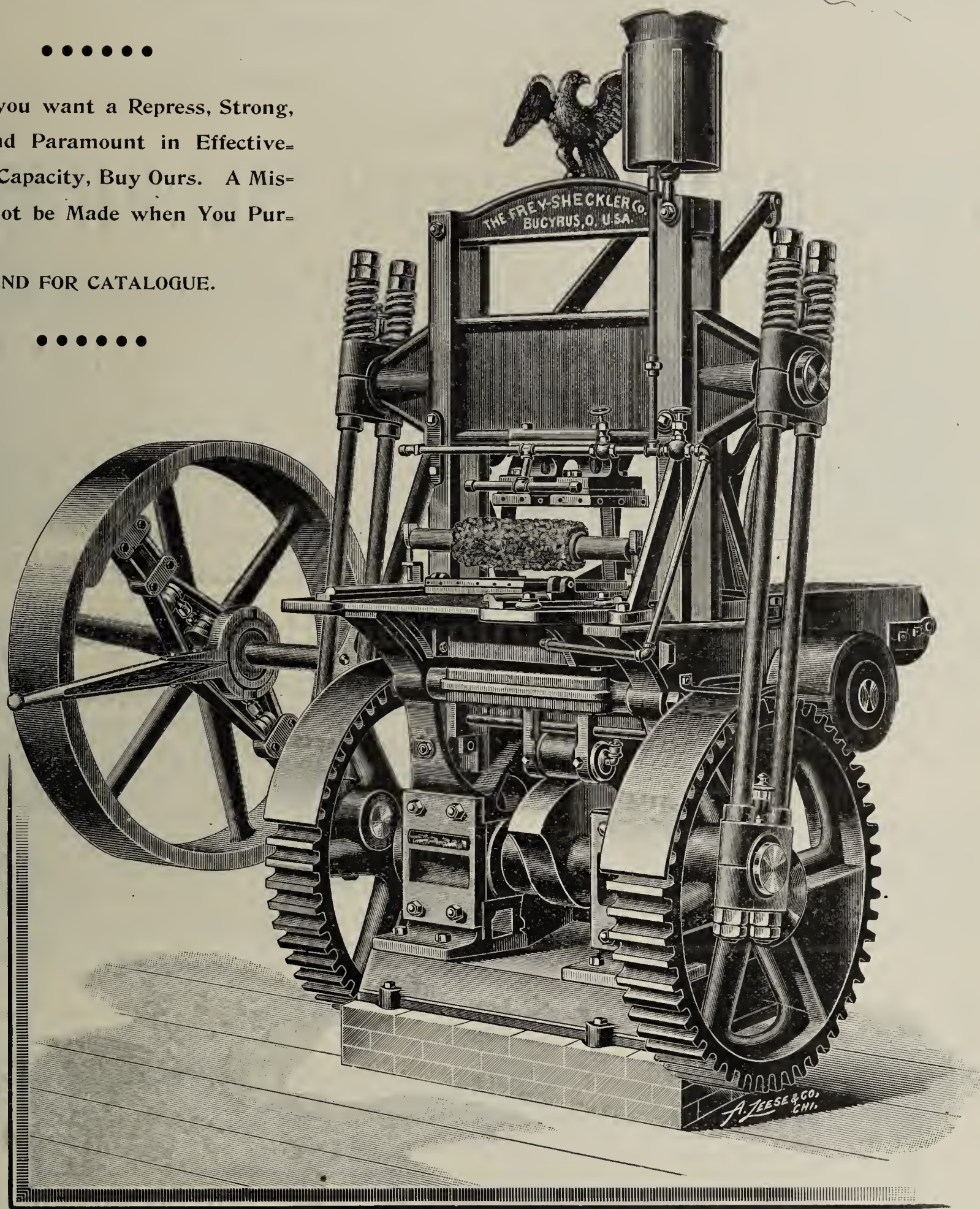
# A PRIDE TO IT'S OWNERS.

.....

When you want a Repress, Strong, Simple and Paramount in Effectiveness and Capacity, Buy Ours. A Mistake cannot be Made when You Purchase it.

SEND FOR CATALOGUE.

.....



The Ft. Smith Paving Brick & Fire Clay Co., Ft. Smith, Ark., recently purchased two of our Eagle Steam Power Represses. See what they have to say.

FORT SMITH, ARK., April 24, 1893.

THE FREY-SHECKLER Co., Bucyrus, Ohio.

GENTLEMEN:—We have been using two of your "Eagle" represses for something over thirty days, and wish to express our entire satisfaction with them. Before placing our order we examined carefully the merits of the various steam presses on the market, and liking the general construction of yours best, bought from you with the proviso that the presses should fulfill all of your representations. We are pleased to say that they have done so. The machines are simply and durably built and have run with uniform ease and smoothness, putting a very heavy pressure on the brick. They have been making from 20 to 22 strokes per minute, each machine repressing from 2,400 to 2,880 brick per hour. We can sincerely recommend them to the trade.

Very truly yours,

FORT SMITH PAVING BRICK & FIRE CLAY CO.,  
By M. D. HUNTON, Sec. and Treas.

THE FREY-SHECKLER CO., Manufacturers of Clay Working Machinery, Bucyrus, Ohio, U. S. A.

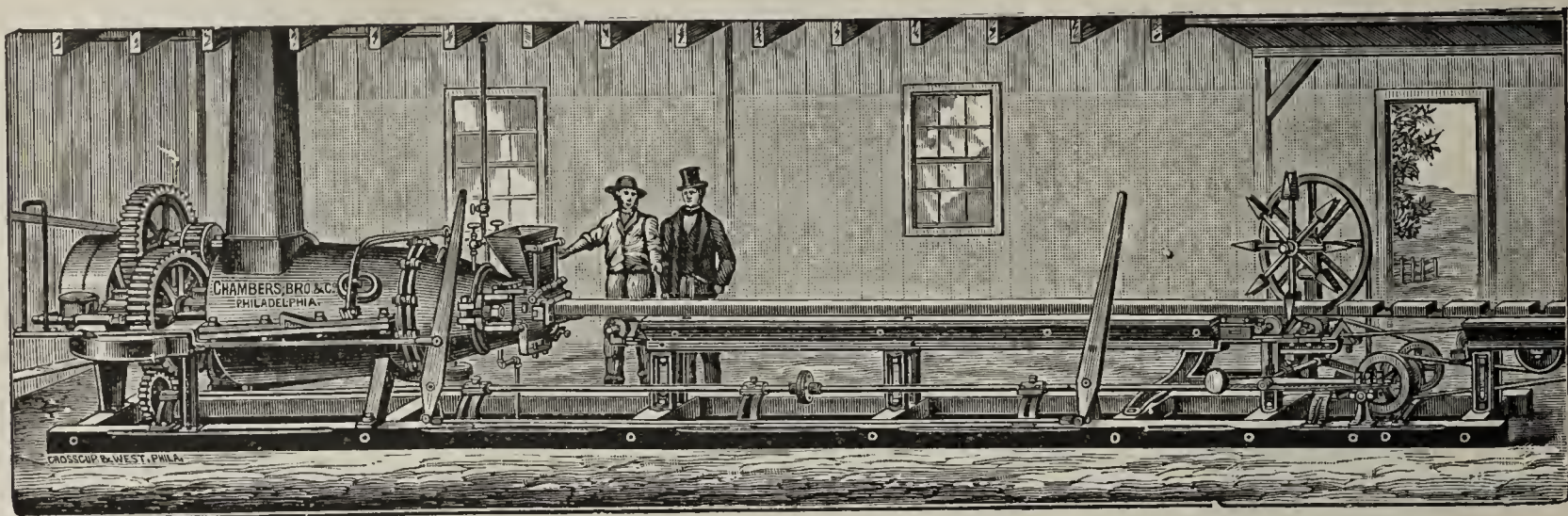


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

PHILADELPHIA, PENN.

## IMPROVED BRICKMAKING MACHINERY.



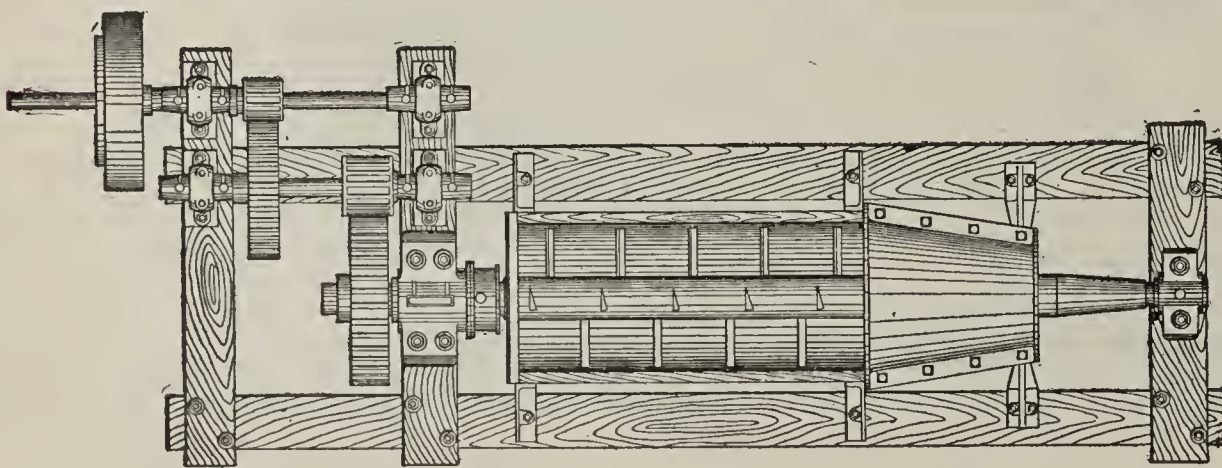
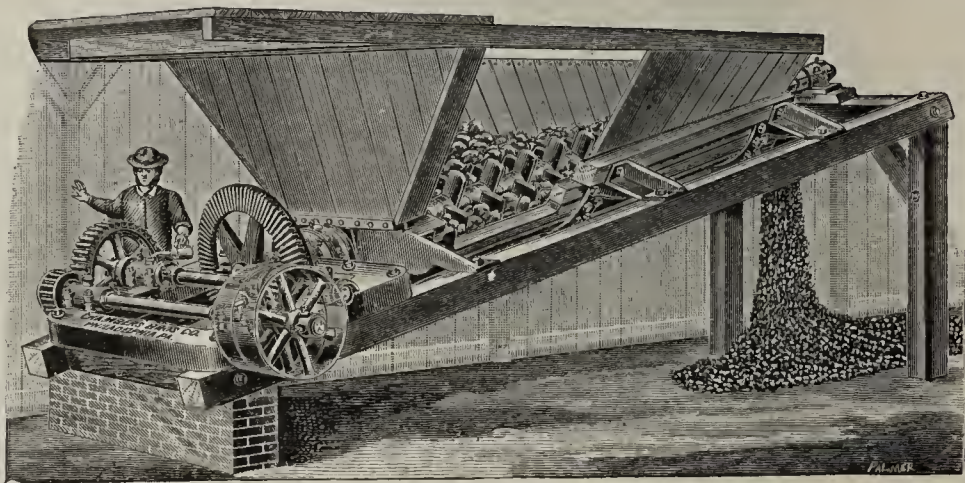
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

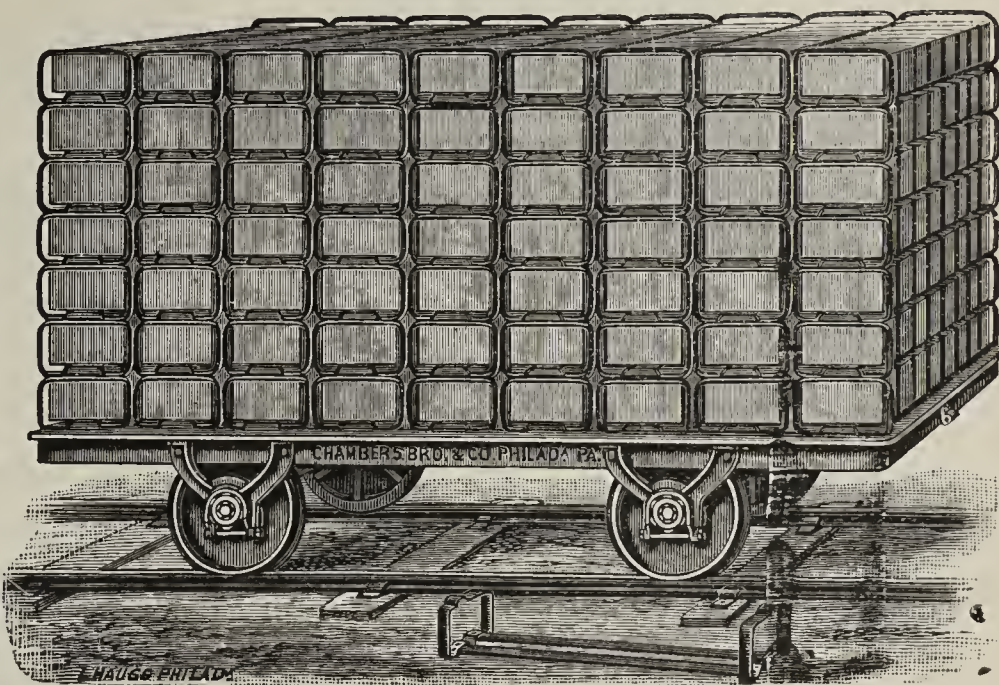
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

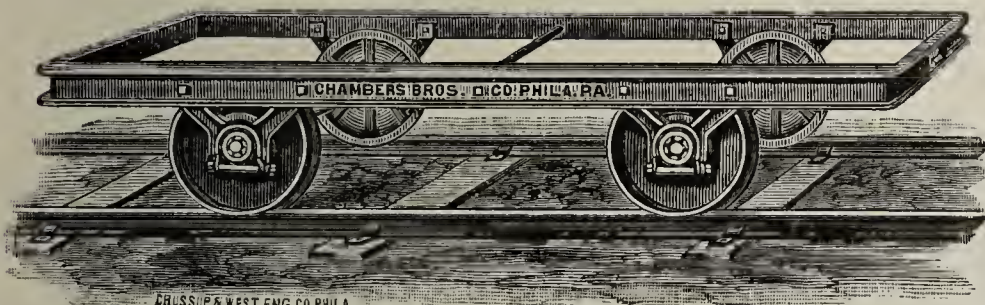
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

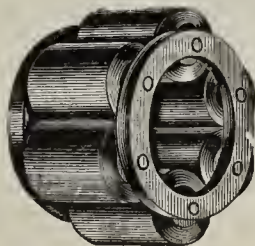


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

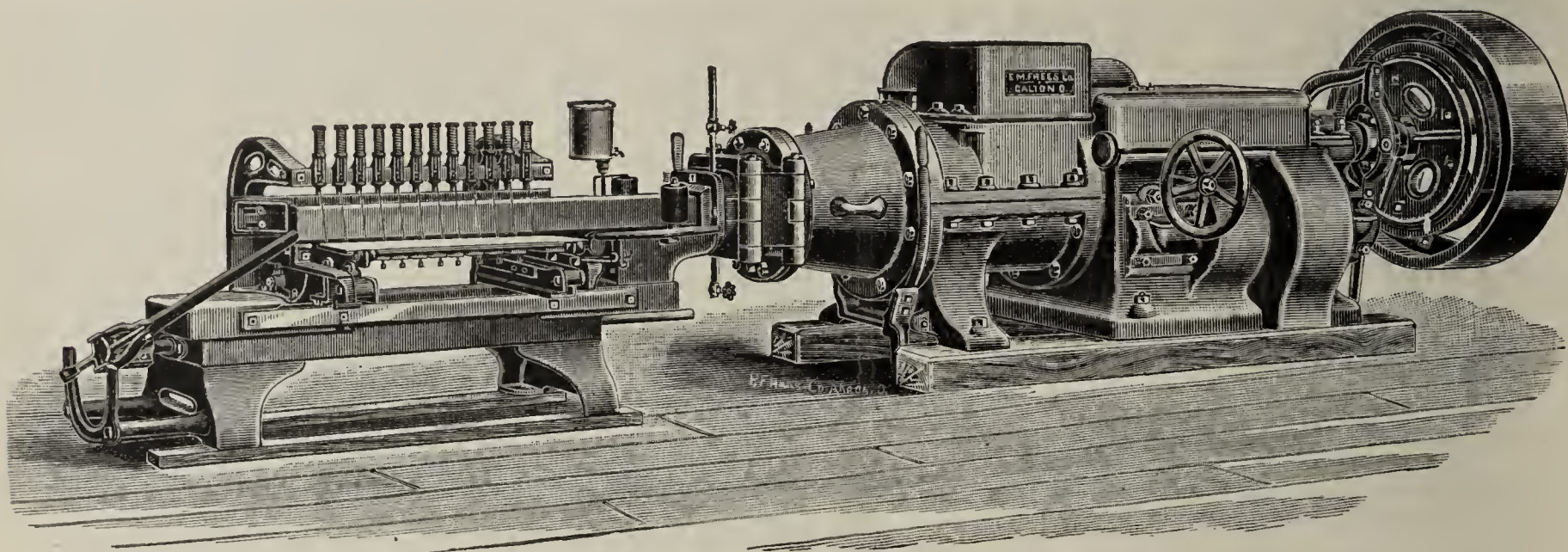
See ad. on front cover page.

[Mention the Clay Worker



# IMPROVED BRICK MACHINERY.

WE recognize the fact that the trade grows more exacting, and the demand is for better brick and better machinery. Our business is to supply the latest and most improved machinery which will produce the **best** quality of brick at the **lowest** cost.

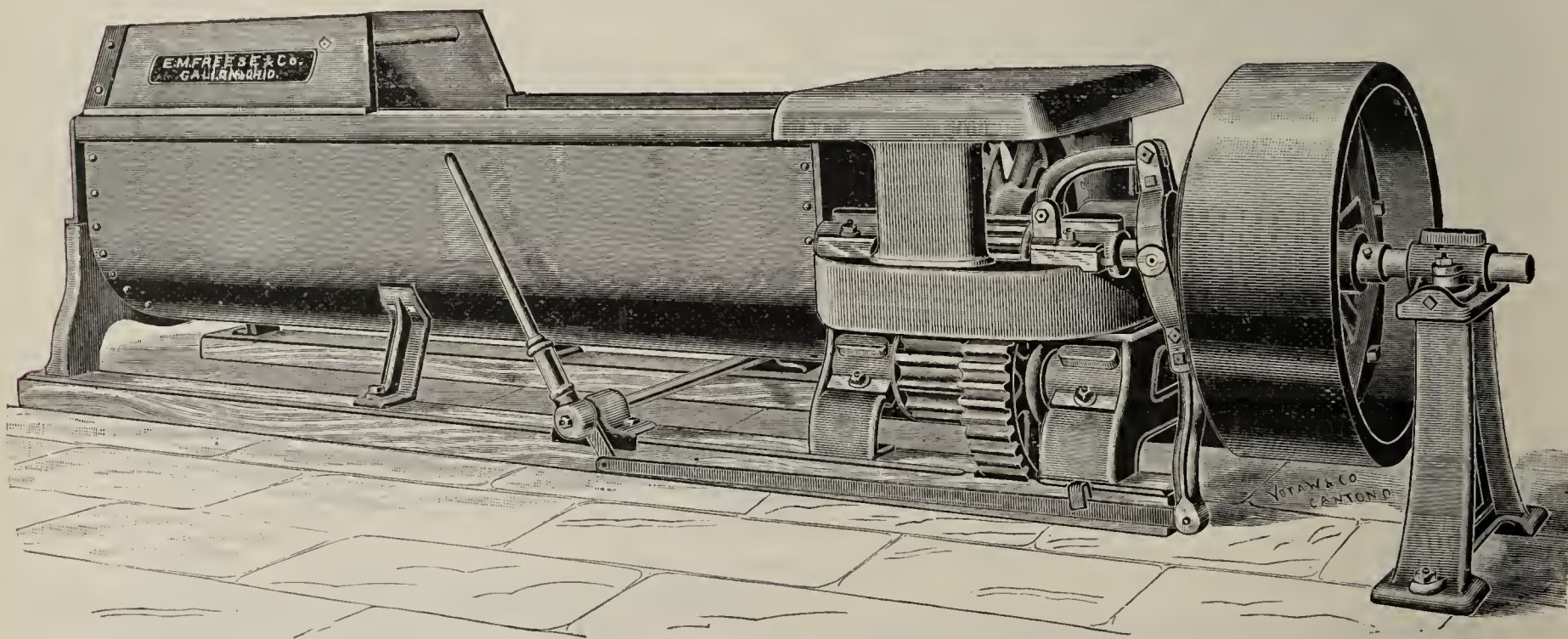


"MAMMOTH JUNIOR" OHIO BRICK MACHINE.

This machine is compact, simple, self-contained, dust proof, has rotary force feed, improved thrust Bearing, safety front, friction clutch pulley, and lubricating brick die.

All of the few parts this machine has are very heavy, and none of them will cause you trouble. Write for particulars.

## •❖ ANOTHER • PUG • MILL. ❖•



Our Pug Mills are made of all sizes and capacities. They have new and valuable features. They give universal satisfaction. Why not get a Pug Mill that will PUG your clay, not one that simply conveys the clay from one end to the other. WHY?

IT WILL PAY YOU TO LOOK US UP.

ADDRESS **E. M. FREESE & CO.,**  
GALION, OHIO.



# ·✠· AND STILL THEY COME! ·✠·

HORNELLVILLE, N. Y., May 27, 1892.

MESSRS. E. M. FREESE & Co., Galion, Ohio.

*Gentlemen:*—Yours of the 25th inst., is at hand, and in reply would say, that we are manufacturing paving brick from shale rock on the machine we purchased of you in March last. The machine is strong and well suited for making this class of brick, doing the work easily. We require a very stiff column of clay, and we are pleased to say that this machine produces the kind of brick we want.

Very truly,  
HORNELLVILLE BRICK, TILE & T. C. CO.



CALIFORNIA, WASHINGTON Co., PA. }  
May 30, 1892. }

E. M. FREESE & Co., Galion, Ohio.

*Sirs:*—The machine is doing first-class work—the best I ever saw. I am not prepared to say just what the capacity of the machine is. I have made at the rate of 4,500 per hour, and know that it is not near what it will do.

Yours respectfully,

F. H. MARTIN.



FAIRMOUNT, W. VA., October 25, 1892.

E. M. FREESE & Co., Galion, Ohio.

*Gentlemen:*—Your favor of October 22nd received. We are glad to furnish you our testimonial with reference to our experience with the Ohio Brick Machine. We commenced to make brick about the first of last April. The machine works like a charm. The machine is very strong and durable, and works beautifully and makes a perfect brick.

Truly yours,

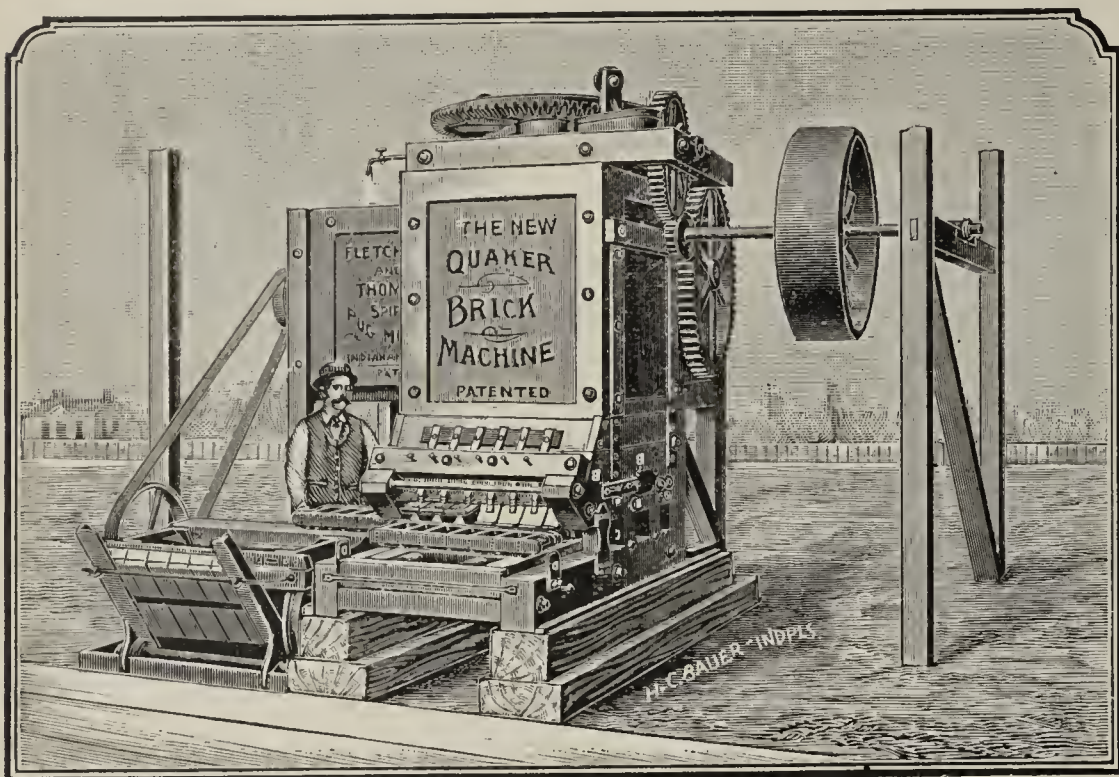
J. H. & M. N. BARNES.



## FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

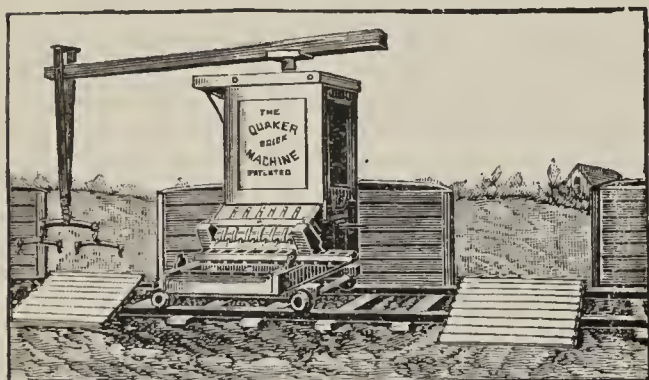


## Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

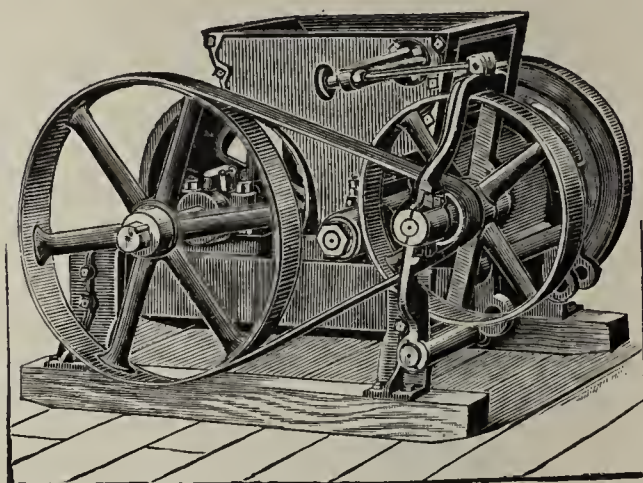
This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



## THE NEW QUAKER

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



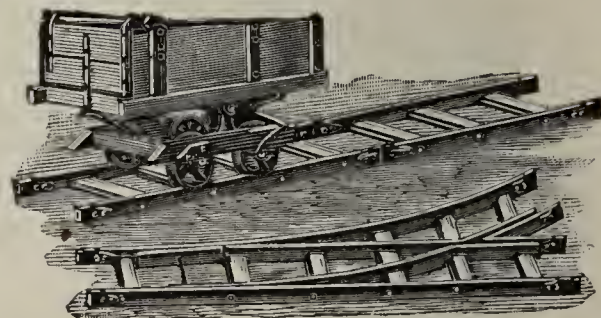
## DISINTEGRATORS.

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

FLETCHER & THOMAS, Indianapolis, Ind.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

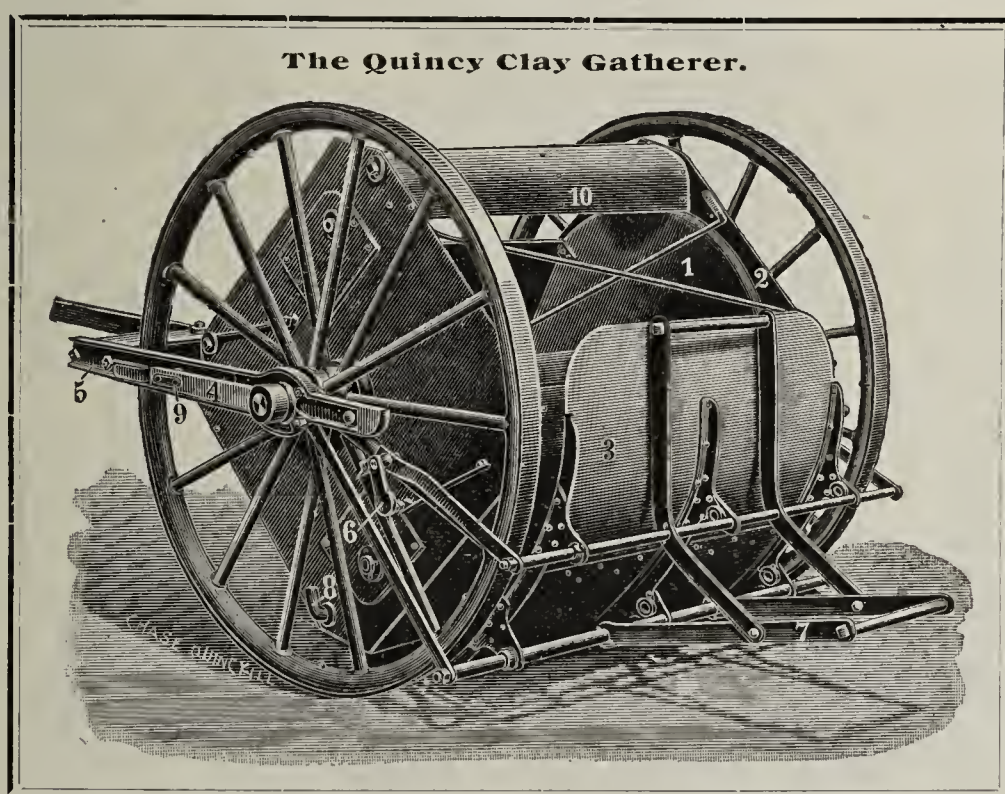
## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

The  
PERFECTION  
HYDRAULIC  
BRICK PRESS  
and....  
ANDRUS IMPROVED  
DOUBLE PRESSURE  
BRICK PRESS

Are the best Presses in  
the market.



The  
GRATH DOUBLE  
DOWN DRAFT KILN,  
PERFECTION CLAY  
DISINTEGRATOR  
....and  
QUINCY CLAY  
GATHERER.

Write for Circulars and  
Prices.

ALL of the above appliances are in use at the yards of the American Hydraulic Press Brick Co., Collinsville, Ill., who are producing the finest quality Press Brick in the country, free from granulation.

We solicit an inspection of our works.

## ILLINOIS SUPPLY & CONSTRUCTION Co.,

Odd Fellows' Building,

ST. LOUIS, MO.



# THE SIMPSON BRICK PRESS.

*NO SEAM AROUND THE BRICK.*

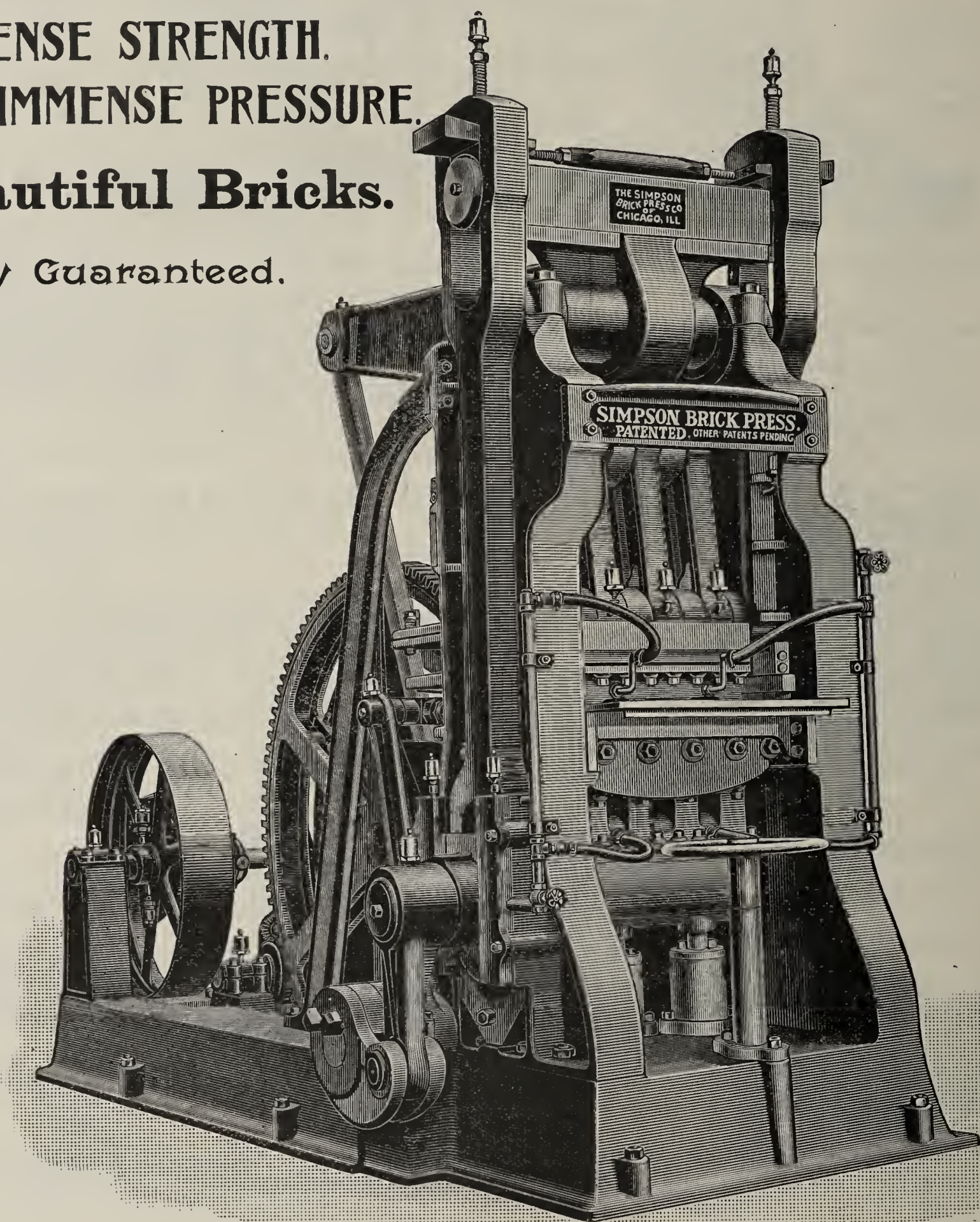
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

**IMMENSE STRENGTH.**

**IMMENSE PRESSURE.**

**Beautiful Bricks.**

Fully Guaranteed.





# The SIMPSON 5-MOLD Brick Press.

—Apply to—

**THE SIMPSON**

**BRICK PRESS CO.,**

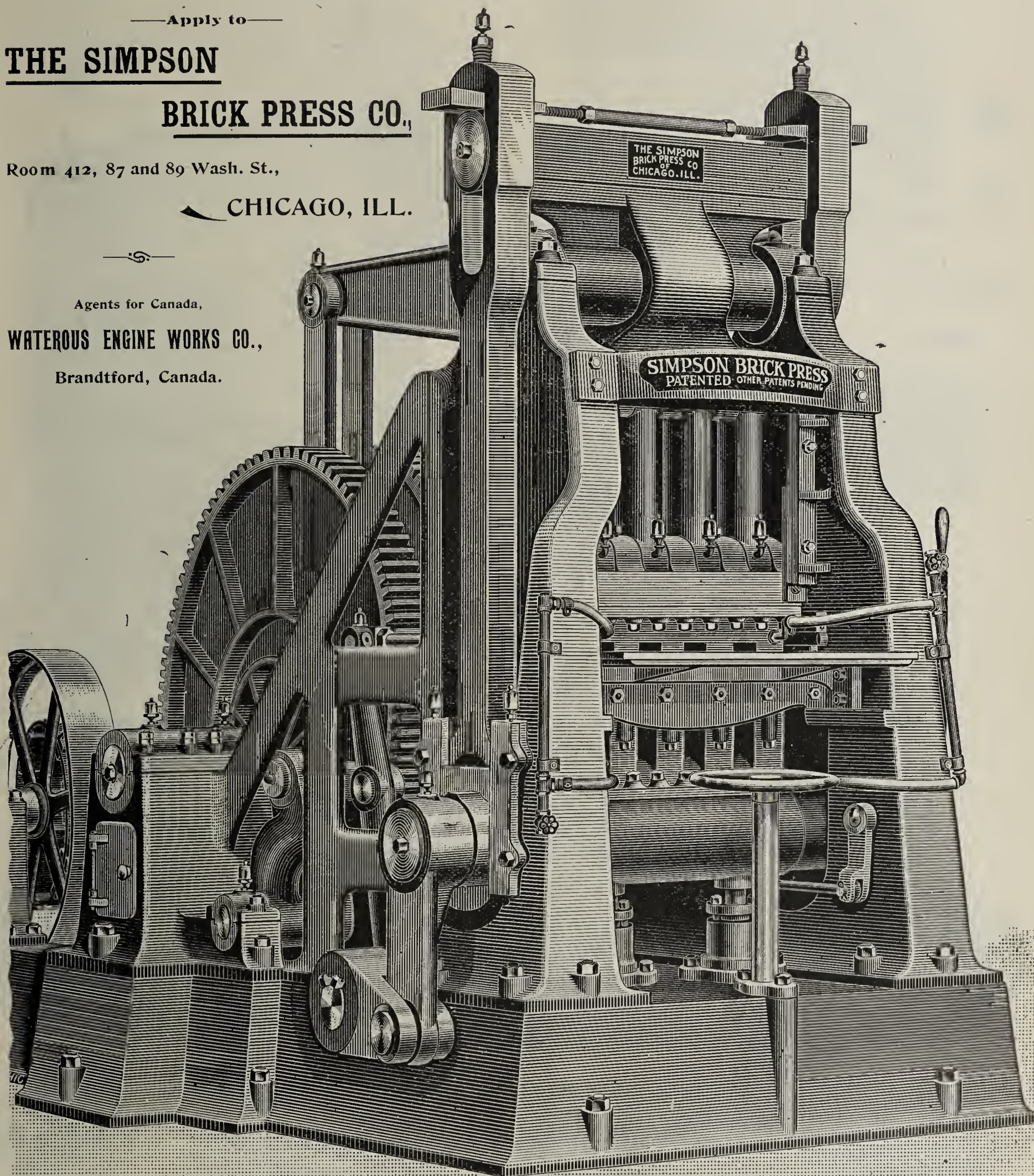
Room 412, 87 and 89 Wash. St.,

**CHICAGO, ILL.**

Agents for Canada,

**WATEROUS ENGINE WORKS CO.,**

Brandtford, Canada.





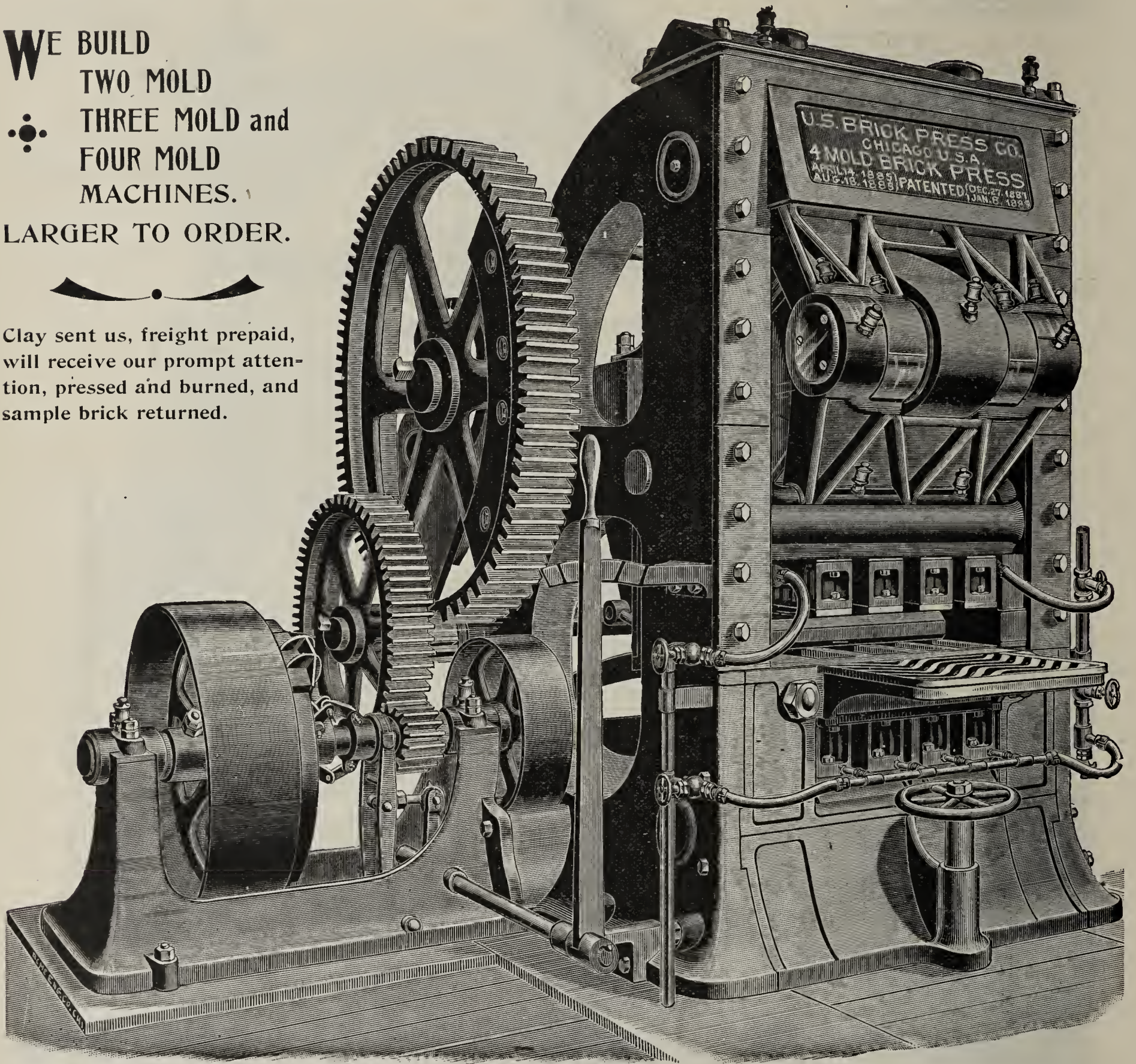
# THE U.S. DRY CLAY BRICK PRESS

Is specially designed to meet the requirements of the modern Brick Plant, inasmuch as it is representative of STRENGTH, DURABILITY, and above all, of SIMPLE CONSTRUCTION.

— ✻ MAKES FINE FINISHED FACES ✻ —

**WE BUILD**  
 TWO MOLD  
 ✻ THREE MOLD and  
 FOUR MOLD  
 MACHINES.  
 LARGER TO ORDER.

Clay sent us, freight prepaid,  
 will receive our prompt atten-  
 tion, pressed and burned, and  
 sample brick returned.



SEND FOR CATALOGUE AND PRICES TO

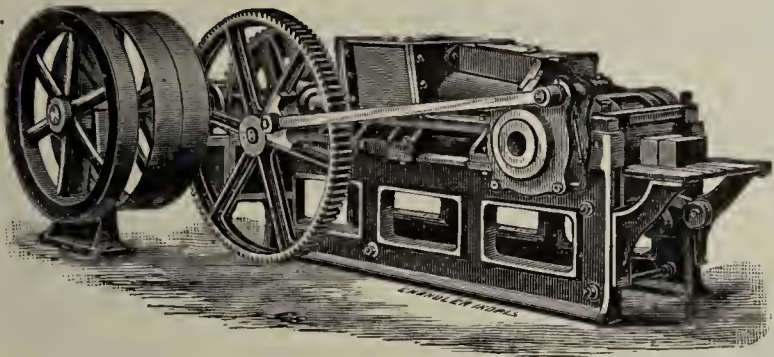
## THE UNITED STATES BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

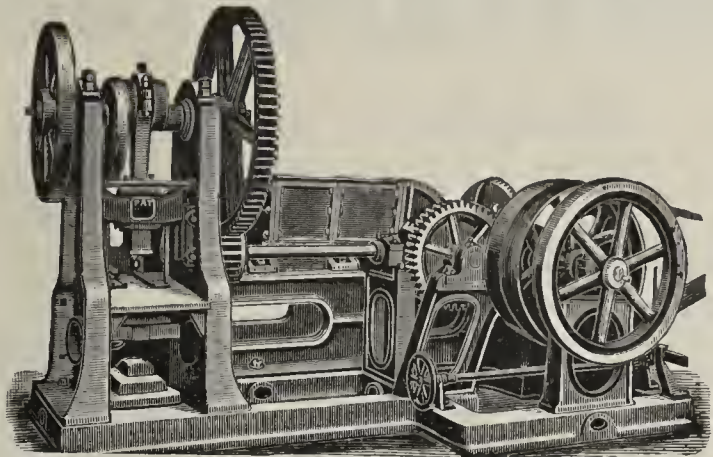
1111 to 1113 UNITY BUILDING,

79 DEARBORN STREET, CHICAGO, ILLS.

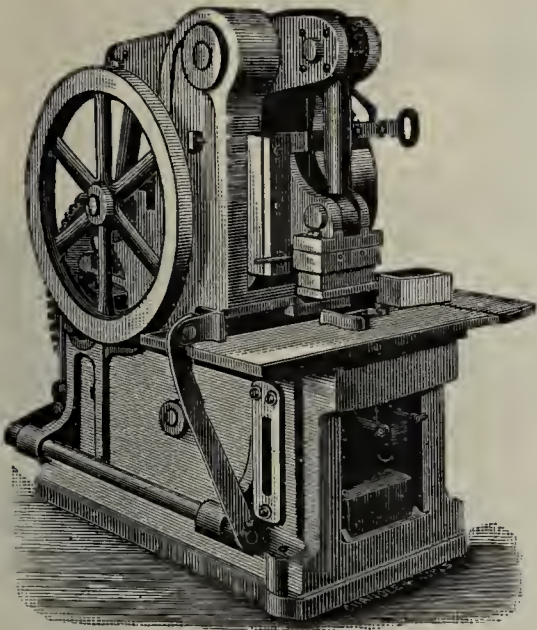




IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK & TILE PRESSING MACHINE

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building **BRICK**

and the best and most economical  
kiln in which to burn them.

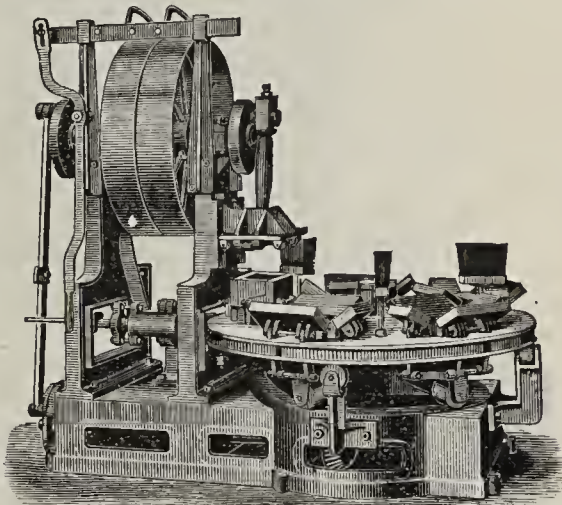
We are prepared to furnish com-  
plete equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

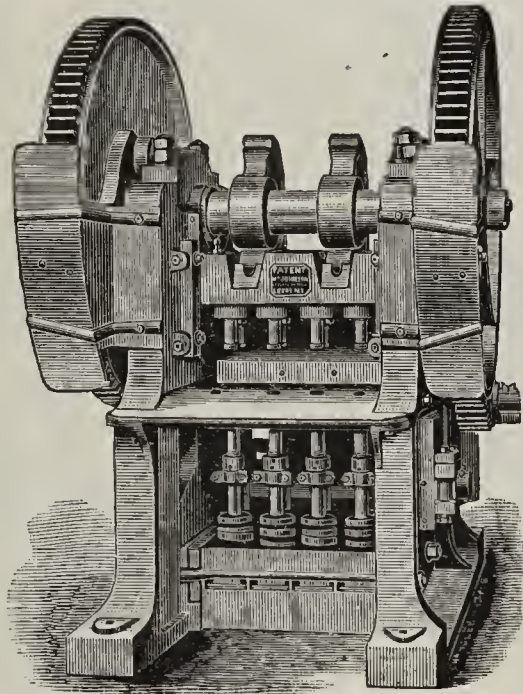
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

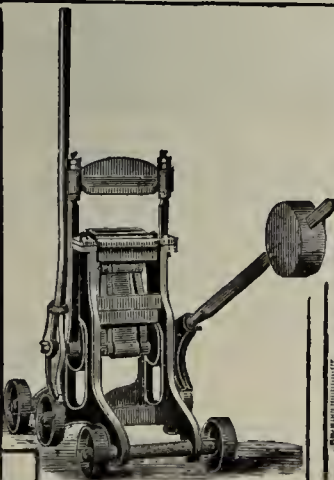
BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



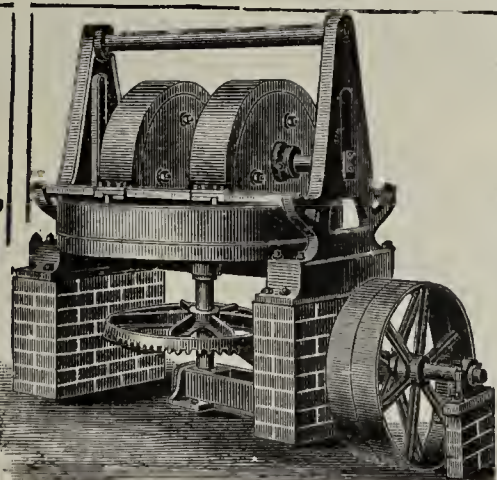
PAT. STEAM SAND-FACED PRESSING MACHINE



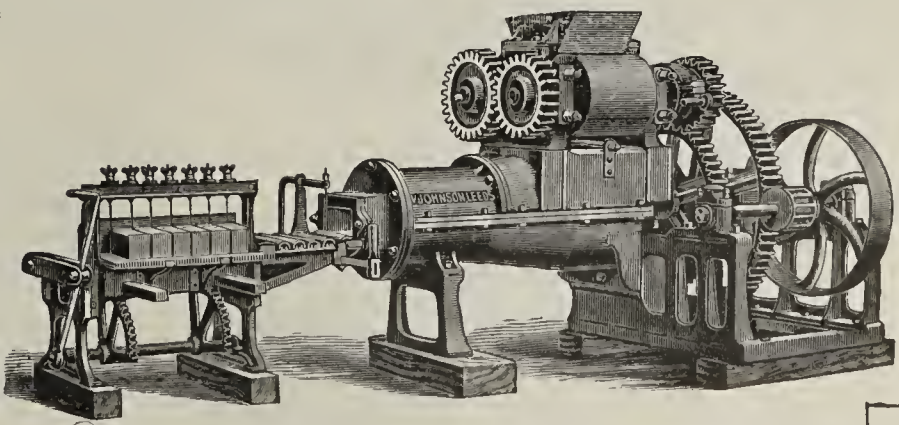
DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER



HAND LEVER BRICK PRESS



PERFORATED EDGE RUNNER CLAY GRINDER



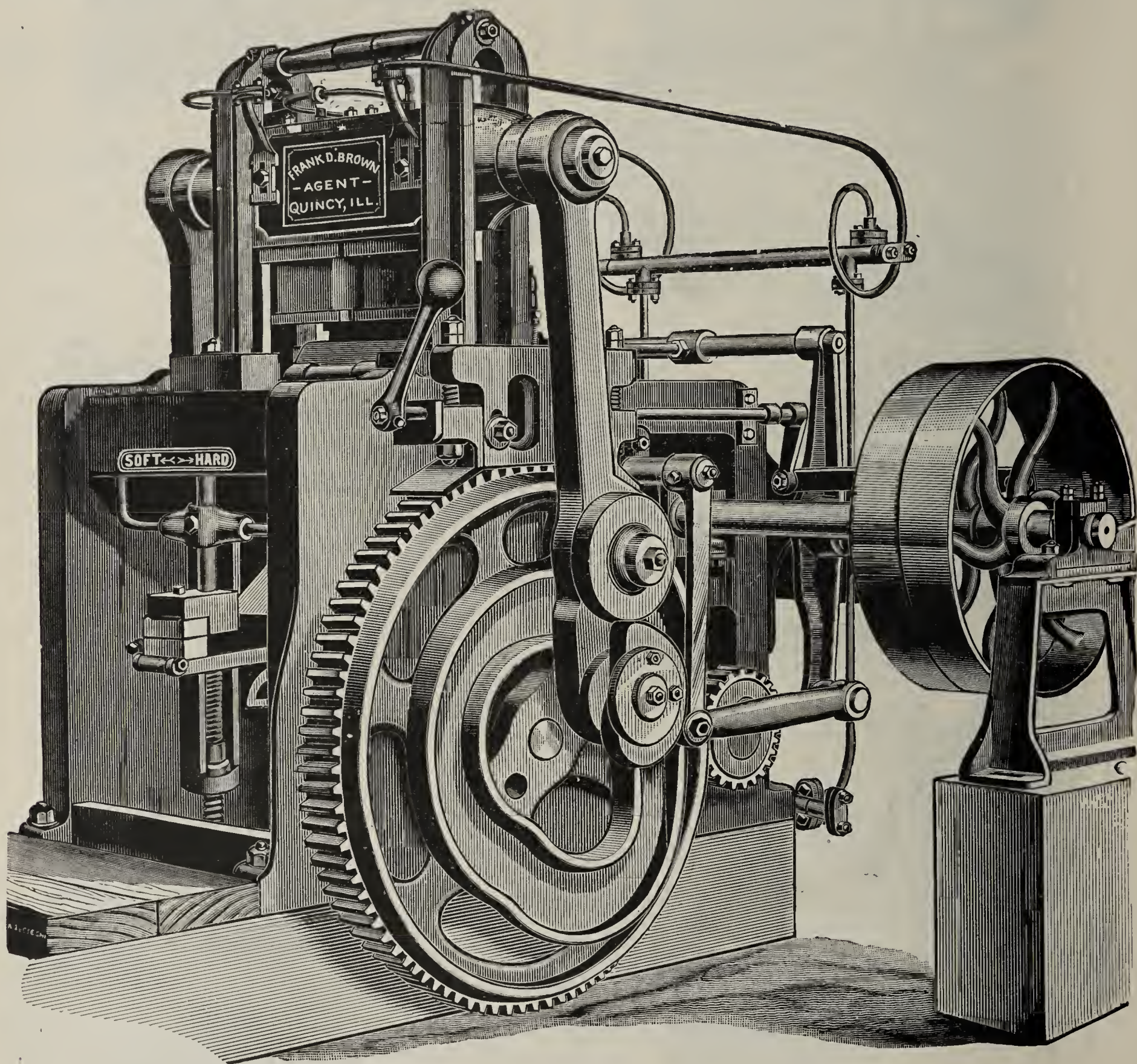
COMBINATION PUG MILL BRICK & TILE MACHINE



# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN, Quincy, Ill.**



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

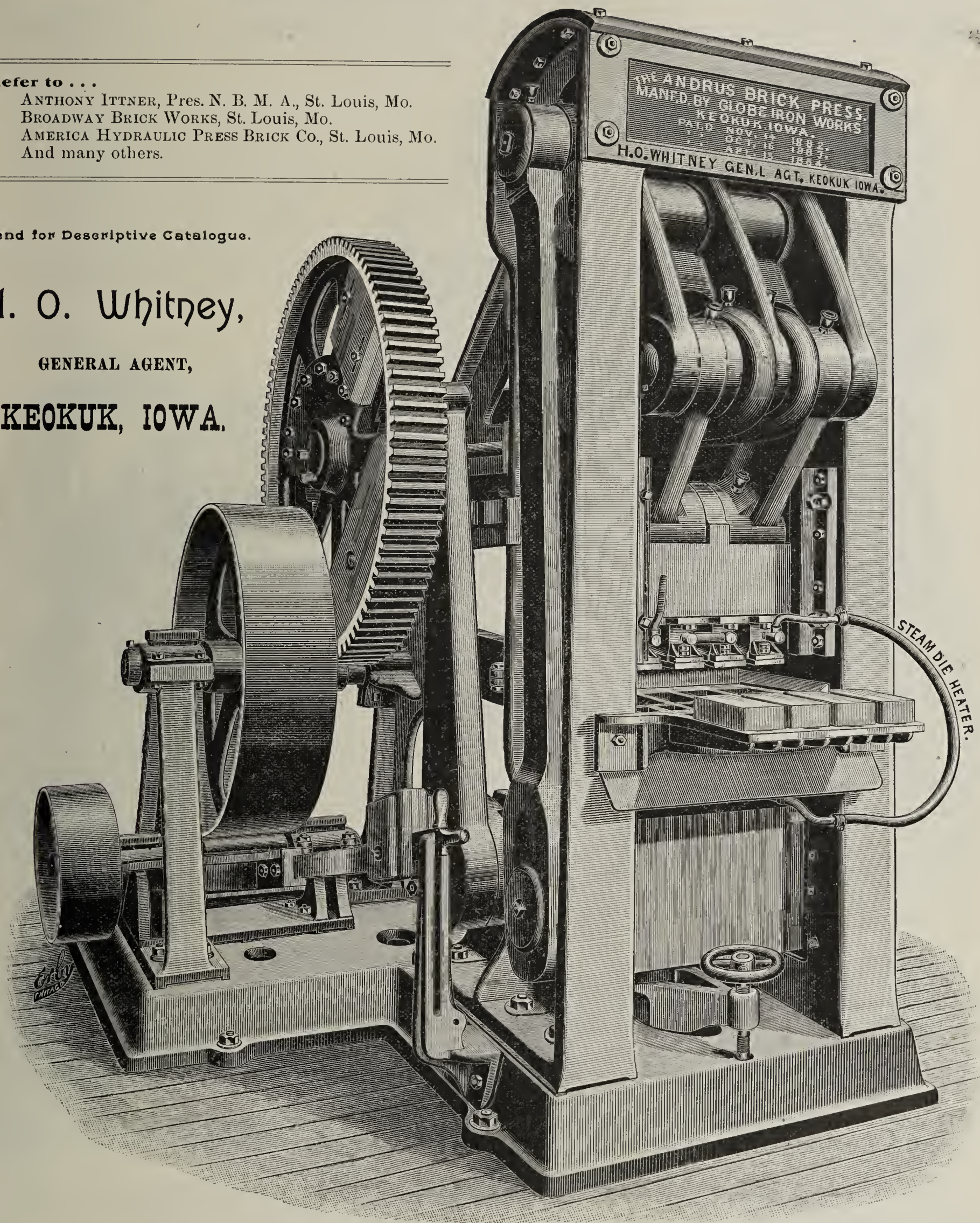
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.

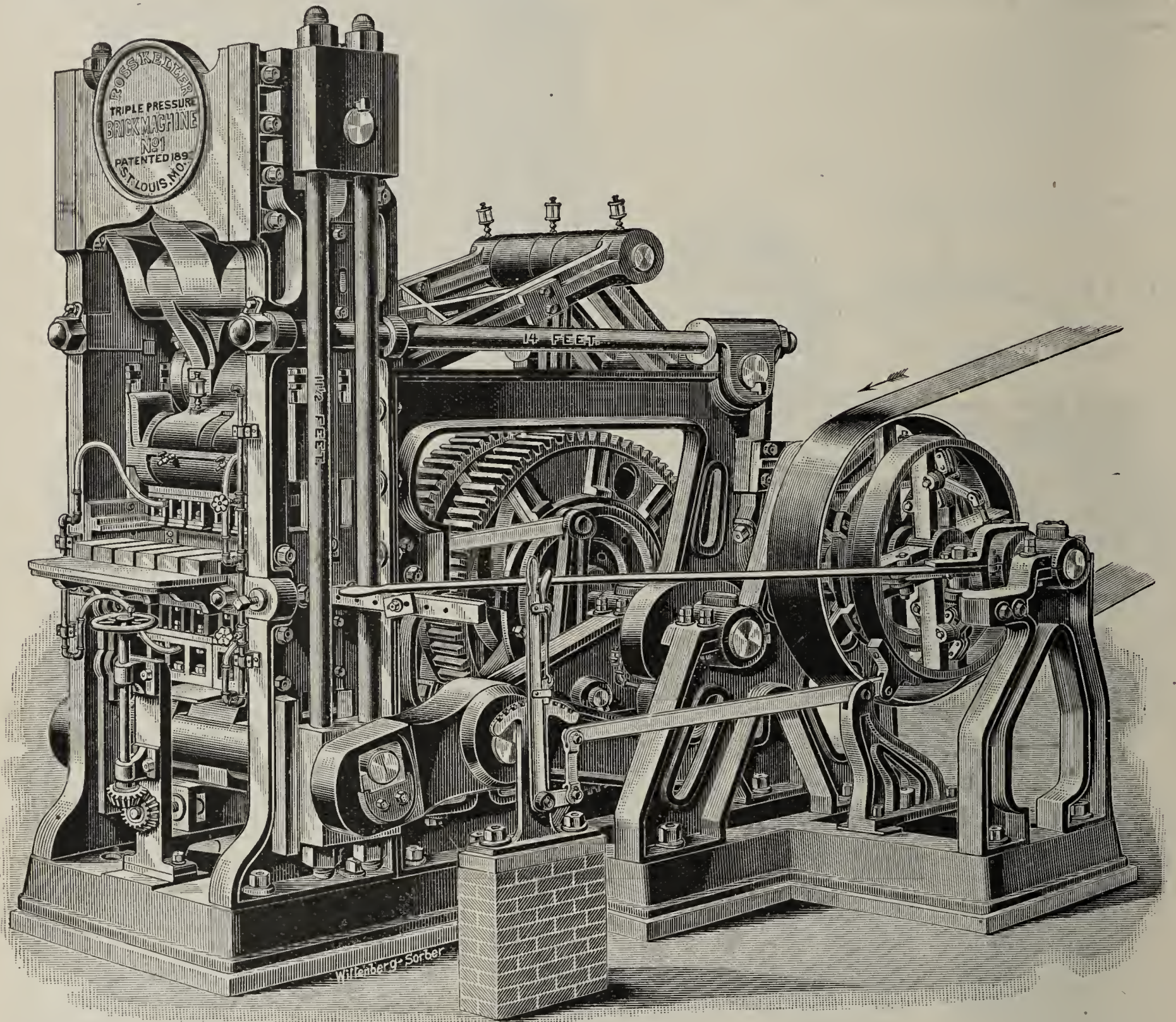




# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 75,000 pounds, Capacity 35,000 pressed brick per day.*



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**  
*Room 207 Laclede Building, ST. Louis, MO., U. S. A.*



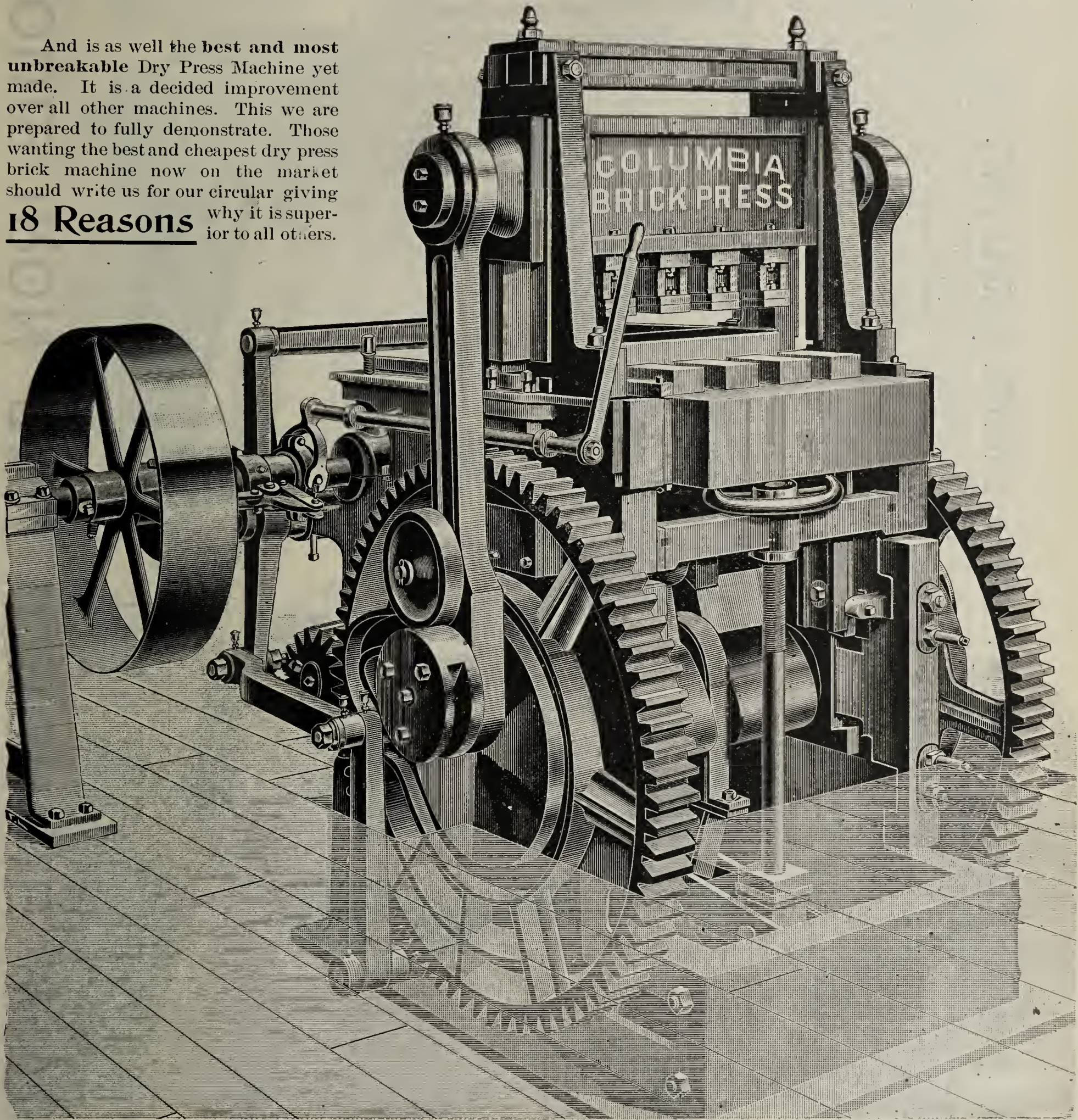
❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

# FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving

**18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

## COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



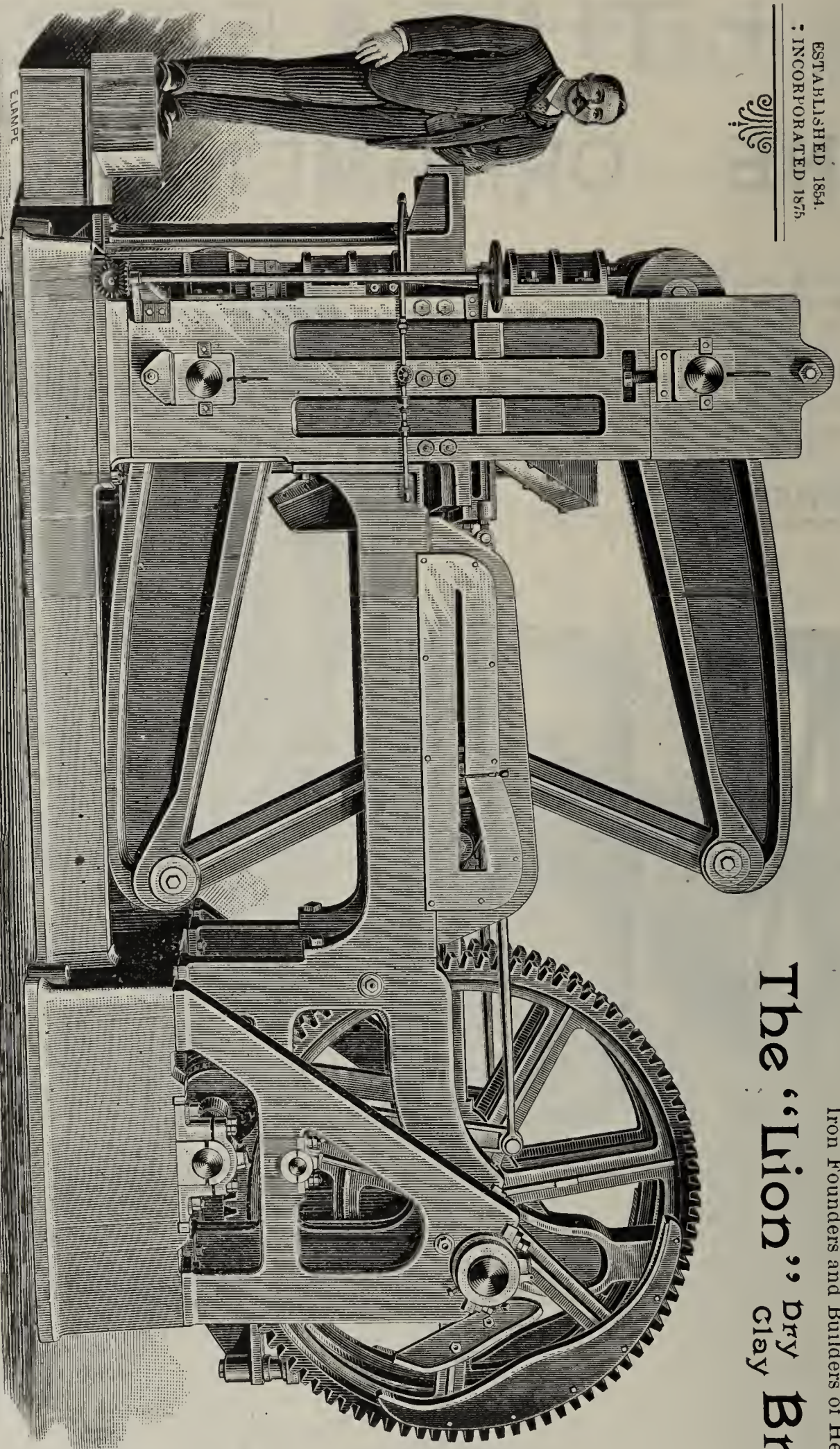
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1854.  
INCORPORATED 1875.



The "Lion" Dry Clay Brick Press.

Iron Founders and Builders of Heavy Machinery.



Weight, 44,000 pounds.

Capacity, 25,000 to  
30,000 pressed  
bricks per 10 hours

Pressure, 200 Tons on Five  
Bricks.



## WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain.
2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum.
3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do.
4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

**ST. LOUIS IRON & MACHINE WORKS, Main Street and Chouteau Ave., St. Louis, Mo.**



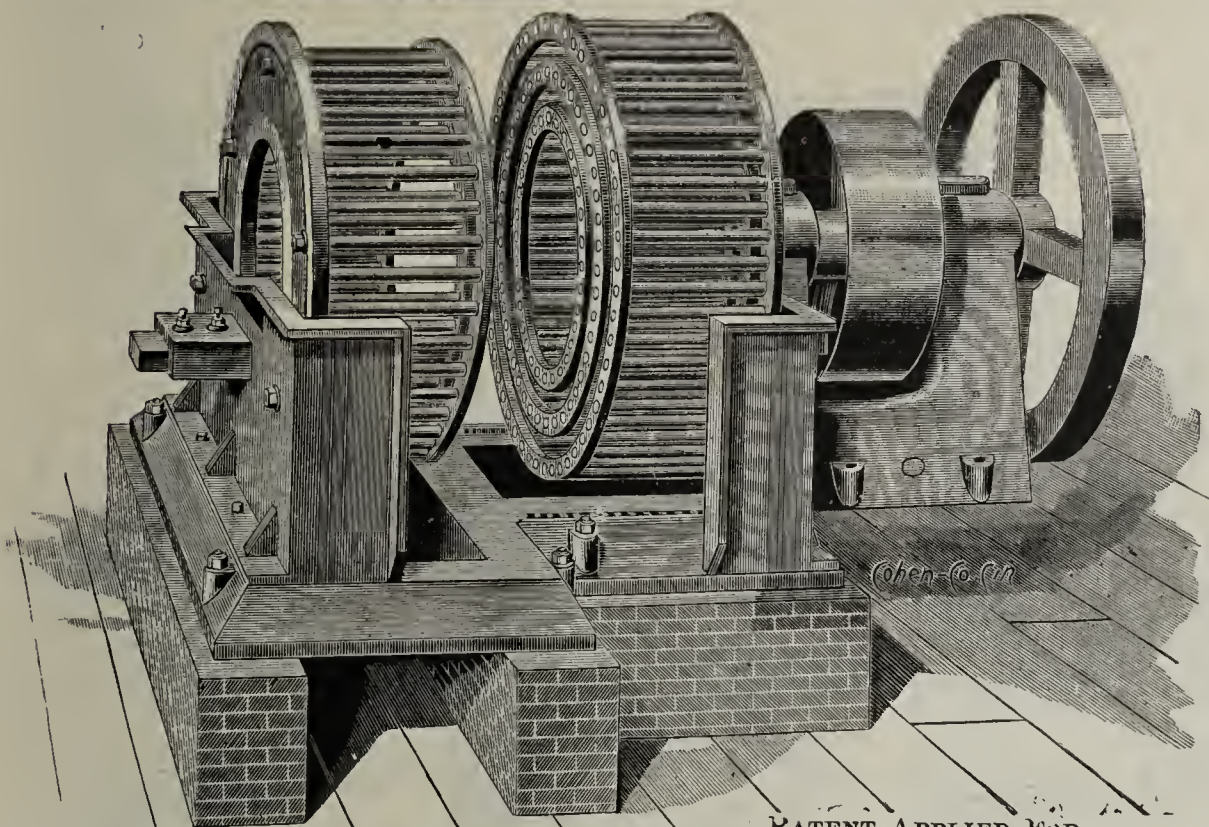
## Description.



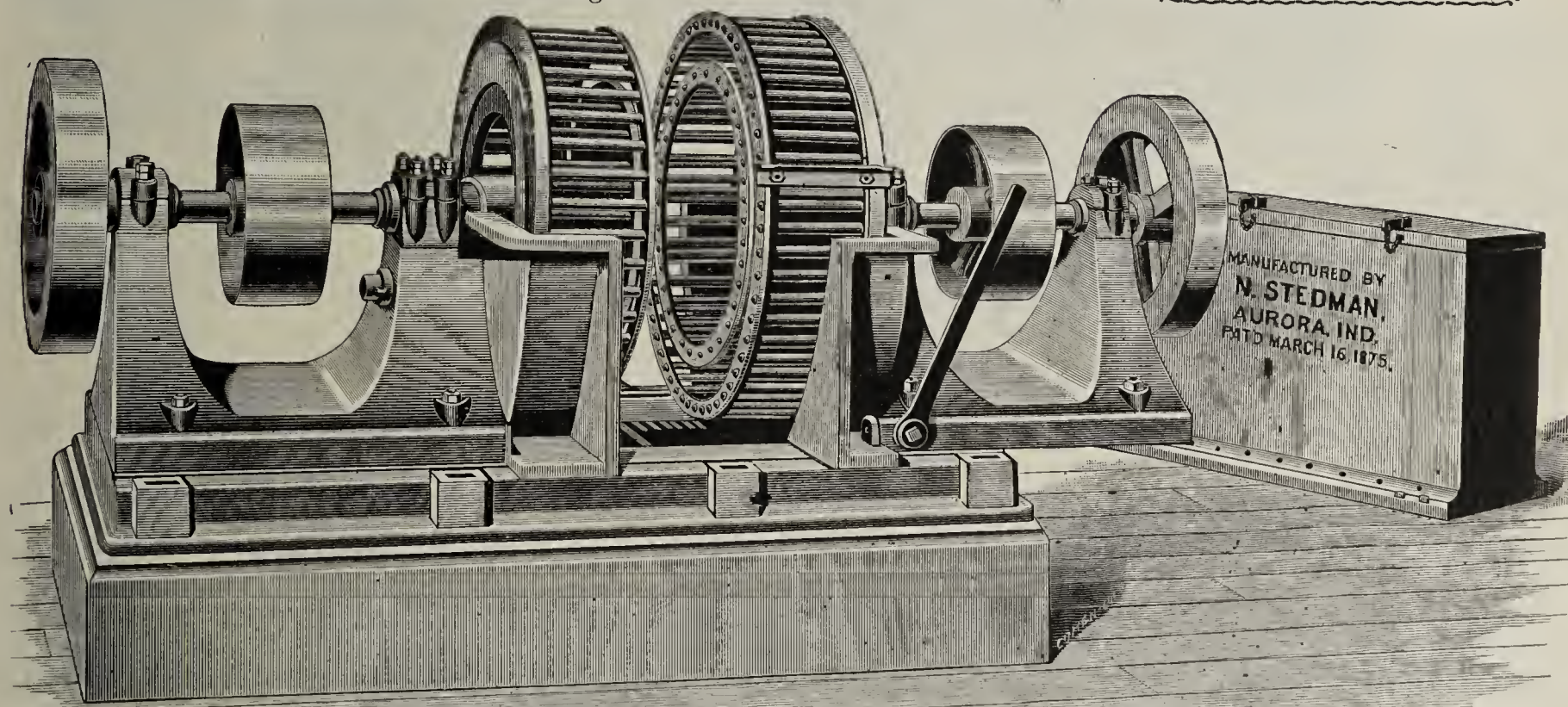
This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loomy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



# Millions . . . . .



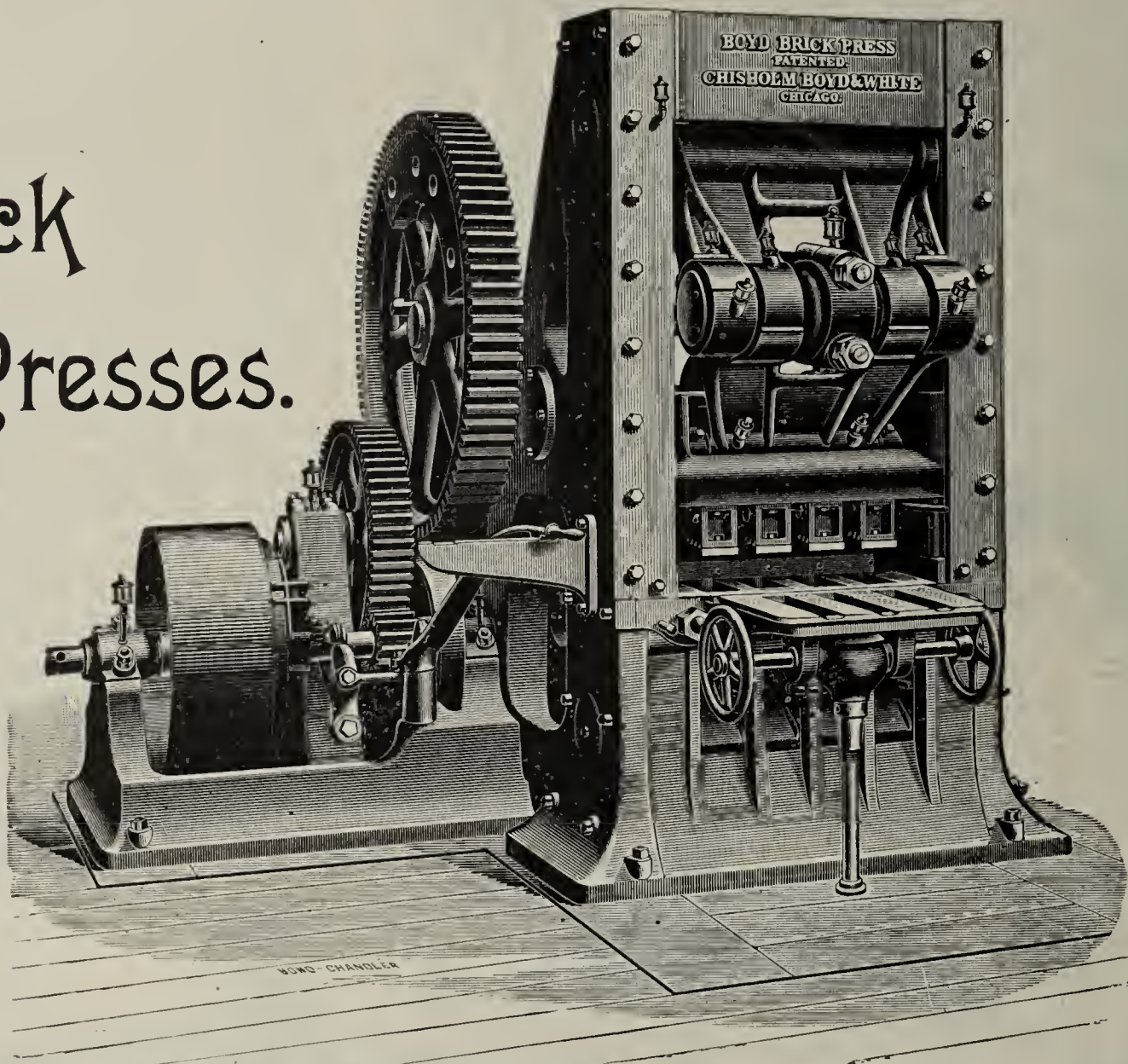
--- OF ---



# Beautiful Brick

Are Being Made Daily on

## Boyd Brick Presses.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you can have a sure thing?

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street.

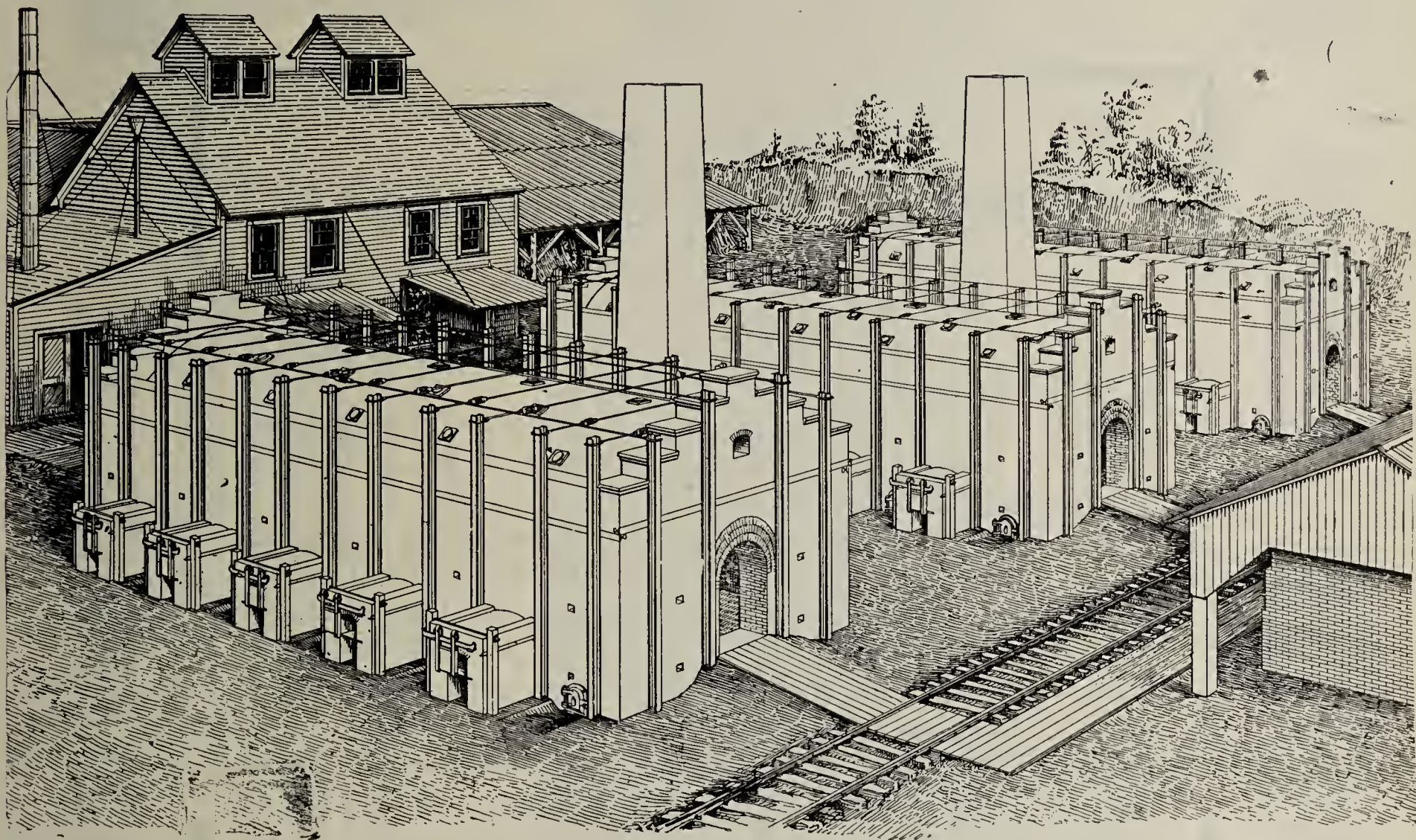
CHICAGO.



# THE FLOOD KILN.

•⇨ Up-and-Down-Draft. ⇩•

The Flood Kiln for burning brick of all kinds is a wonderful success. It uses less fuel than any other down-draft kiln. Old experienced burners are enthusiastic in its praise. It dries the brick up-draft, having special furnaces for this purpose. It burns down-draft. It is scientifically and correctly proportioned. All parts are under the perfect control of the burner, enabling him to produce brick all hard and of a uniform color from top to bottom. There are many Patent Kilns in use, great fuel eaters, which we would change over at our own expense and take for our pay the value of the fuel saved in one year.



## Extraordinary Offer.

We will build the Flood Kiln for any responsible party, at our own cost for material and labor, and superintend one or more burnings of front, ornamental, common or paving brick, under guarantee of absolute satisfaction in quality of product and cost, the loss to be ours in case of failure. The time has come when the brickmaker should demand, and obtain, satisfactory results in burning his own brick before paying his money for yard rights. Correspondence solicited.

**CHISHOLM, BOYD & WHITE,**  
**Monon Block. CHICAGO.**



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



## Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



## Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

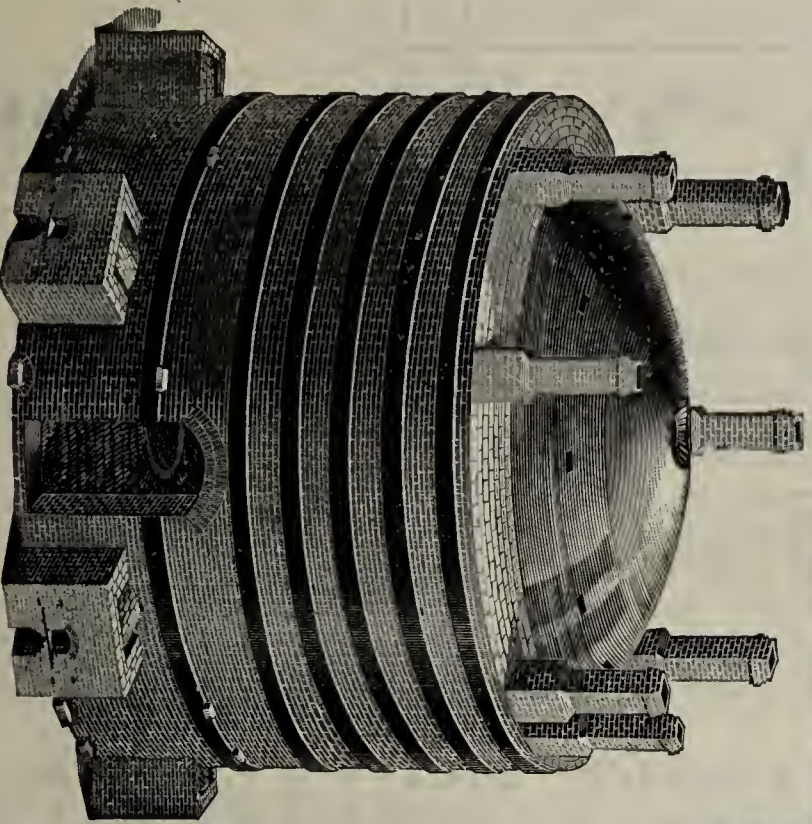
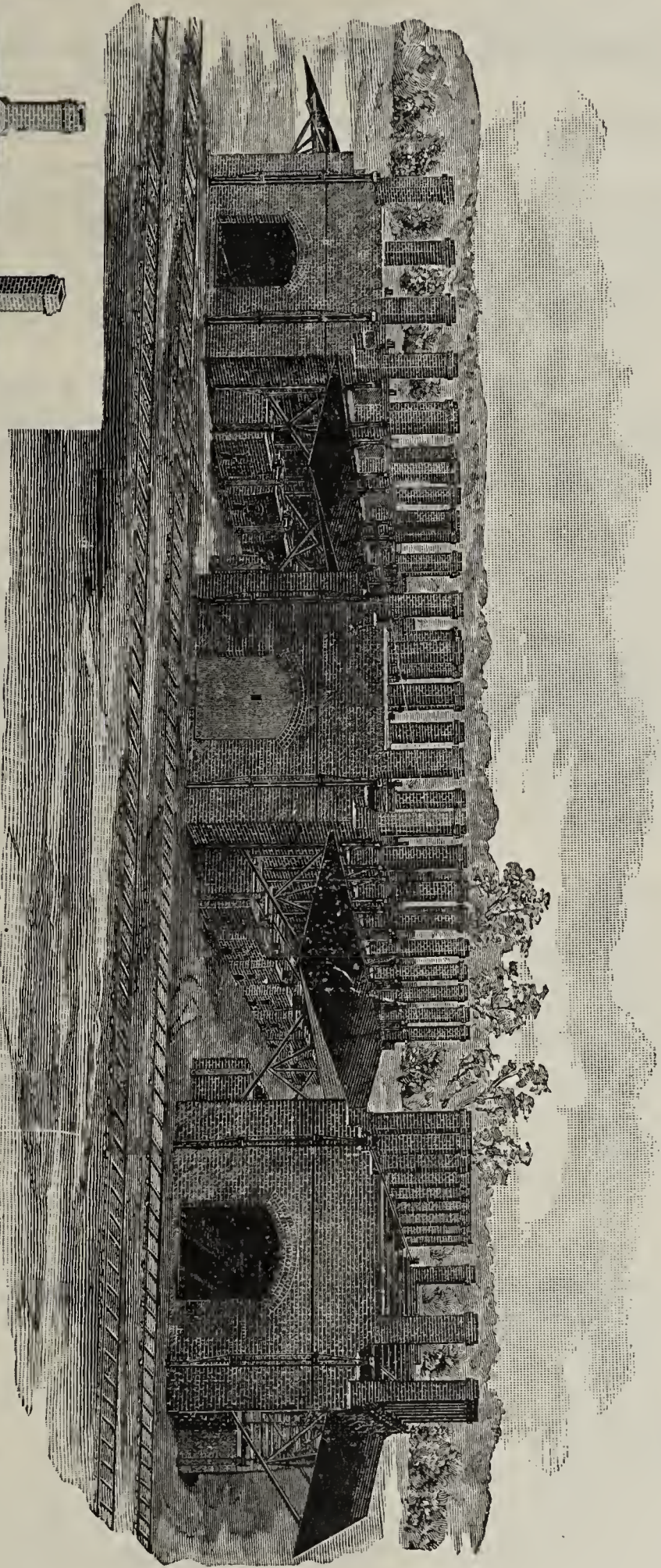
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**

64 Johnston Buildings,

Cincinnati, Ohio.



• THE KILN OF THE PERIOD. •

# THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire. It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers. Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.  
Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

### GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,  
General Manager J. M. Blair Brick Co.

### AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,  
Very truly yours, L. U. NICKELL, Sec'y.,  
Fulton Fire Brick and Mining Co.

### FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular. (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

## SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.



W. H. KELSO, President.

MAX A. TH. BOEHNCKE, Gen'l Manager,

PAUL BOEHNCKE, Sec'y and Treas.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

## BOEHNCKE'S

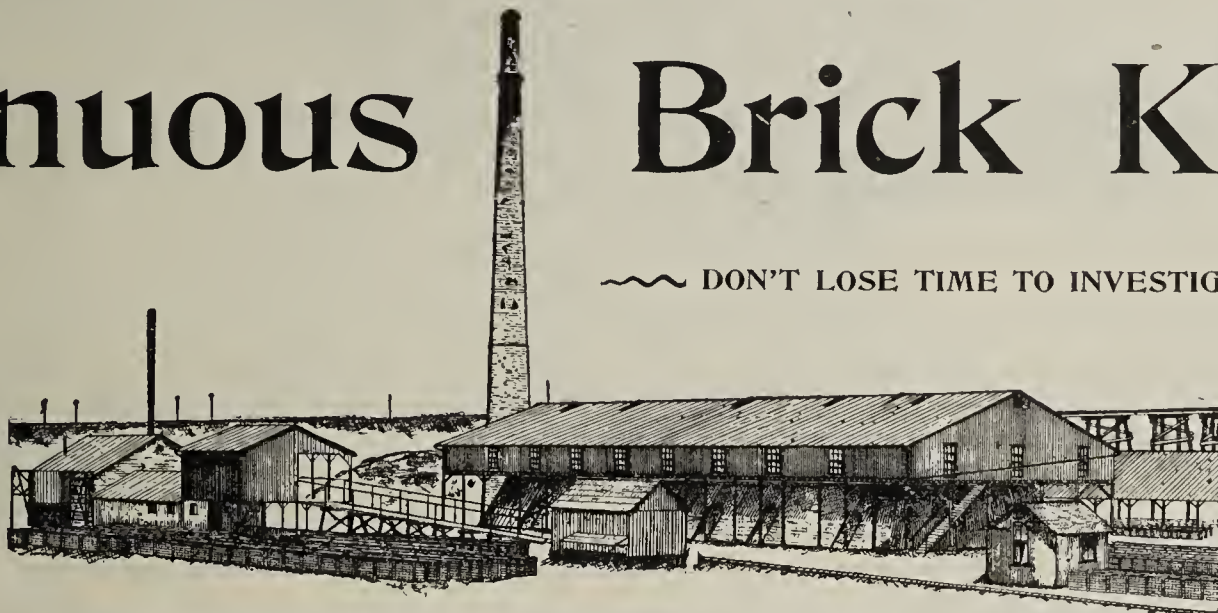
Several other U. S. Pat-  
ents applied for.

### UP AND DOWN DRAFT

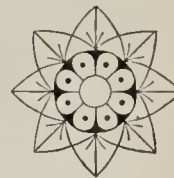
# Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.



DON'T LOSE TIME TO INVESTIGATE.

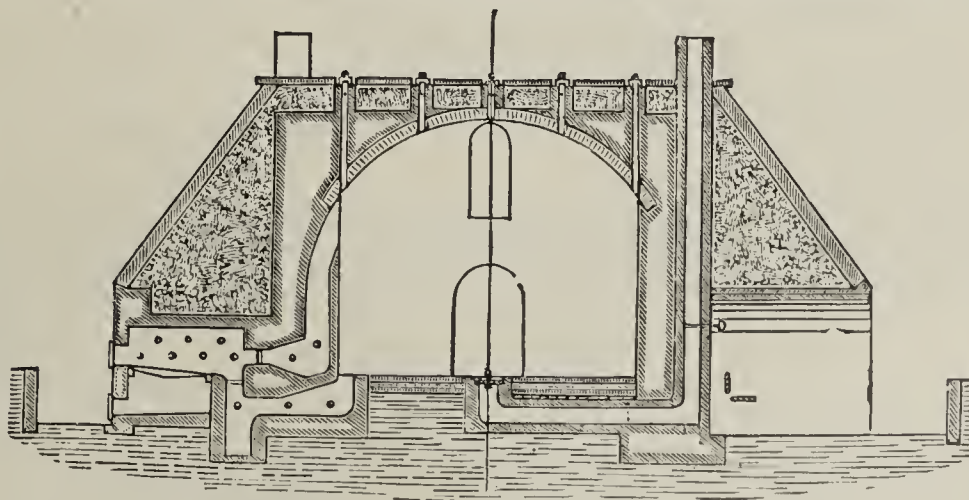
## ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of  
Soft and Stiff Mud Brick,  
Dry Press Brick,  
Shape and Face Brick,  
Sewer and Paving Brick,  
Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,  
Box 35, Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

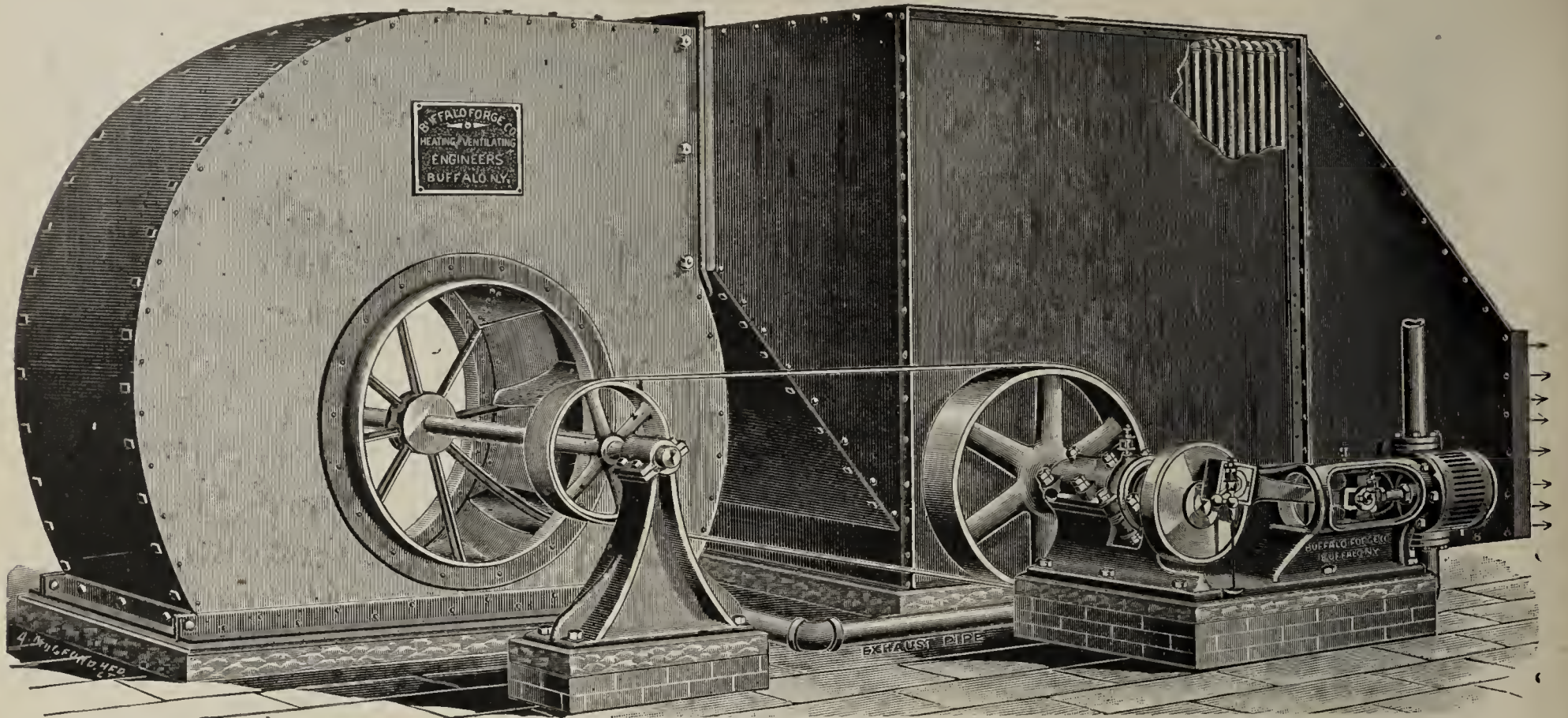
FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A New Brick Dryer.

now so popular in Germany. It is very economical. For full particulars see our catalogue.

We have secured the sole control in the United States of Albert Schaaf's Brick Dryer, (U. S. Patent 483,018.) which is





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To CLAIM that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is ONE thing; to PROVE it is QUITE ANOTHER.

The proof that Buffalo Progressive Brick Dryers embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

BUFFALO FORGE CO., Buffalo, N. Y.

## S. G. PHILLIPS, Agent and Patentee,

WOODBRIDGE, N. J.,

DEALER IN

"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.

"Air Dried" Bricks All the Year Round.

A new plan of reducing old, approved methods to a System. This frame enclosure needs no iron pallets:

**THE INSIDE FAN STEAM DRYER.**

A cross, spiral current from fan to fan. Bricks are safely dried in five hours. No "checking" or discoloration.

**NO CHIMNEYS OR BRICK STRUCTURE!**

And only half the doors are required. A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

**MORE FANS! LESS PIPES!**

The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the bricks, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live," as now in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

**"Seeing is Believing,"**

Therefore, "at home," this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

**"Better Than Drying in the Sun."—"Exhaust Steam."**

OTTUMWA, IOWA, April 6, 1893.

S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—I have had your Dryer in operation during the last season and it continues to give me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTDICK.

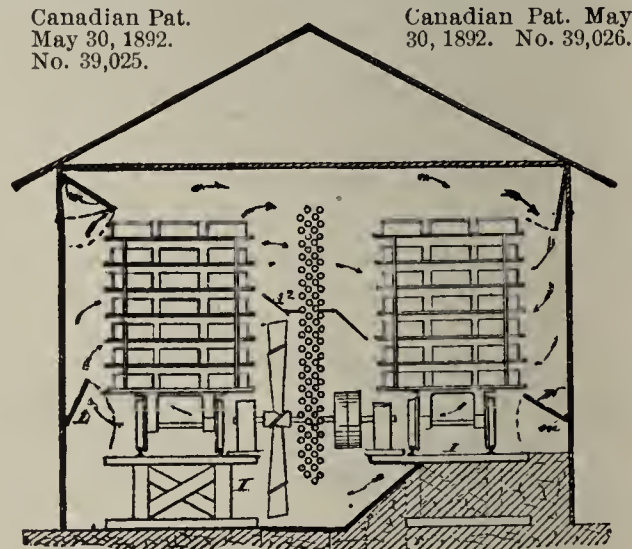
**"And Met the Requirements in Every Case."**

MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,

CHAMBERS BROTHERS CO., J. H. Chambers, Gen'l Mngr.



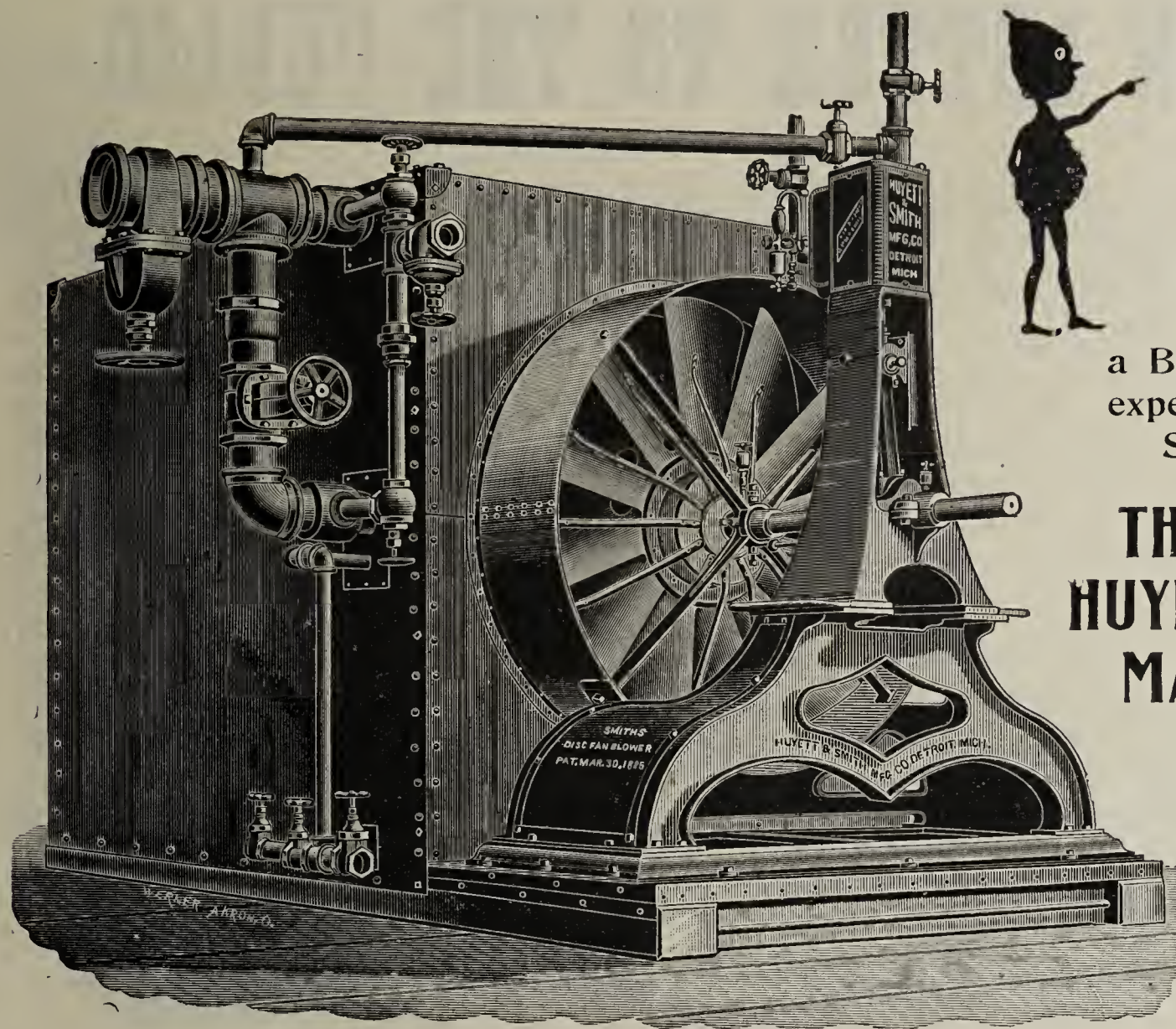
U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

PHILADELPHIA, December 14, 1892.

### THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.

**"I think you have the Dryer the brick people are looking for."**—JNO. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently: **"Not over 12 hours to make them VERY DRY—the best by great odds of any in the market"**—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance.





## Old Sol

What about him?

He is uncertain in this rainy weather,

Why not purchase a Brick Dryer that is no experiment?

Such a one is made by

THE....  
**HUYETT & SMITH  
MANUFACTURING  
COMPANY,**

Main Office  
and Works.

DETROIT,  
MICHIGAN.

This Hot Blast Apparatus used in connection with a system of tunnels forms the only perfect and efficient Brick Dryer known for the following reasons :



- 1st. It duplicates nature, the brick being placed in contact with a large volume of air in rapid motion.
- 2nd. The drying can be carried on continuously night and day in all kinds of weather.
- 3rd. Dries more brick to the ton of coal or cord of wood than any Dryer made.
- 4th. The brick are evenly dried, without cracking and will not "mash" in the kiln.

*For full information, prices and references, write*

**The Huyett & Smith Mfg. Co.,**

MAIN OFFICE & WORKS: **DETROIT, MICH.**

CHICAGO, 31 S. Canal St.

BOSTON, 48 Union St.

NEW YORK, 107 Liberty St.



# AN OPEN LETTER TO THE PUBLIC.

LOUISVILLE, KY., May 1, 1893.

The unparalleled success achieved by **The Standard Patent Forced Draft Brick Drier** and its extensive sale, necessitating an encroachment on territory hitherto set aside by the Iron Clad Dryer Co., for their exclusive use, has apparently made our "would-be" competitor from the "windy" city bilious. A realization of the fact having dawned upon them that they are rapidly advancing (?) to the rear, that they cannot continue to compete with us on a legitimate basis, and philosophizing, no doubt, that the "end justifies the means," they determined upon a desperate course. Prompted by this determination, they instructed their attorneys to write several of our customers, informing them that if the "Standard" Drier which they were erecting was constructed thus and so, it would be an infringement on their patents, and dire consequences would ensue if the usual royalty was not paid forthwith. Naturally these communications were referred to us, and being cognizant of the fact that the charge, or rather **implied** charge, (they dared not make a direct one) did not contain **one iota of truth**, but was prompted solely by a **venomous spirit**, and furthermore believing it to be an **unlawful** and **malicious** attempt to injure our business, we immediately instituted suit against them in the United States Circuit Court at Chicago, for **\$50,000 damages**. With a view, however, of bringing the question of alleged infringement to an issue without waiting for a tedious process of law, and also to determine their sincerity in the matter, we agreed to pay them \$5,000 if they could substantiate their claims. We made this offer to them in writing under date of March 2nd, as per copy below.

LOUISVILLE, KY., March 2, 1893.

IRON CLAD DRYER Co., Chicago, Ill.

GENTLEMEN:—Assuming that you **really believe** our Brick Drier, as it is constructed, to be an infringement on your patents, and taking it for granted also that you are an honorable firm, and willing to settle this question in an honorable way, we make the following proposition, to-wit:

If you can substantiate by any three reputable patent attorneys in the United States that the claims made, or implied in the letters written to our customers by your attorneys, Messrs. Poole & Brown, we will pay you the sum of Five Thousand Dollars (\$5,000.)

This committee of experts to be selected in the usual manner, i. e., you name one, we another, and the two thus selected agree upon the third. The facts then to be presented to them, and we to abide by their decision.

In addition to the above mentioned sum to be paid you, if the decision is against us, we will pay all expense incurred in this investigation.

If on the other hand, you fail to substantiate the claims made, we shall only ask you to pay the actual expense which this investigation entails.

Surely no one could ask for a fairer proposition than this. If you are honorable business men you will unhesitatingly accept it. If you ignore our proposition, we shall assume that you have lost that sense of honor which we supposed you possessed and shall conclude that you intend to pursue the disreputable tactics which you have started, and will treat you accordingly.

Your unwarranted attacks on us recalls to our minds a conversation which our Mr. Bemis had with you sometime since, when Mr. Curran tried this same **worn-out dodge** on you. We repeat your own language, "**Mr. Curran must be getting desperate for business, etc.**" Perhaps this will now apply to your case.

Respectfully,  
THE STANDARD DRY KILN CO.  
ROBT. ELLIOTT, Sec. & Treas.

Up to this writing no reply has been received from them.

In rejecting our proposition, which, as can be seen, is an eminently fair and equitable one, the fact is established that they have no confidence in their ability to sustain their "trumped-up" charge and yet lack the **honesty to admit it**.

In conclusion we would say that the "Iron Clad Drier" has not a single patented feature about it that the owners could hire us to adopt. Our Drier is built **solely** under our own valid "**up to date**" patents and we haven't a particle of use for their antediluvian affairs.

It is apparent that the suit begun against us was not started in good faith. It has no foundation in fact, and was brought merely to "blind" the public and divert attention from the vital point at issue, i. e., the relative merits of the two Driers.

We are prepared to substantiate the correctness of every assertion we have made, and believe further that we can prove to any fair-minded man that the course being pursued by the Iron Clad Dryer Co., is disreputable and betokens a character that is dangerous to encourage.

Respectfully,

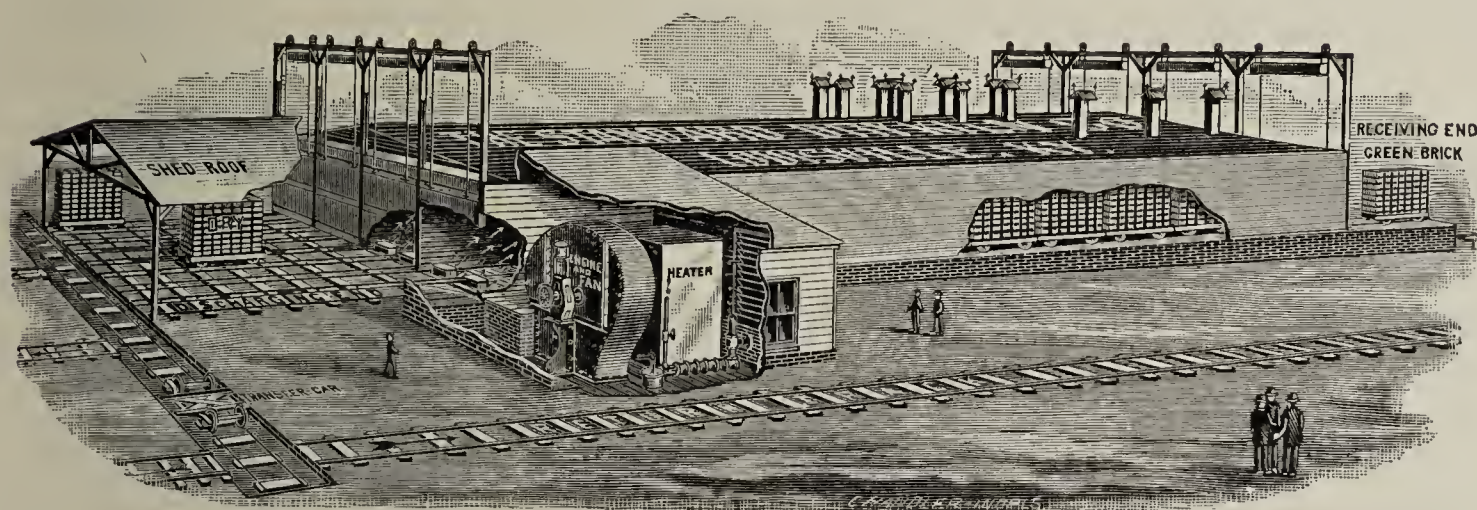
THE STANDARD DRY KILN CO.



“JUST AS GOOD AS

# THE ‘STANDARD’ ”

IS IN REALITY A DIRECT ADMISSION THAT THE “STANDARD” IS THE ACME OF PERFECTION AMONG DRIERS, AND WHEN A “WINDY” COMPETITOR MAKES THIS ASSERTION IT ONLY EMPHASIZES THE WEAKNESS OF HIS OWN.....



.....  
READ

THE

FOLLOWING

LETTER.  
.....

.....PRONOUNCED.....

“THE

COMING

DRIER

...FOR

PRACTICAL BRICKMAKERS’

THE STANDARD DRY KILN CO.,  
LOUISVILLE, KY.

MOBERLY, Mo., April 7, 1893.

GENTLEMEN:—After a thorough examination of the different systems for drying brick, I bought from you a four-tunnel, eight track Patent Combination Drier, as I was satisfied you had the right system for rapid and uniform drying. After giving the Drier a thorough test, I am pleased to say that it has far exceeded my expectations. Our brick are made from shale on a Frey-Sheckler machine, and we can dry them in from 12 to 24 hours, and quicker if we wish, as the heat and circulation is under perfect control; can dry them fast or slow, as we please. There is no doubt in my mind that yours is the coming Drier for practical brickmakers. It does the work thoroughly, uniformly and without checking, and damp or cloudy weather does not affect its working in any way. Our tunnels are 90 feet long and we dry 50,000 brick per day easily and could dry more if we could make them. Your guarantee has been more than fulfilled and we heartily endorse your system, and will with pleasure recommend it to anyone in need of a simple and effective Drier. Wishing you success,

Yours very truly,  
J. A. SANDISON, Manager,  
MOBERLY BRICK, TILING & EARTHENWARE CO.

The “Standard” is distinctively a modern, “up-to-date” Drier, being wholly intact from the cobwebs of antiquity. Valid, patented features covering the distribution of the heating surface, mode of ventilation and its adaptability to the exacting requirements of the varied clay products sustain its claim to superiority, and merit its unquestionable record as being the most practical, rapid and economical Drier before the public. We solicit a comparison of its mechanical excellence and results attained, with the construction and work of all others. Send for illustrated catalogue, endorsements, etc.

## THE STANDARD DRY KILN CO.,

OFFICE AND SALESROOM:  
923-925 WEST MAIN STREET.

LOUISVILLE, KY.



# NOTICE!

## TO THE PUBLIC:

We take this means of informing the public that we have lately secured valuable patents on our Brick Drier, and have good reasons for believing that our improvements have been appropriated, and are being used without authority from us by the

**IRON CLAD DRYER CO., CHICAGO, ILL.**

The United States Court will be called upon, therefore, to decide this question of infringement at the earliest date possible.

In the meantime, we feel that it is incumbent upon us to warn **all users** and **intending purchasers** that we shall fully protect our property rights and promptly and vigorously prosecute all infringers of our patent rights, to the full extent of the law.

**"A · WORD · TO · THE · WISE · IS · SUFFICIENT."**

Incidentally we would add, if you want the **best** and **cheapest** Natural Draft Drier to be had, and at the same time wish to avoid the annoyance of a probable lawsuit, you will do well to communicate with us.

Remember, we charge you only a legitimate manufacturer's profit on material furnished, and do not tax you for even **valid patents rights**, to say nothing of **antiquated** and **expired ones**.

**AMERICAN DRIER COMPANY,**  
**LOUISVILLE, KENTUCKY.**



# A FEW FACTS

## CONCERNING DRYING BRICK AND DRY HOUSES.

All brickmakers dry their brick and other clay products, by some means, previous to burning. How many are there, may we ask, that have carefully tested their clay to determine whether or not they produce as tough a brick when the moisture has been forced or watersmoked out of the brick, as when dried in the old way, in the open air or under cover. We maintain that green bricks submitted to very high degrees of heat, is first parboiled and then baked, having the life and strength cooked out of them before they are burnt—in many instances the brick so treated will be found very brittle and this is a very serious matter, particularly in paving bricks, where the greatest possible toughness is needed.

There are a great number of fresh dry house men claiming the attention of brickmakers to their recent discoveries, all of them the best and the cheapest—analyze a few of their discoveries and what do you find—bake ovens, all disregarding nature's laws, some have a great amount of heat and little ventilators through the roof to let steam escape, others have a very great amount of heat and no ventilators whatever. There is another class which blows a hot blast against the brick, and still another of the same variety that knows absolutely, that, heat is what wins, and goes in, to double discount his competitor by stringing large quantities of pipe underneath the cars, which combined with the hot blast succeeds in producing quite a cooking arrangement—some of these inventors for some years back have been successfully drying the life out of lumber, and probably maintain that boards so treated were just as strong as if old nature had absorbed the moisture until seasoned. The imaginary success with the boards no doubt encouraged them to argue, on the principle that pine boards is lumber all over America—consequently mud is clay wherever found, therefore would stand the same amount of cooking process. Time and experience will teach the error of the argument, and see the system that is copying, and closely following nature's laws, producing for its hundreds of successful patrons, sound bricks at a trifling cost.

This system of large volumes of moderately heated air drawn over and around the bricks by natural draft, absorbing the moisture instead of parboiling and cooking, **is fully covered by patents which will be protected by the laws of our country, and all infringers vigorously prosecuted.**

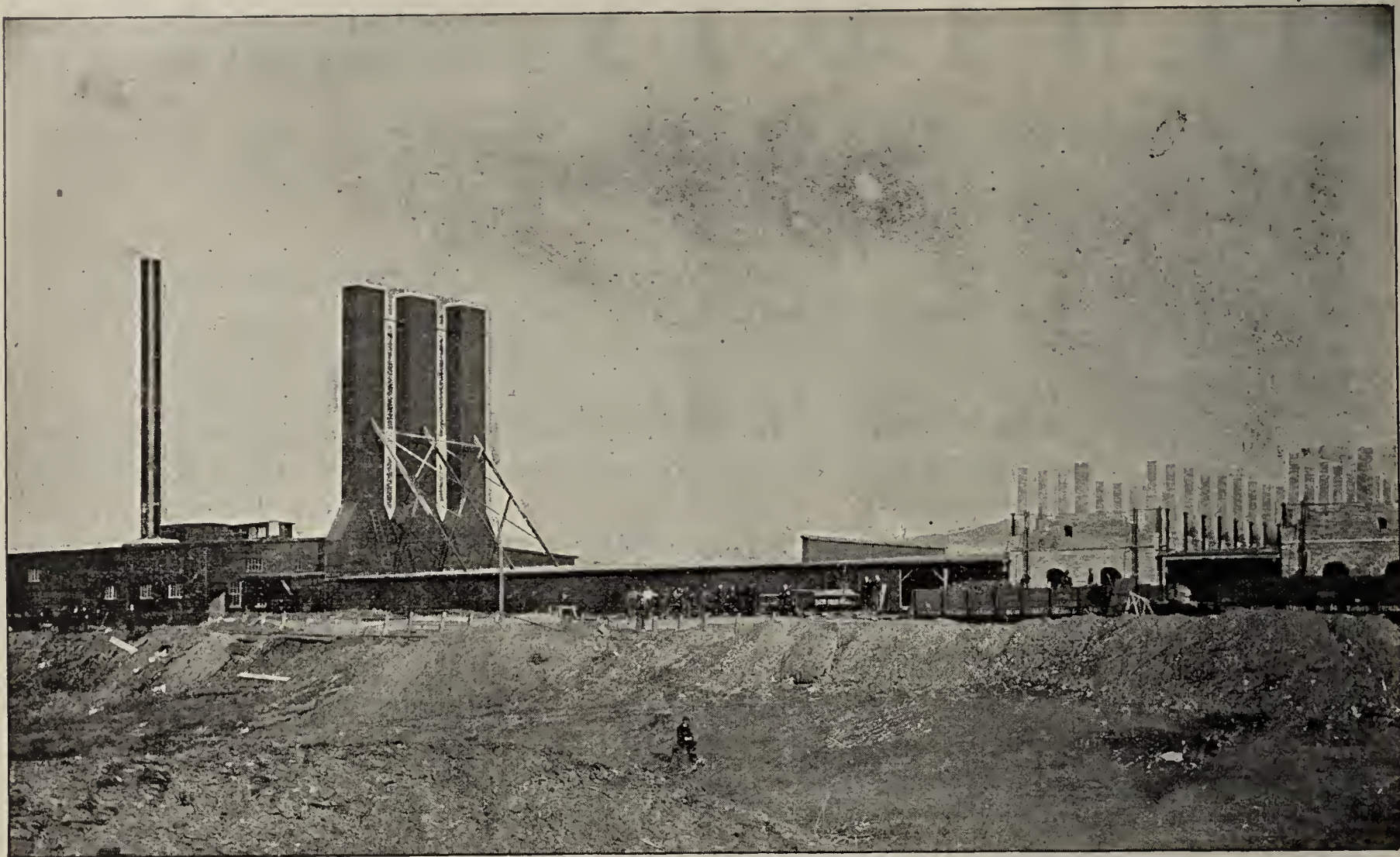
An elegant new catalogue explaining this successful system is now at press. Write to the address below and a copy will be forwarded at the earliest moment.

See ads. on pages 704-796





# The Best <sup>ALL</sup> AROUND Brick Dryer



DRYERS OF THE ALTON PAVING, BUILDING AND FIRE BRICK COMPANY, ALTON, ILL., BUILT BY THE IRON CLAD DRYER CO., CHICAGO.

E. RODGERS, { PRESIDENT,  
TREASURER,  
GEN. MANAGER.

C. H. CHAMBLIN, SUPERINTENDENT.

.....  
DIRECTORS.

WM. ELIOT SMITH,  
EDWARD RODGERS,  
BALSER SCHEISS,  
RICHARD GARSTANG,  
HENRY T. BURNAP.

## THE ALTON PAVING, BUILDING

~ AND ~

## FIRE BRICK COMPANY.

.....  
OFFICE :

120 West Second Street,  
ALTON, ILL.

WORKS AT  
NORTH ALTON, ILL.

IRON CLAD DRYER Co.,  
CHICAGO, ILL.

ALTON, ILL., May 5, 1893.

GENTLEMEN :—Perhaps the last three months have not been equaled for severe storms in years—still your dryer has given us entire satisfaction—we have put brick  $8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{3}{4}$  through your dryer in eighteen hours and they come out dry. Our clay will stand any degree of heat and I am satisfied that we can dry our brick in fourteen hours if we wish. There may be other dryers that will dry brick, but we want nothing more satisfactory than the Iron Clad.

Yours truly,

EDWARD RODGERS.





# THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XIX.

INDIANAPOLIS, IND., JUNE, 1893.

No 6.

Written for the Clay-Worker.

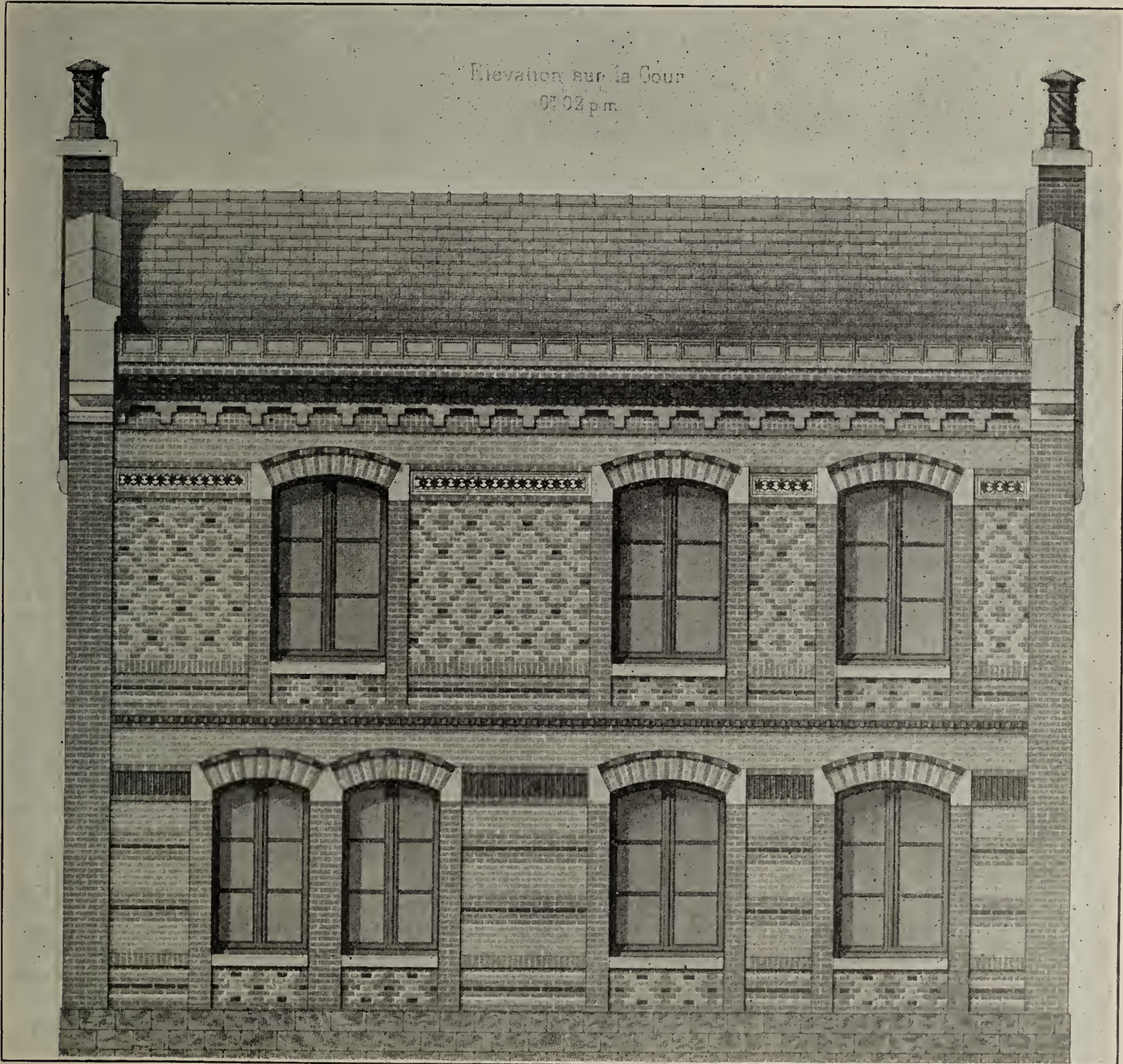
## DECORATIVE BRICK WORK.

THE CLAY-WORKER has published many examples of Foreign brick work. Any class of mechanics, or any nation which does not look beyond its own immediate surroundings,

becomes constrained and formal in all that it does.

When we look from our own buildings to what is done by other nations or other people, we naturally observe startling differences. For instance, in the accompanying design there is a strange-

ness and newness in the composition and detail which is more than usual. It is the kind of design which would be very conspicuous alongside our everyday structures. But there is no occasion to expect that exactly this thing will happen. When we accept informa-



A COURT FACADE IN PARIS.



tion and instruction from other countries we always do it with certain allowances. We rarely or never accept exactly the ideas of others. We take them along with those we have of our own. We are now making colored brick of ideal quality in many ways, and may profitably look for instruction and advice to the work done by others, where colored work has been used. Foreign nations are, in no instance, making colored or pressed brick which is superior to that made in our own country. In fact, it is doubtful whether any work in modern brickmaking, unless it be in certain grades of enamel work, is equal to that produced by our own manufacturers; but in design and arrangement, we can get pointers from European nations.

The design here given, is intended for the interior court of a building, and has a quality which would not belong to it if it were otherwise exposed. It is freer in its design, there are more patterns, than if it were a direct street exposure. The most venturesome of American designs would not risk all of these features and patterns in any front which he would design. Nevertheless, there are many single features in connection with this building which could be readily adopted in our own work. On the left hand side of the first story is a very interesting design for a double window. The panel work below the sill is neat, the trimming at the sides of the window plain and substantial, and the caps picturesque. Altogether, we have an interesting combination, and which almost any intelligent bricklayer could use. It is fair to assume that the panel below the sill is of red, buff and chocolate colored brick,—certainly a rich and effective combination. The pilasters at the side and the pier are red brick. The skewbacks appear to be of stone or terra cotta. Buff terra cotta would answer a very admirable purpose. The lower rim of the arch is of buff and red brick and the upper is made of chocolate. It would be natural for an American bricklayer to prefer fewer horizontal lines on the first story. This space might well be laid up in relatively plain colors, say in a single shade of buff. The national taste of our people would suggest something of this kind.

The pattern work of the second story is of red, buff and chocolate, as mentioned before. Whether we like this sort of a pattern or not, or whether we like this sort of work generally, is not the question. It is well to bear in

mind that there is certain to be a good deal of this kind of work done within the next few years; and as to whether individual brickmakers are pleased or not thereby, is not a question. There will be the demand and it must be supplied. While those of quieter tastes would be better pleased if the contrast were not so sharp, they must not expect their taste to prevail at this time. To many it will seem that if this kind of work is to be done, it would be altogether more American and simpler in character if the patterns were laid up in different shades of red, rather than in the more startling combinations of red, yellow and bronze.

It is interesting to note the way in which this pattern work of the second story is laid up. In each panel between windows or the end pilasters the centres are determined and the work laid up each way therefrom; so that each panel is uniform, and all cutting of the figure or design comes next to the pilaster itself. The band of decorative work between the skewbacks have the red brick top and bottom filled in with enameled tiles. The color in this instance is white body with the figure in light transparent blue. It makes a front like this look very bright and attractive. The brick cornice above this band is very interesting and instructive, and certainly gives much more satisfaction than if the upper portions, were worked out in galvanized iron and wood. A brick cornice is nearly always cheaper and it is nearly always better. When one is building a galvanized iron cornice there is a disposition to do something elaborate. When building of brick it is nearly always simple and effective. The gutter moldings in this design are of terra cotta, and the roof, we may add, is of tile. Thus we may have a design which, as a whole, is not beautiful, yet which contains many good details. It is the kind of design that any bricklayer will find full of available material. The first story band below the windows, the windows themselves, the cornice and chimney caps are all of more than passing interest.

Again, the pattern work of the second story is an innovation which will be quite conspicuous in the near future. Furthermore, the cornice of brick is the coming cornice, because it has intrinsic merit. The gutter mold of terra cotta forms a substantial construction, which must lead it to find a place in our modern buildings.

It is pleasant to notice that there is no material in this building which might not be a clay product. The foundation could be in building blocks and would be particularly satisfactory if glazed. The sills could be readily constructed in terra cotta, and the skewbacks and copings of the same material.

As said, there will certainly be much of this kind of work laid up in the near future. In view of this the CLAY-WORKER has secured designs, diagrams, and explanations which show its origin and exactly how it is done.

#### BURNING ROOFING TILE IN MEXICO.

INvariably read with much pleasure your various "Brickyard Sketches," which, especially when illustrated, I consider one of the most attractive features of the CLAY-WORKER. Some of the photos of modern brick plants show, to a surprising and gratifying extent, to what perfection the trade is rapidly being brought.

Thinking that perhaps it might interest some of your readers to see the other side of the picture, in a country where there are no trade journals, and no desire after improved methods of working, etc., etc., I enclose a few kodak pictures of a small Mexican yard. This small tile yard is worked by two Mexicans who



PHOTO No. 1—DISCHARGING KILN.

simply make enough out of it to keep them, turning out about 1,000 tile a week, worth about \$20 to \$25 per M.

Photo No. 2 represents the method employed for the tempering of the clay by tramping it out with a horse. offered the present of an old pug mill



(in good order), but same was declined with thanks, as it would require two horses (the horses in Mexico are very small,) to work it, and the removal of it would entail some trouble and work. The clay after being tempered is conveyed by hand and deposited beside the moulding table.

Photo No. 3 shows the process of moulding the roofing tile. The slab is made by one man who places it on a piece of wood formed in the shape of the tile, on which it is conveyed to, and placed upon the yard by the other, who remedies any defects, and sees that it is

was burned hard, without check or crack, in this identical kiln, in seven and a half hours. If any of "the brethren" would have any curiosity to see the brick, it will give me pleasure to forward it to you.

R. M. GREER.

Tuxpam, Mexico, April 25, '93.

P. S.—I trust Bro. Gates has been able to successfully discharge the onerous duties of his office, without committing any grave error of brain or heart.

#### KEEPING EVERLASTINGLY AT IT IS WHAT BRINGS SUCCESS.

It is constant advertising that produces an effect, although the spasmodic announcement may have a force peculiar to itself. A

Written for the Clay-Worker.

#### HINTS ON BRICKMAKING.

No. 76.

BY R. BRICK.

#### SETTLING A KILN OF BRICK.

IN THE May number was discussed the first two stages of a burning kiln. First, "Watersmoking;" second, "Hurrying the kiln up to a uniform degree of heat in every part, ready for the final or finishing heat." In order to get this result it is necessary for the fireman to look into the arches through the sight holes frequently, and if one or more arches are not as hot as the balance, give them special attention until all are heated alike; then the fire will reach the top of the kiln near the same time over the entire top. When this is accomplished, then begin to increase heat in the kiln, and continue to do so until the kiln begins to sink or settle; then give it enough fire to keep it settling, watching the top closely. When any part of the



PHOTO NO. 2—TEMPERING CLAY.

straight and true before leaving it. 300, tiles a day is considered a fair days work for the two hands.

Photo No. 1 represents the discharging of the kiln. This kiln is made of old broken tile and mud, and has a capacity of about 700 tiles. It can also be seen in the distance in Photo No. 2.

The picture of this kiln reminds me of a story told of an eminent Belfast devine of the past generation. Dr. Cooke, who, on the occasion of his of his opening a new country Presbyterian Church, on being asked to suggest a suitable inscription to be placed over the door, advised, "This is not a barn." "This is not a pile of cord wood," would be a suitable inscription for this kiln as it appears in the picture.

The Mexican method of burning is peculiar. The kiln is generally lighted first thing in the morning, and usually concluded before midnight same day. Sometimes in very much less time. The ware produced is of good quality. I have at present before me a brick which

boy sees his father every day and is naturally influenced by the example which is

perpetually before him; he goes to the theatre but occasionally; the effect of the latter being more striking may be proportionately more effective. Many people protest that it is unnecessary to continue the advertising of Royal Baking Powder, Sapolio, Pearline and other well-known articles. They cannot understand why it is continued; they declare it does not influence them, but the manufacturers know better. The man who denies that he is influenced by advertising constantly before him deceives himself, and his very protest is proof of it.—*Fame.*



PHOTO NO. 3—MOULDING CANAL ROOFING TILE.

kiln sinks faster than the balance, fire less under that part.

The platting must now be tight to prevent waste of heat at top, also to distribute the heat uniformly over the kiln. Good, straight, hard brick are best for top platting. If, however, you do not have straight brick on top and heat escapes too fast, either put on another course of platting, or cover the kiln with clay. It is absolutely necessary to control the heat at top in order to heat the bricks uniformly, and it is better and easier to do this before the kiln gets very hot than afterward. As the kiln



shrinks away from the wall, the casing must be kept pounded up tightly against the kiln on the sides and ends, it being necessary to do this perhaps once every two hours. When a crack appears in the wall anywhere, have it plastered at once with mortar made of clay and sand. Prompt attention to this point is important and saves fuel. While the top must be carefully watched, it is just as necessary to watch the arches closely to see that none of them get too much or too little heat. This depends on the quantity of fuel put into the kiln, and the time allowed between fires; time enough should be given between fires to allow the fuel to be consumed before more is put in. If the kiln is ready for more heat before fuel is burned, then more air is needed under it; this requires the grates to be kept clear of cinders.

Another thing to be avoided is using too much fuel at a firing. The fuel must be in proper shape and place, so that when the fire door is opened the fuel can be thrown in quickly and the door closed to prevent much cold air from rushing in. The exact way of firing and amount of fuel at a firing, depends upon the kind of kiln used. Where there is only a wall and no furnaces, it is necessary to close the door just as quickly as possible, as the cold air comes in contact with the bricks inside before it has time to become heated. When the bricks inside are at white heat and the door is opened to fire, the cold air comes in contact with the hot bricks, causes sudden shrinking of the part of the brick exposed, causing it to check and break; this causes breakage in the arches. If too much fuel is thrown into the kiln at one firing, the bricks are melted. When there are furnaces attached to the outside of wall, where fuel is burned, and only heat and flame passing into the kiln through openings in the wall, the bricks in the arches are not exposed to cold air, or to sudden heat; hence the arch bricks are not melted or broken. Where furnaces are used, only enough fine coal is used at a firing to cover the grate surface with a thin coat of fuel—about four common clay shovels full. The fires must be kept level on the grates, and grates clear of cinders. The burner must watch the arches and see the effect of the firing.

If the arch is getting too hot next to the wall, give a little more time between firings, to allow heat to drift to the centre; continue this until centre is as hot as

the sides. If the kiln is settling too fast in the centre, then fire with light charges and little time between firings. The small amount of fuel thrown in makes less flame; this reaches only a short way inside the wall, and firing often throws the greater portion of heat up the walls and causes kiln to settle out to the wall.

Watch the bench brick and overhanging courses, and as long as they keep their position you will know they are not too hot; if, however, you notice the overhanging bricks beginning to droop and the ends of bench brick beginning to bulge, or the arch sway out of line, you will know it is getting too hot, then give more time between firings. When a kiln is settling and becomes very hot in the arches, it is well, once in every six hours, to let the fires burn low, and when arches begin to change color to cherry red, begin firing again. This gives the pure heat time to move up to the upper half of the kiln, preventing too much settle in the arches. To know how much to settle the kiln can only be ascertained by testing the clay. Some clays expand in burning, some do not change in size, while others settle or shrink from two inches all the way to eighteen inches in a kiln set 40 courses high.

In burning bricks that settle 16 inches, the settle should not exceed four inches each 12 hours. Clay that settles six to ten inches should not be settled more than three inches in 12 hours. If the kiln is settled too quickly, the lower bricks are burned too much, the top bricks too little; this is a false settle. A true settle is where the shrinkage is nearly equal from bottom to top. This can only be gotten by getting kiln heated to the top before beginning the settle, then let the settle be continuous, but sufficiently slow.

In burning a kiln of bricks let nothing interfere, take all the time necessary and use enough fuel to burn the kiln hard. Pay no heed whatever to any one who croaks about the time you are at it, or the amount of fuel you are consuming. Keep one eye on the top, the other in the arches of the kiln, and fire away until it is properly finished without regard to time, weather, circumstances, or croakers.

SEEING your name in print is not advertising. The thing you sell—what it is, what uses it serves, the terms on which it may be had—tell this truthfully and agreeably, and you advertise.—*Penn. Mutual.*

Written for the Clay-Worker.

## CHEMISTRY FOR CLAYWORKERS.

### Paper No 12.

It may be safely inferred from the statement and examples furnished in my last paper in April number of the CLAY-WORKER, that general knowledge and the application of scientific principles are not monopolized by any particular industry or institution. The intelligent clayworker is not satisfied by simply visiting his brother brickmakers' yards or potteries, gleaning new ideas and improved methods from them; not by any means; he takes a stroll through a cotton factory, a rolling mill, a machine shop, a glass works, a distillery, a sugar refinery, etc., in a word, he gets intellectual food from every works, shop, or shanty he puts his inquiring head into; even a tannery with its repulsive sight and smells, offers him such a fund of information, that he is amply repaid for all that was disagreeable in his visit.

I am led to these remarks by the apparent serenity with which some clayworkers look on their own small works as much as to say, "With me, and my men, and within the confines of my works, is lodged all that is useful and worth knowing, and what we cannot do, or do not know, is not worth knowing, or doing." This kind of stupidity is rapidly being relegated to its proper place, a back seat; assurance and conceit have had their day, and now in the front ranks we find the inquiring clayworker pursuing his business on scientific principles, calling in the aid of machinery to manipulate his clay and mold it, drying it by the aid of well-known laws in natural philosophy, and burning it according to thermal laws; and entering into all the processes, not purely mechanical, is a large share of chemistry which the advanced clayworker is earnestly endeavoring to master.

To the young clayworkers who read my articles in the CLAY-WORKER, I would say, take no stock in the advocates of old and antiquated methods, even if they (the advocates) made their "little pile" by those antique processes. Look beyond making brick by hand, and drying them by sunshine. Strive to get the best machine that is suitable to your clay and the goods you intend to make. If it is bricks, get the best dryer, and burn them in the best kiln and



to the end that you may be enabled to judge properly and select the best kilns, dryers, etc., always keep before you the old motto, "Knowledge is power." Therefore strive to obtain as complete a knowledge as possible of the laws and principles governing the action of kilns and dryers, for their good or bad performance depends entirely upon how nearly they conform to natural laws, which are constant and inviolable; it is assumed of course that the dryers and kilns are in the charge of men who are competent and trustworthy.

Do not imagine the study of mechanics is out of your line and will do you no good. Make as good an engineer of yourself as you can, it will enable you to judge the efficiency of machinery you may need, and know if the men in charge of such machines are running them properly, or neglecting and abusing them in any way.

Make your business a scientific study but do not let it absorb all your attention; take a passing glance at other industries and you will find there is a sort of connecting link binding one to the other all through, and you will be surprised at the analogies between processes of other industries and your own; go into a large bakery in which machinery is used for kneading and working up the dough into loaves, etc.

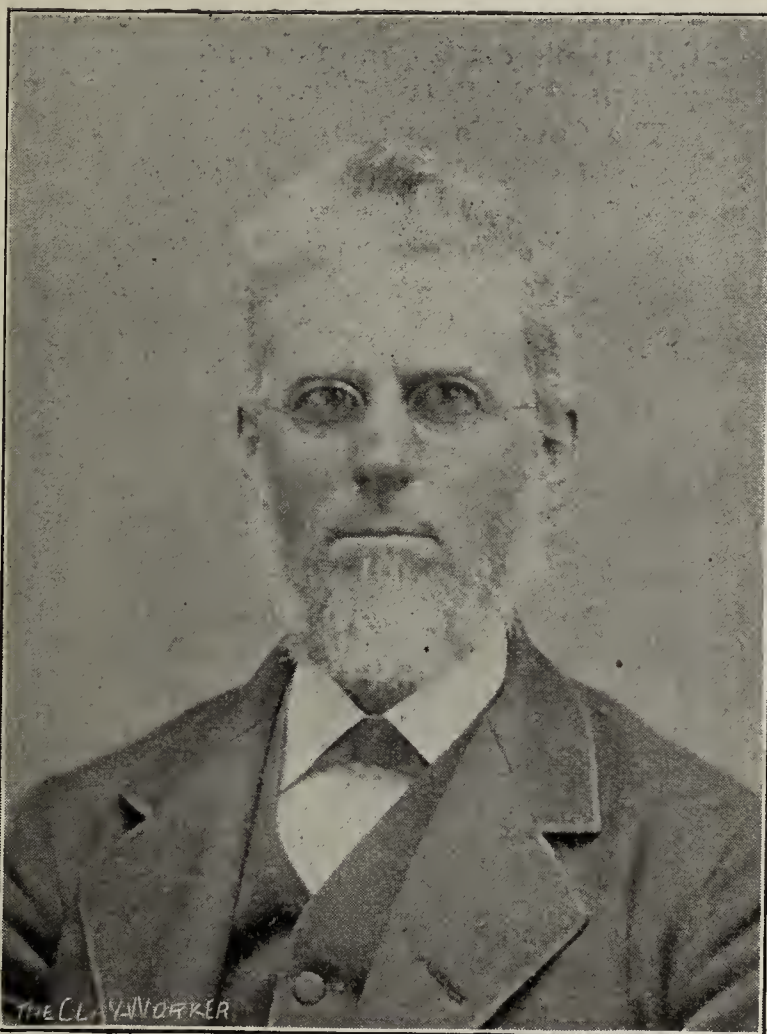
Would you think there was anything in common between a brick yard and a cotton bleaching factory? About sixty years ago there was a revolution going on in the cotton and linen bleaching process something akin to the one now in progress in brick drying.

In bleaching by the old method, each piece had to be exposed to *air and sunshine* for several weeks in *summer*, and had also to be kept moist during that time; for this purpose it was essential to have a conveniently situated meadow land—each piece being spread on a grass—same as clothes are spread on the grass plot to dry.

Baron Liebig writing on this subject in 1850 says, "What an enormous capital would be required to purchase land for this purpose! How greatly would it increase the cost of bleaching to pay interest upon this capital, or to hire so much land in England. Now, a single establishment near Glasgow, of

only moderate extent, bleaches 1,400 pieces of cotton daily, *throughout the year*. Besides the diminished expense, the cotton stuffs bleached with chlorine suffer less in the hands of skillful workmen than those bleached in the sun."

It was the same then as now, the majority of the bleachers were very sceptical about the bleaching powder conferring any benefit on them, and the usual excuses for not adopting the new process were offered. Even when Baron Liebig wrote the above there were still a few sunshine bleachers in the field, but not many. Nearly all the cotton and linen



EDWIN BROCKWAY, BRICK MANUFACTURER, FISHKILL-ON-HUDSON, N. Y.

made at that date was bleached with the powder.

Bleaching powder and its action on cotton and other material will be briefly explained when treating of chlorine and its combinations with lime.

The chemistry of an ordinary brick yard has caused me to digress at considerable length and I now call a halt on myself, and propose returning to the elementary principles of chemistry in my next paper, hoping, however, that what has been advanced in this long digression will not be forgotten. Clay and its principal constituents, silicon and aluminum, or rather the oxides of these two elements, have received more

attention than can be given to the other elements, yet, they have only been very briefly and unsystematically hinted at.

There is a vast field for profitable study and delightful contemplation in these two elements alone, but remember there are over sixty more, most of them quite as interesting and as profitable too. Moreover the chemistry of a brick yard does not end with the chemistry of the clay; there are other materials used, the chemistry of which will be found to yield as much pleasure as the clay; for example the water, in its liquid solid, and vaporous state; then there is the air, the study of this alone is full of charming surprises. How many brick-burners using half a ton of fuel per M. brick are aware that they consume over thirteen tons of air for each ton of fuel burnt? or that the weight of air consumed in burning a kiln of brick is three times the weight of the brick burnt.

W. WAPLINGTON.

#### A REPRESENTATIVE BRICK-MAKER.

THE subject of this sketch, Mr. Edwin Brockway, is one of the best known brick manufacturers on the Hudson river. He was born in Glasco, Ulster Co., N. Y., May 20, 1838. His parents moved from Glasco, in the following November to Newburgh, Orange Co., N. Y., where his father was employed as a foreman of a brickyard. In 1845, he moved to Haverstraw where he again engaged in the brick business, first as head burner and foreman, and eventually attained the proud distinction of proprietor of a brick yard. In the spring of 1863, after having worked on his father's yard for several years, first, as an edger of brick, and then sand boy, trucker, mold sander, molder, setter, burner and finally, foreman, Edwin was taken into the business as a partner, and given control of a yard north of Haverstraw, which he managed for ten years. This period embraced some of the most prosperous seasons Hudson River brick-makers have ever known; starting at \$4.25 early in 1863, the price gradually advanced until it reached as high as \$17.50 per thousand in 1868, when the brickmakers became the greenback kings of that section, there being no gold in those days. In 1879, he bought



seventy-five acres of clay land near Fish-kill Landing where he erected a large yard, which he still operates, now having a daily capacity of about 160,000 brick, being one of the best arranged and most carefully managed plants on the Hudson. Mr. Brockway's success in life is due to no accident of birth or freak of fortune but to steady, intelligent effort and qualities of head and heart, that have won for him the confidence and esteem of all who know him.

Written for the Clay-Worker.

#### SIGNS OF PROGRESS FOR THE BRICK MAKING CRAFT.

BY J. W. CRARY, SR.

WHEN Davy Crockett went to Congress, his first dinner was at a fashionable hotel, where one of his friends invited him. The waiter handed him a Bill of Fare. "Thank you," said Crockett, "I have read the morning papers, but I see this speaks of your *truck* and *fixin's* for dinner, so you can jest bring me the whole lot, if it is good and healthy," and thus the CLAY-WORKER is ordered.

The CLAY-WORKER is not, technically speaking, a professional educator of those who labor in clay work, or the mere amateurs of the clay arts. When the CLAY-WORKER was first started, I do not think there could have been found enough competent teachers to have made a *faculty*, for teaching the true theory and science of brickmaking or anything in the clay line. So that the best the CLAY-WORKER could do was to invite all the most experienced, and best educated men in clay work, to write and tell what they knew in the best style they could, about clay work.

ALL NEW ENTERPRISES MUST IMPROVE AND PROGRESS OR STOP.

The CLAY-WORKER hit upon the right principle—the *eclectic*. The most intelligent of all sorts of clayworkers were asked to contribute such facts and suggestions as they could best give respecting their several lines of work. The result was, that a spirit of pride and emulation was engendered in all the crafts of clayworkers, that inspired a disposition to study the theory and science of their work, as well as the practical routine of it. This naturally led to a community of feeling and interest, which has resulted in a permanent establishment of an Annual Con-

gress, made up of the most intelligent and progressive element of the clayworkers.

Although this Congress of clayworkers is only six years old, it has grown to giant proportions, and become a body of general importance, and it is not extravagant to say that it will grow to national importance, and exert a most powerful influence on the building industries of the whole country.

If the CLAY-WORKER is not the father of the N. B. M. A., it is the "Foster Mother" of it, and deserves to be as it is, its official organ. Other clay journals are doing good and valuable work for the clayworking industries, and doubtless will prove to be invaluable, and indispensable auxiliaries, if not equal competitors of the CLAY-WORKER.

The CLAY-WORKER discusses a large range of subjects, bearing on the clayworking interests, and building, and all concerned, can always find something of importance in in that Journal. Of course, with a few exceptions, writers for the CLAY-WORKER do not claim to be strictly technical and scientific, for the reason that it would be impossible now, to find many practical clayworkers who can treat their writing scientifically, but they do it intelligently, plainly and instructively, with a steady improvement in the erudition of their several vocations in clay work; so that with the progress now making in clay literature, the CLAY-WORKER and its contemporaries will soon become the acknowledged teachers of the clay arts.

This will greatly popularize and help the clay journals. If a person desires to engage in the clay business, in any way, or if such person wants to build the best kind of a house, or do anything that may require the use of clay products, such persons will first look through the leading clay journals, from which he will get about all the most valuable information needed for the success of his contemplated work.

DEMAND FOR INFORMATION ON CLAY WORK INCREASING.

In every issue of the CLAY-WORKER I find some direct or indirect request, by some one, for some special information about something in the clay line, and the CLAY-WORKER either gives the information, editorially, or else calls upon some of its contributors to do so; and thus our clay literature has become "*didactic*," as well as "*eclectic*;" that is to say, that it not only selects the best it

can find of a miscellaneous kind, to publish, but employs some of the best and ablest teachers to write. It is the amateur clayworker, not the "bred and born" clayworker that can best appreciate clay literature. Most of the old "bred and born" brickmakers "know it all." You can teach geography to a mule better than you can teach the science of brickmaking to an old moss-clad brickmaker, but the man who loves to learn brickmaking, so that he can engage in it intelligently, will take all the clay journals, and all the books on clay work. \$20.00 will buy all the clay literature in the market, and all respectable, intelligent brickmakers will not hesitate to pay \$20.00 for information necessary to a full understanding of their business. The very best of brickmakers never lose money by reading on the subject, while the unskilled brickmaker can save or gain many thousands of dollars by a careful perusal of the current literature on brickmaking.

A few months ago, a brickmaker in the West, wrote to me, making certain enquiries. I answered that all of his enquiries were fully answered by the books published and sold by the CLAY-WORKER. A few weeks after, I received a letter from this man, saying, "I don't know what made me so careless, as to neglect ordering the books before. I have them now, and have saved over \$1,000 by the information they have afforded me."

A brickmaker in Carthage, N. Y., writes in May CLAY-WORKER, an order for J. W. Crary, Sr.'s, book on "Brickmaking and Burning." He wants "light," he says, "on burning with coal screenings put in heads of kiln." I think he will find all the light in the book he has ordered, that he needs, and if he does not find the "light" in the book, he can find it in my later writings in CLAY-WORKER. But I will say here, if he wants to save one dollar in fuel, and lose two in the quality of brick, why just put three pecks of coal dust to a 1,000 of brick in body of kiln, and six pecks in brick on the heads, fire with wood, as they do on the Hudson, and you will have a kiln of whitewashed brick, burnt too much in centre of brick and slack burnt on the outside, and you have lost much more in the grade and quality of your brick than you have gained by the use of coal dust. Yet coal dust may be used, sprayed on coal, where there is a strong draft of air under grates.



## A DISTINGUISHED GUEST.

**A**MONG the notable visitors at the World's Fair during the past month was Mr. H. Greville Montgomery, editor of our esteemed co-temporary, *The British Clay-Worker*, of London, England. Mr. Montgomery's stay in our own city was too brief to admit of anything more than a hasty glance about the business center. After doing the Exposition he will visit many of the principal cities and the clay-working establishments within reach. We bespeak for him a cordial reception among the craft. We know from our own experiences that there are very few American factories that will not be open to his closest scrutiny. Our craftsmen almost without exception accord the clayworker scribe a hearty welcome. We trust our collaborator may realize so much of pleasure and profit from his trip that he will return again and stay longer.

Written for the Clay-Worker.

## ENAMELED BRICKS.

## Second Paper.

**I**N MY last paper I mentioned a few things which appear to me to be very much against the successful manufacturer of enameled brick by the slip and glaze process. Some of my readers have, no doubt, experienced some of the difficulties I have pointed out, but are still struggling on in their effort to produce a fine grade of goods by this process.

## TRUE ENAMEL.

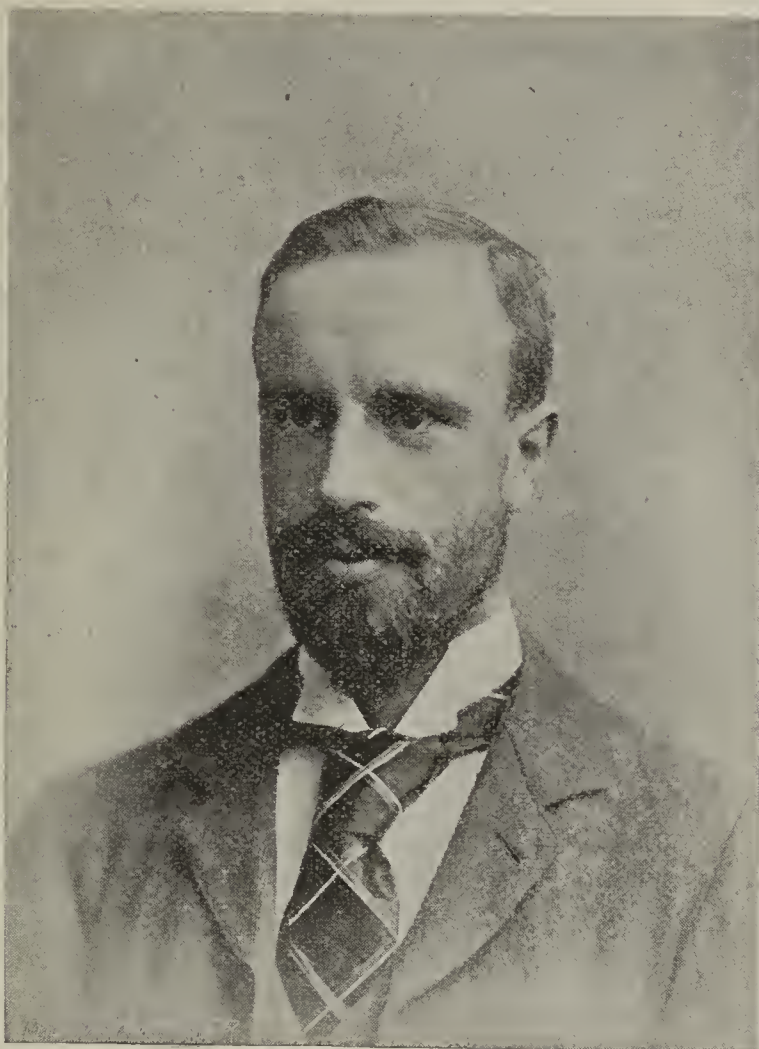
It seems to me, that only by using a "True Enamel" can the finest and best and most substantial enamel brick be produced. Every particle of the enamel being properly "fritted" and the whole properly compounded, "won't craze," nothing can be more detrimental to the enamel brick manufacturer than to have his brick craze, especially so if this takes place in a short time after the brick have been put into a building.

I don't want to be understood here to say, that no enamel will craze, but I do mean to say, that an enamel properly compounded according to its chemical equivalents, and properly fitted, when suited to the clay from which the brick is made and adapted to the fire to which the brick is subjected, "won't craze."

## UNIFORMITY OF COLOR.

Absolute freedom from crazage, while of inestimable advantages, is not all, nor does it embrace all the advantages derived by using a true enamel. Uniformity of tint, which is so very essential, is also assured.

I endeavored to point out in my former paper, that by a variation of the different thicknesses of slip put upon the brick by the slip and glaze method, various results were given, but this is not so, or at least to anything like the same degree with a true enamel. There may be considerable difference in the specific gravity of the true enamel dur-



H. GREVILLE MONTGOMERY, EDITOR "THE BRITISH CLAY-WORKER," LONDON, ENGLAND.

ing the several times of dipping, but the tint on the several quantities of brick when burned will be the same. There will be no appreciable difference.

If by a slight error of judgment, the burner gives the enamel a little more fire, the tint of color is not altered, but in the case of white will preserve its pure whiteness, while by the other method a little extra fire would cause a darker appearance and the brick would present a dirty whiteness.

## PURE WHITE.

Another advantage to the manufacturer and the customer alike, is the purity of color. I venture to assert that

by the slip and glaze process, a true and dead white is impossible. In a fine grade of goods not only is uniformity of tint indispensable, but trueness of color also. The creamy tint, so often seen on a professed white brick, stamps it at once as second or third grade quality, and on the other hand, the pale bluish, milky color, gives but a similar grade of goods. Therefore to command top prices and ready sale a dead white must be given, and this can only be produced by using a true enamel, and further, the nature of a true enamel, beside its purity of color, is "softness and firmness" combined, which is not only beautiful to the eye, but lovely to the touch.

Some of the old enamel wares of the 17th and 18th centuries are good examples of the purity and quality generally, of a fine white enamel. Everything about them is pleasing to the eye and the touch, and their firmness is proven by their age. So it will be with a true enamel on brick.

The slip and glaze process is hard and cold, stiff and rigid, and altogether uninviting. If you tone down this stiffness, so as to put a little more life into it, then you are extremely liable to crazage.

Without presuming to dictate to the many sensible men engaged in the brick industry, and whose daily endeavor is to produce the very best quality, yet I must say that purity and "tone" of color will go a long way in commanding a ready sale for enameled brick.

## CHIPPING.

Much may be said on this point. The very great amount of loss caused by chipping is at times so serious that the manufacturer should pause and consider not only what is the cause, but by which method of enameling he is least liable to it. Perhaps the more technical term would be "peeling." Very heavy losses in this respect are sometimes caused by the colored and consequently more expensive goods.

Now, by the slip and glaze process, great liability to peeling is caused by the slip being pretty much of the nature of the clay brick, and would of itself, without the coating of glaze, peel off during the burning, or before, while drying. So that were it not for the glaze coating, the slip itself would be an



absolute failure. The whole success depending upon the glaze, being burnt in and forming a silicate with what silicious matter there may be in the slip, and thus adhering to the brick. But when this is not so, through the burring not being long or strong enough, or the slip being put on too thick, the result is more or less peeling or cracking.

#### COLORED ENAMELS.

The best colors produced are those of the true enamel. Take, for instance, green, brown, blue, chocolate, cream, emerald or rose. All these are of a dirty, muddy appearance, and indistinct by the glaze process. There is neither life nor feeling, and when seen, one feels that there is something lacking. Beside their indistinctness, they are cold and hard. But the true enamel colors, when rightly compounded and manipulated, are brilliant, and hard, yet soft and firm, and so pure that when you see them they please the eye and gain your admiration.

Anyone desiring to see the superiority of the true enameled brick has only to compare them with similar colored brick made by the other process.

#### COST.

With regard to cost, I believe that, judging by results, the true enamel brick is the cheapest to produce, although this is a question more for the man engaged in the business.

There still remains, also, the question of once or twice burning, burning in the open kiln or the muffle, or square or conical kiln, each of which has a certain effect on the production of good enamels, or otherwise.

In my opinion it is not only important that the bricks should be enameled by the best process, but that their treatment afterwards, in the shape of burning and that in proper kilns, is as necessary to the production of fine goods and good colors as any other thing connected with their manufacture.

If these few suggestions, hurriedly penned, are of service to anyone in the trade, I shall feel specially rewarded. I do desire that in this great country of ours, we may not only produce as fine a grade of enameled brick as other nations, but the finest grade in the world. We have all the material necessary.

I have seen many of the clays in Europe and those from which the best enameled brick are made, but I have never seen anything for this purpose that can even compare with some of the

native clays, samples of which I have received during the last few weeks. So that in a little while, with undaunted energy and a little patience, we may ere long be on the top as manufacturers of enameled brick.

In my last I was made to say, "Brown brick" instead of burnt brick, and "Lime transparent" instead of semi-transparent glaze. WM. CLAYTON.

#### HOW TO SECURE BRICK PAVED COUNTRY ROADWAYS IN OHIO.

WHENEVER you present the matter of public improvements to the general tax payer, two questions invariably arise: "What are the benefits?" and "What is the cost?"

I shall attempt to answer both of these questions, so far as they relate to the paving of country roads with good vitrified brick.

The advantages of a roadway in the country, properly paved with good vitrified brick, over ordinary dirt or pike road way, is so obvious as to scarcely need mentioning. It enables the countryman to reach market at all seasons of the year, and at one-half the cost and with three times the pleasure. It places the farmer ten miles from the city, on an equal footing with the farmer one mile from the city. It enables him to get the highest market price for his produce, as he can reach the railroad station and city at any season he likes. It helps him to secure better educational advantages for his children by sending them to the city school, where there are many advantages, and that without wet feet and with the pleasure, so much enjoyed by their city cousins, of bicycle riding. It benefits the city man, as he can combine the seclusion and quiet of a country home with the hurry and rush of a business and professional life in the city. It helps the railroad company, as it brings the product of the soil for shipment at all seasons of the year, thus avoiding a scarcity of cars. It makes country life a pleasure and adds 75 per cent. to the value of farm property.

As to the cost of this improvement, it can be arranged so as not to exceed that which is now paid annually to improve our common dirt roads, which are passable one-half the time and navigable the other half.

#### HOW TO GET THE WHEREWITH.

My plan is this; taking the tax duplicate as a basis, let each county issue

bonds not to exceed 50 per cent. of the total valuation of the taxable property in the county, said bonds to run for 1, 2, 3, 4, 5 and up to 100 years, to bear no interest and to act as a first lien on all the taxable property in the county. The state to issue a state currency after the proper legislation and to purchase said bonds at par, giving in exchange said state currency. This currency should be made a legal tender for all debts and for state, county and municipal taxes, and to be secured by all the taxable property throughout the state. There can be no question as to this currency always being worth par, as its security is always double its face. Let us illustrate, A. B. is a contractor, C. D. is a free-holder, E. and F. are laborers and material men respectively. A. B. improves a roadway amounting in value to \$10,000. The county pays A. B. \$10,000 for such improvement in state currency; A. B. pays E. \$5,000 and F. \$5,000 for labor and material; E. and F. each pay C. D. \$5,000 for merchandise; C. D. pays this \$10,000 for taxes to the county. The county pays the state the same \$10,000 for one of the bonds and both the bonds and the currency can then be canceled. Now this currency has been at par, has been a legal tender for both debts and taxes, has been paid and the county is richer by the value of the improvement. This may seem tedious but I hope I shall be able to make the matter simple.

We have in Ohio 75,000 miles of country roadway, 60,000 of which ought to be paved, 20,000 with an 18-foot wide roadway, and 40,000 miles with a 12-foot wide road way. As to estimates of cost to properly grade and construct a brick paved roadway from first class material on an 8-inch broken stone or slag, or on a nine inch gravel foundation with a 4x18x24-inch undressed limestone curb, would not exceed on an average \$1,000 per mile for each foot wide.

|                                              |            |
|----------------------------------------------|------------|
| 20,000 miles, 18 feet wide, at \$18,000..... | \$ 360,000 |
| 40,000 miles, 12 feet wide, at \$12,000..... | 480,000    |

Total cost of construction..... 840,000

We have in Ohio a tax duplicate showing \$1,800,000,000 of taxable property. Assuming that by reason of this improvement this property will increase in value at least \$600,000,000, making a total of taxable property \$2,400,000,000. The cost of the improvement would be just 35 per cent. of the above amount, making three and one-half mills on the dollar per year. The above is based on the assumption that these roadways will last 150 years, and that as the coming generations will share their use they ought to help pay for them. J. P. HAZELTON.



Written for the Clay-Worker.

### AMATEUR CLAYWORKERS.

#### How They May Devote Spare Hours to Pleasure and Profit.

**A**GREEABLE to promise, I will try to give a few suggestions to Amateur Clayworkers and hope to encourage my young friend in the brickyard, to apply some of his leisure hours to pleasure that may turn profitable and interesting, that is, providing he can find the hours, and if he cannot he can turn his attention to manufacturing some. They could possibly be squeezed in between daylight and breakfast or from after work to bedtime, even if bed



HIS NIBS.

time should be later. Such hours often occur on wet days, or a cold day, or a day that is too hot. They can be found or made, for those who have a will can find a way; and the production of such hours will show some marks of merit; it may be skill, it may be marked with ability, it might show perseverance, or develop the practical applications of the material (clay) to many unthought of positions of utility.

There is an old story of comparison which went the rounds of the press, about the late Jay Gould, to the effect that he could take a cents worth of paper and with a few strokes of his pen, make it worth millions. That was capital. Tennyson could take a dollars worth of paper and in a few hours write a poem that would be worth thousands. That was ability. There was an improved machine for making paper, which made the inventor rich. That was skill. There is a fellow running the machine, making thousands of reams per day, for which he is remunerated at the extent of one dollar and a half per day. That is labor.

If you took a little piece of clay and made a perfect toad; that would be art.

If you set a toad on a leaf and took a mould of it; that would be skill.

If you duplicated a million from the mould, nicely colored, burned and mounted, that would be a paper weight; it would also represent labor, possibly a small amount of capital, it should be worth at least ten cents, and as it would not weigh a quarter of a pound, there could be two dozen made out of the clay contained in one brick, so if fashioned in that style, one thousand brick would be \$2,400 per M—or 24,000 toads at 10 cents equals \$2,400. You could afford to lower your price to find a market and let some one else sell them for you, even if they had to go to the Columbian Fair, where there must be a daily attendance of 40,000 or it won't pay,—(the Fair, I mean).

Now to try and illustrate my scheme. I was compelled to have a subject, so I chose a toad, as I have seen somebody illustrating the clay business with one, and I want to start low down on something small. The idea was taken from the old story of his nibs, the Toad, that hopped in good condition, out of a hard head (stone.) How did he get there? Now for the mould! To catch him and stick him down with pins would be cruel, but give him two teaspoon fulls of old Rye Whiskey, (Bourbon will do,) and he will be as quiet as if he was a stone until you are through operating.

There are many moulds and many ways to get at a desired result, but the general use of Plaster of Paris for reproducing any article in clay is hard to surpass, and those familiar with its use, can impart the practical knowledge, but not bestow their handicraft to another in a moment, so there is nothing but practice.

There is no material in such general use as Plaster of Paris that acts so obstinate, that spoils so quickly both its own usefulness and the object smeared with it, by the hand of the uninitiated, or that is so pliable in the hands of the expert, unless it be clay in the hands of an artist.

Before taking my young friend from the brickyard to the modeler's easel, we will try and start away down with the object of reproducing a toad, and in next CLAY-WORKER I will endeavor to illustrate, with a few sketches, how we bring him out in terra cotta, mount him on the Classic Pedestal, designed by an artist or architect. First, made in Plaster by a model maker, embellished by a modeler, molded, pressed, finished, dried, and how we color, glaze and burn him,

not forgetting what we make him out of (clay). In all well regulated work it takes all these hands, each doing his part.

It used to take ten men to make a pin, they have machines to do it all now. Try it all round (the toad, not the pin) and you will find what part you excel in, and what you fail in, and find why.

#### MODELING IN CLAY.

That you may have a substantial little plaster model to work on, get a toad and give him the perscribed dose of Bourbon, set him on a nice little natural leaf and rub him over with a little thin oil, also the leaf and table or plank you lay him on, roll out a little wall of clay and put it around him, about half an inch from the leaf, having first given the clay a coat of shellac, and then soak and melt one pound of glue in a glue pot, when melted, add half a pound of glycerine and stir until cool as will pour, and pour it on Mr. Toad; when hard enough to remove clay wall, pick up mould and remove his nibs, (he will be all right—may have a slight headache next morning). Thoroughly dust out the mould with some French chalk, and then wash with a strong solution of alum water; when dry, oil with oil made of Gum de Mar, dissolve in hot turpentine, and add equal amount of coal oil; oil it thoroughly, but do not use much oil, a half cup of clean water and dust in Plaster of Paris until the water will take no more, allow a moment for the plaster to soak, and then thoroughly stir and pour into your gelatine mould. To avoid holes, pour it out again and blow the plaster well into the crevices of the mould, fill in plaster again and shake it down. When the plaster is thoroughly set, carefully remove the plaster toad out of the mould and we will have a plaster model to start operations on. Don't mix plaster like your grandmother made gruel, dusting and stirring at the same time. Yours truly, M. JAY.

(To be Continued.)

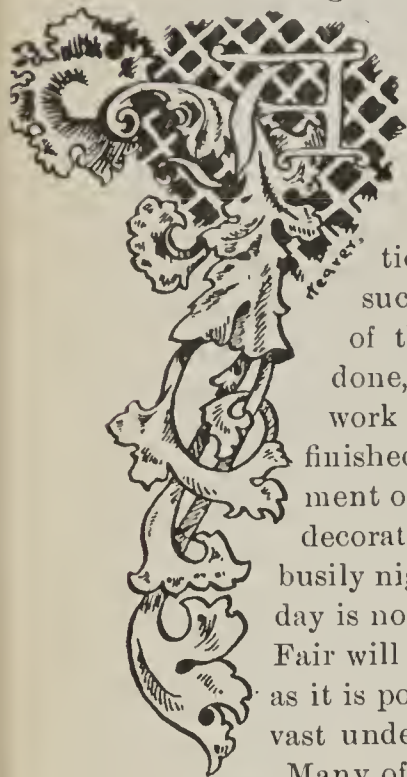




Written for the Clay-Worker.

### AT THE WORLD'S FAIR.

#### The Work of Installing Exhibits Progressing Rapidly.



MONTH ago it was thought that by the first of June the World's Columbian Exposition would practically be finished, but such is not the case. All of the great buildings are done, so far as construction work is concerned. The unfinished part is the arrangement of displays and interior decoration which is going on busily night and day, so that the day is not far distant when the Fair will be as nearly complete as it is possible to bring such a vast undertaking.

Many of the states have made their buildings into regular state museums, and the major portion of these are ready for inspection. Other states have furnished their buildings handsomely, for the comfort of their children sojourning at the fair, and perhaps this is the better use.

The landscape gardener has not been idle and the lawns and groups of flowering shrubs and plants, that greet the eye on all sides, are proof of the energy and success of his work. As a matter of fact, it is now spring in the city of Chicago and the next few weeks will be the most delightful of the year. Those who are arranging to visit the fair the latter part of June have chosen well.

#### BRICK CONSTRUCTION AT THE FAIR

Is not numerous. The temporary character of the buildings precludes the idea of using brick to any great extent, but there are a few examples of brick work that our readers will find very interesting. Among them the Swedish building is conspicuous. The accompanying illustration gives a fairly correct idea of its chief characteristics.

It will be noticed that the building, while made in the most part of wood in the fashion prevalent in the country for whose use it is erected, has a fronting of brick and terra cotta work. The materials were brought here for the purpose, having all been designed in the mother country.

The extreme ends, the portion of the work immediately beneath the square tower-like constructions, is built of sev-

eral kinds of sand cements and bricks of several sorts. That portion upon the extreme left of the building comes from the works of the Skanska Cement-Actiebolaget, or in English, the Scanian Cement Company, Limited, of Malmo, Sweden; and the opposite end is the work of the International Cement Company.

The Scanian Cement Co., is a firm of some backing, the joint stock amounting to \$400,000, and has made quite an exhibit of its Portland cements, the most interesting of them however being with the assistance of the Scanian Cement Foundry Co.; the latter using the raw material of the first mentioned firm in making their cement building materials. It is this combined work that enters the structure at the Western portion of the building. What appears as broad white bands in the engraving



ONE WAY TO SEE THE FAIR.

is artificial stone work made of the cement. The bricks are from the same material, some of a whitish shade and the others of a regulation clay red. The stair cases that lead right and left into the upper porch, are both constructed of this same cement, and the imitation in cement mosaic of a granite stairway, with balustrades of the same material, is so perfect in its every detail, that only the most experienced eye would detect the artifice. In fact the writer was unconscious of the fact until told, and heretofore he has prided himself upon some knowledge of stones. Besides these, there are a number of pavements made of tiles. Within the building, they have shown a number of imitations of various stones such as granite, and composite stones; the imitation being made apparent in its perfection by the contiguity of the government collection

of building stones. The latter are the genuine article.

The portion of the front facade that connects the tower upon the left and the main entrance, is made of brick furnished by the Borringe Brick Works, these being owned by I. G. Kohler. They are of a dark shade, and firmly pressed, being smooth. They have received rewards for good quality before; and at Gothenburg in 1891 upon a technicality were ruled from premium, but were consigned to the Test House where they received the certificate of superiority

#### SOME IMPORTED BRICK.

The bricks that are used to construct the portion of the facade corresponding to that filled with Kohler manufacture, are made by the Minnesberg Brick Works Co., limited. In pattern, they are exactly the same that are placed in the before described wall, and if placed in a pile with them would not be distinguishable to the ordinary eye. In carrying out the ideas of the architect, who by the way is Mr. Wickman of Stockholm. It has been necessary for these makers of bricks to conform to the designs closely, and even in their terra cotta finishings for the coping of the wall, at the place where the frame portion of the building begins, have had to work out the same ornamentation; this latter is a very handsome piece of work. A band is composed of a quadrefoil of leaves, above which is an open scroll of acanthus leaves. The top is finished with a roping, having at regular intervals an intricate knot.

It will be noticed that the front, or porch, is flanked by two semi-circular towers of ceramic materials. The lower portion upon either side of the broad doorway is composed entirely of brick, and decorative band made by the Hoegness Coal Mining Co. In design they conform very much to the structure already described, as in fact they are but a continuation. However, it is a company of some note in the making of such goods, and this is not the extent of their exhibit by any means; within the building they show some of their fire bricks, the quality being superior and hard burned. They are in various forms such as are needed in technical work. Earthenware tubes and pipes for drainage and sanitary purposes are a feature, and the pile outside the wing is composed of all sorts of joints, bends and junctions, some of the diameters being 24 inches. Their tiles for mural



decorations are notable, being yellow, brown and gray glazed.

The upper portion of these towers that have just been mentioned, are very different from the facings that have gone before. They are of a highly ornamental glazed brick and are of a yellow color, excepting the bands that run down in spiral direction, the spirals of either tower being reversed. These are a bright blue, and the effect is rather a decided contrast. This part of the work is furnished by the Skromerga Coal & Clay Manufacturing Co., of Ekeby. They make a great many mural ornaments, and have some of these shown, and also several of their tile and small brick pavings. Under the archway that you must pass through to enter the building, is a facing of similar ornamental bricks to those in the towers.

These are the works in clay that go to construct the building. All above these is made of wood, and the roofings are all of a shingling, the stain of which however gives it the appearance of considerable age. In fact they are black enough to have been exposed to Chicago dirt for several years. There alone

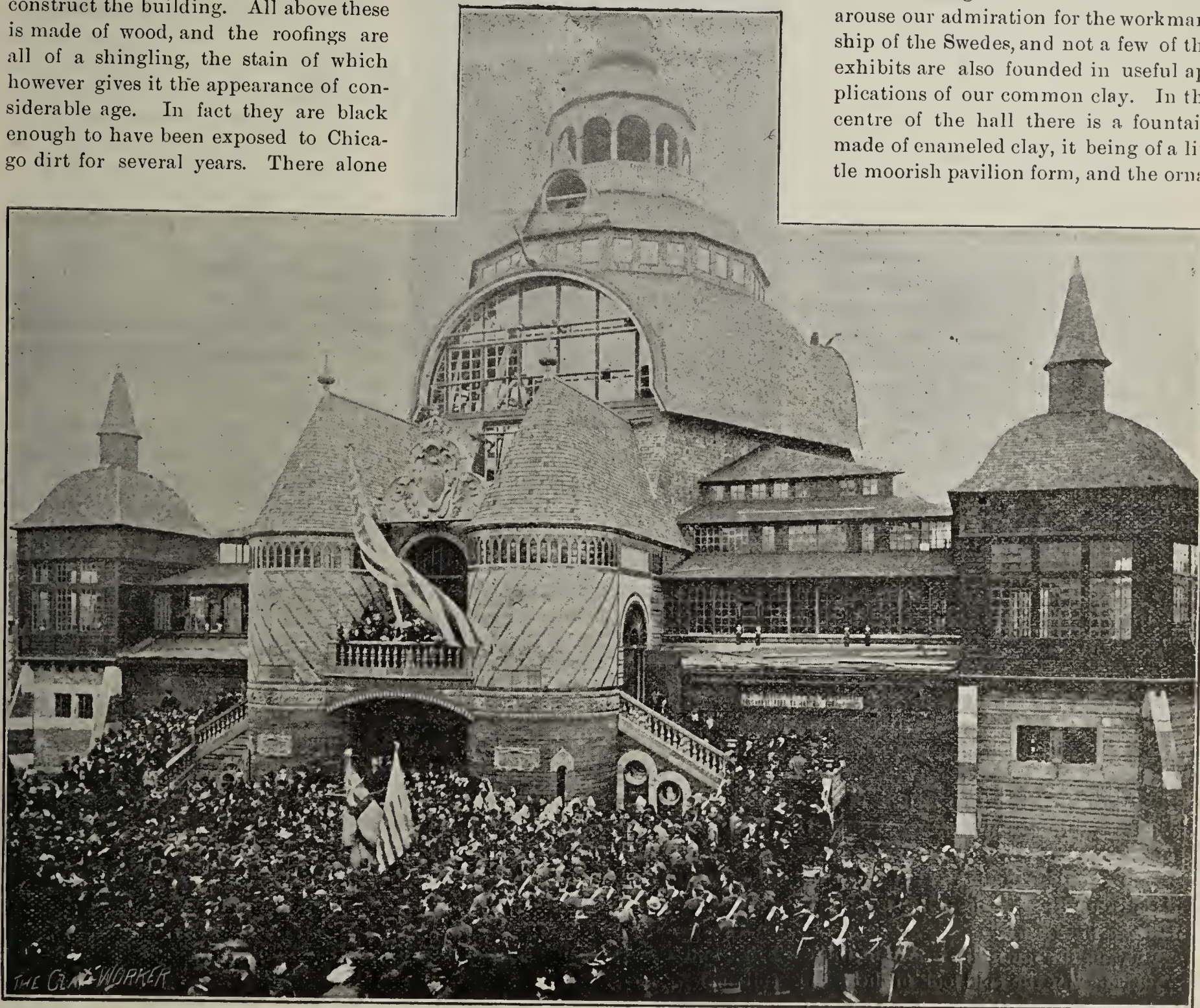
remains of clay the entablature, that is above the door window upon the porch. This is formed in an elaborate manner and bears the coat of arms of the country, a shield bearing rampant lions and an assortment of choice crowns. As a symbol it is very pretty; otherwise it means but little, for the love of the Swedes for their King Oscar is more for the person than the office.

#### SWEDISH CLAY WORKS.

When the writer made the visit to this building, the president of the royal commission was not upon the grounds, but the next member of the commission, Mr. Bergendal, extended the courtesies of the country, and took a decided interest in the CLAY-WORKER and its readers. While his branch is more closely connected with the iron industry, he is at the same time well up in claywork-

ing, and in his chat told much of the home country that was of interest. The portion of Sweden which is more productive of clay than any other, is that part lying along the sound that divides it from Denmark. The section is in the nomenclature of the country called "The Sound," very much as we would say the "Lake Region" when speaking of the states bordering the Great Lakes. Another thing that places manufacturer's plant in this region is the fact that it is rich in coal. That they are making rapid progress in the art of making bricks and terra cottas, is evinced by the growing trade in these articles with the Germans, who are themselves industrious moddlers in clay. But with the latter nation, there are certain inconveniences suffered such as poor fuel supply, etc.

But inside of this building there are a host of things that are calculated to arouse our admiration for the workmanship of the Swedes, and not a few of the exhibits are also founded in useful applications of our common clay. In the centre of the hall there is a fountain made of enameled clay, it being of a little moorish pavilion form, and the orna-



SWEDEN'S BUILDING AT THE WORLD'S FAIR.



mentation all in the familiar moorish arabesque patterns. The colors are dark water greens trimmed with bronzes. Besides the central basin for receiving of water, there is upon each side a smaller half fount. One might fancy it some devotional feature of the Moslem worship to look upon it, and fancy it an ornament from the Alcassar, did we not know that in that religion there are few shrines and paraphernalia for the exercise of religion.

The Rorstrand Co., limited, of Stockholm have a large and handsome display of porcelains, chinas and stone-ware. One is a \$380 set of table ware, being a china in white with a border decoration of gold and blue, the design of which is finely wrought and delicate in its tracery. A beautiful vase also is shown, being some three feet in height, the price however being somewhat higher than that; it is painted in panels with motives of cupids much in the Watteau style, the finishings being in blue and gold.

These are a few only of the wonders that are shown within the Swedish pavilion. There are others in their section of the Hall of Liberal Arts, but all that can interest a clayworker is to be found in the pavilion. For it is necessary to say that as liberal art, the working of clay has been badly treated at the hands of the commission, there being no concentration of the industry. This is all the more surprising, as it must have been contemplated in the early design of the Liberty Arts display. The industry even entered into the artistic decoration of the huge hall, for in some of the painted friezes, the potter and clay worker is represented hard at work in his art.

#### AN EXHIBIT OF FAMOUS CHINA.

All the world has echoed and re-echoed with the name "Worcester," and every feminine heart has longed for the possession of at least one piece of the genuine ware. All lovers of the beautiful, pause and look kindly upon the handiwork of these long established workers in clay. It is that branch of the craft, that while not creating essential aids to the existence of man, yet adds so much to the comfort and beauty of his surroundings, as after all to merit the name of "necessary."

Viewing the matter in this light, there is no cause for the cold look of the utilitarian upon such things. Such an act would after all be the cynicism of an ignoramus, more than of a true utilitari-

an, for the latter must be broad in his views to be sincere.

It is an interesting thing to watch the expressions of the faces, that pass in a ceaseless throng through the triangular space, that has been apportioned for the use of the Royal Worcester Works, at the World's Fair. The space given to this exhibit is a prominent one, facing the central plaza of the great Manufacture's and Liberal Art's Building, that mammoth structure that covers nearly thirty-six acres of ground space. Think of it as being within three hundred feet of a mile in its outside walls.

The space was somewhat awkward in shape for the purpose, but the firm have readily forgiven that, in view of the

with openings of a moorish arabesque, and within these open niches are arranged vases and bits of virtu, all of the Royal stamp. The idea is a beautiful one and viewed from the outside reminds us of the old Italian ways.

At the very entrance are placed some of the great painted vases that appeal to every artistic taste, and these are fitting harbingers of what is within. The threshold is guarded above by the royal arms of the mother nation, but the old Unicorn will have to gaze down upon the throng of rebellious Americans, willy-nilly, and we can only hope that his placid old countenance will have no cause to become awry.

Inside, arranged upon broad tables, in cases, and upon slender pedestals, are the treasures that Royal Worcester has sent from over the ocean, to be inspected by the millions that will visit the Fair during the coming summer. There are samples of the perforated porcelains, which made collectors wild when their regular patterns first met the public eye, and you must ask to see the Ivory Porcelain, the Jewelled Porcelain and the various royal services that are exhibited in the cases. These are handsome dishes decorated in gold, enamel and oriental designs.

Upon the pedestals, standing in graceful confusion, are vases and lamps. Some of these latter are beautiful female figures supporting the bowl of the lamp proper, and their modelling shows an artist's hand.

Pleasant men are in charge of the exhibit, and while their pronunciation bears a strong English stamp, it is not at all unmusical to the American ear. But in talking with them be sure to say vase, not as we do, like the word "lace," but like "cause" only not quite so broad. If you do this, you will make a deep impression in the hearts of the Englishmen.

I had a very charming chat with the curator of the display, and in the course of our talk I learned a host of things in regard to the works at home, and their ways of doing work. Many things of historical interest were called forth, and and I cannot resist telling some of the things yet remaining in my memory to the readers of CLAY-WORKER.

#### THE BEGINNING OF THE WORK.

The manufacture of china, attracted the attention of the princes of the European nations early in the eighteenth century, and perhaps the first evidences of similar undertakings in



"THE BATHER SURPRISED."

(Modeled for the Royal Worcester by Sir Thomas Brock, A. R. A.)

splendid lighting they receive from the lofty dome above. Across the triangle has been placed a partition through which leads a large arched door, giving ample scope for drapery effects that the decorator has not been slow to take advantage of. Everywhere, browns have been introduced, the seal browns always, and the effect with chinas in which gold and cream shades are predominant, is readily apparent to one versed in the arranging of colors. The walls however are boldly covered with a roughened paper-mache of a dusky dark green tint; but the light from above is filtered through a thin yellow baize, and the garnish green is much softened.

The outer walls on the interior, instead of being bordered or finished with a cornice, are pierced in regular order



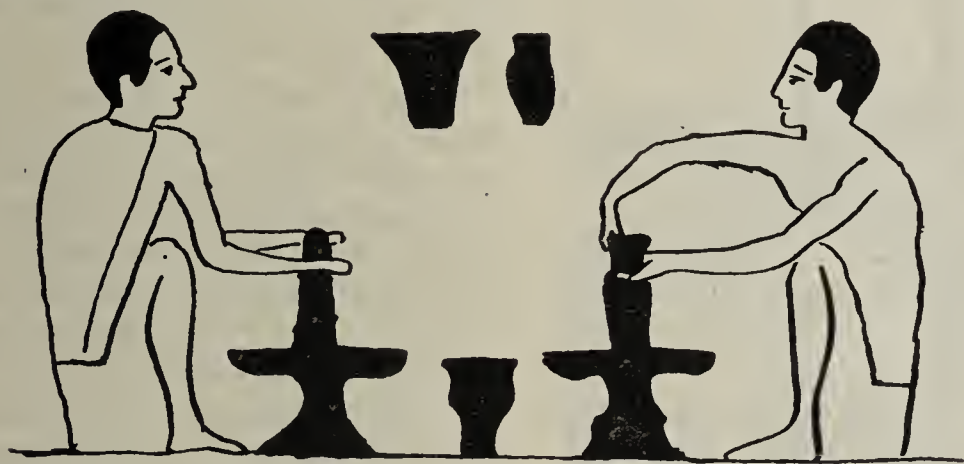
England, are to be found in the small factories at Bow and at Chelsea. The latter place was under the direction of the French Sprimont, and naturally the product, although of a high class and richly decorated, bore the characteristics of a distinctly French style. It was in 1751 that Dr. Wall invented the porcelain for which Worcester was to become famous. And it is worthy of remark that the product of those early days, has never been surpassed for its fine texture and homogeneity of body and glaze. Dr. Wall's invention was made in the face of the fact that Worcester had neither coal nor clay at hand, and the same characteristic energy is shown in the management of the joint stock company, which he founded for the development of his new manufacture. He was the head of the institution until his death in 1776.

King George the III visited the works,

and processes; and secondly, the historical portion, which embraces not only the history of the art itself, and the application of ancient literature to its elucidation, but also on account of the light thrown by monuments in clay on the history of mankind." The fact that there is ancient literature devoted to the elucidation of the potter's art is evidence that it was an absorbing topic even to the older civilizations.

#### HOW ROYAL WORCESTER IS MADE.

It is an interesting thing to follow a piece of Royal Worcester from the period when it is as yet in the elementary form to the moment of triumph in which it stands forth a Royal piece indeed. The different stages of the journey may be for convenience separated into eight, and named the Mill, Throwing Room, Figure Room, Biscuit Oven, Dipping Room, Glost Oven, Painting Room, and Burnishing Room.



"Royal Worcester" as it was made in Thebes, 2000 B.C.  
(Drawn by Hearer)

in 1788, and was so pleased with the evidences of skill, that in the next year the royal appointment was granted, and thenceforth the name Royal Worcester was to work its way into the world's favor.

Up to the time of this writing, great success has attended the Royal Worcester Works, and there are now employed within them nearly a thousand persons, all busy in the filling of the increasing demand of the people for high class pottery. This desire is not by any means an offspring of the present civilization, as the words of Birch, an authority in such matters will testify: "The history of the art of working in clay, from its rising amongst the oldest nations of antiquity till the present time, resolves itself into two great divisions, which have engaged the attention of two distinct classes of enquirers, namely, the technical or scientific part, comprising all the details of material, manipulation

The Mill is a building of three stories, with adjoining boiler and engine house. The ground floor is given to the washing pans which are filled from the upper stories, and to the vats or "arks" in which the ground materials are stored. Upon the first floor are the pans in which are ground flint, feldspar, Cornish stone; and also the glazes and colors. Adjoining these is the mixing room. The upper story is occupied by similar pans for the grinding of calcined bones, gold, etc. The room adjoining is the laboratory.

These pans are all of the same form, but the sizes vary according to the use. They average about ten feet in diameter and three feet in height. They are firmly hooped, and are floored with blocks of chert stone (which is a very hard substance) and which are cemented with ground china. An upright shaft turns in the center of the vat and has four radiating arms that move the

runners or grinding stones. The materials to be ground are thrown into the vat, and enough water to cover them to the depth of several inches. Then the shaft revolves and the abrasion slowly reduces the mass to the consistency of thick cream. This operation is vital to the quality of the finished product, and consequently much attention is given to it. And the material must be indeed finely ground, for it is all sifted through a silk lawn. The latter under the glass, shows no less than 4,000 meshes to the square inch.

There are several substances which are ground in the mill,—kaolin, calcined bones, flints, Cornish stone, etc. Kaolin was first discovered in England by Cookworthy in 1768, and comes from Cornwall, and is the feldspar of decomposed granite. Cornish stone or "petunste" is another decomposed rock. Calcined bones are a feature peculiar to English pottery, and marks the difference between it and the continental porcelains. It is from this element that arises the soft or tender characteristic of the Worcester ware. Ox bones are the only ones used and come mainly from South America. Feldspar comes in the purest state from Sweden, and to be useful, must be free from iron. The materials for the glaze, as flint, Cornish stone, borax, lead, etc., are ground, and after being weighed into their proper proportions are melted in the Fritt Kiln. In the melted state, the resulting glass is run into a reservoir of water, which crumbles the mass and makes easy a new grinding.

Adjoining the mill are stock sheds containing such clays as are received in a state sufficiently pulverized, and here are several "blungers" worked by machinery. These "blungers" run in vats and are for the purpose of reducing the clays to cream or "slip" similar to that of the mill. The slip from both sources is run into arks beneath the floor of the slip house.

In the slip house, the slip is thrown by pumps into mixing pots, and in these are revolved arms having magnets, for the purpose of removing every particle of iron that may have crept in by the slightest mishap. The slip is then worked through screens by machinery, and is pumped into the press. The press is lined with linen bags, and in these the slip is compressed into a paste or dough. In this condition it goes to the clay vault, and is there beaten and turned and again beaten and kneaded



for the purpose of making it tough. It is now ready for the workman.

The potter's wheel is an instrument of honorable age, its origin being hidden in the hoary mists of the centuries. And it is a strange example of the constancy of custom. The illustration is a drawing from the tombs of Thebes that was executed 2,000 B. C. A ball of clay is received from an assistant and thrown upon the horizontal wheel which is revolving rapidly. The clay rises in a cone, and is depressed and permitted to rise again. The thumb is then inserted into the mass, the outside being fashioned with the other hand. It is done in precisely the same manner to-day.

But, as a matter of fact, the workmen at the Royal Worcester do little throwing now-a-days. Cups and hollow pieces are made in moulds, this insuring regu-

mould gives the form to the face of the plate, and is attached to a horizontal lathe, called, in the shop parlance, "The jigger." The cake of clay is pressed firmly upon the mould whilst it revolves at a high speed, and with the profile tool, which fits to the edge of the mould, the foot of the plate is quickly raised. The entire mould and plate is next placed in an oven for drying, and the heat soon contracts the dish so that it easily comes from the mould. The drying is completed without the mould.

It is probably in the figure room that the average person would be most interested, for these are made by a process known as casting. The figure, whatever it may be, has been modeled in the most approved of artistic manners, for there are few artists who are so great as to scorn the perpetuation of their work

edges, fits them together into a complete figure. Wherever the slip oozes from a joint, it is carefully wiped away with a camels hair brush. The figure is now wrapped and bandaged with strips of clay, having the same shrinkage, and is ready for the oven.

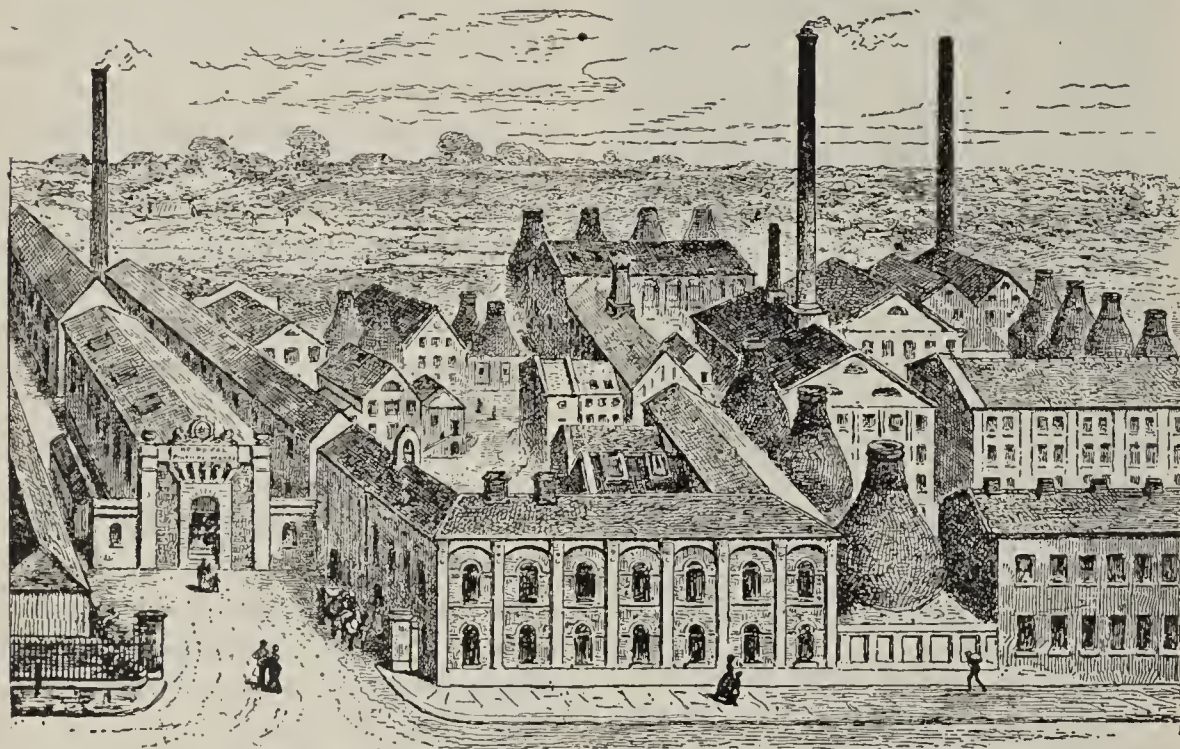
The question of shrinkage is itself an interesting one, and one of the great difficulties presenting itself to the potter. It arises from two causes; the fact that plastic clay contains much water, that in baking is driven off in vapor, and to the fact that many fusible substances in the material, when in the melted state and in close juxtaposition, are given to molecular contraction. These causes sometimes lead to a shrinkage of 25 per cent., and the potter must be well grounded in the peculiarities of every piece of material that he uses. It is noticeable that pottery does not shrink as porcelain, nor pressed porcelain like that which has been cast in the manner just described.

All of these objects are now ready for the biscuit oven. Each piece is placed in a case or seggar alone, excepting cups and bowls, which may be placed several in a case. In packing the seggars, calcined flint is used to make the beds for the ware. This is pure silica, and does not melt in the burning. This packing must be done with care, as when in the oven, the hot china will take the exact form of the packing. In packing the seggars into the oven, the greatest care must be taken that the pressure of the one upon the other is equalized, for even the toppling of a pile would cause great loss.

The ovens are, as a rule, about fourteen feet in diameter, and are of fire bricks, encased with bands of iron to prevent too great expansion. Eight openings at the sides are the fire-place flues, and they lead directly to the centre. About forty hours are taken in the firing, and forty-eight more for cooling the kiln. Little test cups are placed at various parts of the oven, and these are withdrawn from time to time for gauging the state of the work. These, by their varying contraction and state of translucency, show the progress of the "fire."

In the shape as taken from this oven, the china is called biscuit and is translucent and perfectly vitreous, and the dipping room is the next step in its finish.

In the dipping room the ware is



THE "ROYAL WORCESTER" WORKS AS THEY ARE AT PRESENT.

larity of work, and permitting the embossed or raised work upon the surfaces. The mould soon absorbs some of the moisture of the piece, and it readily becomes detached and passes into the hands of the "Turner." Turning is also done upon a lathe, and the theory of the work is very similar to the turning of wood. When the form is complete, it passes to the "Handler," who attaches any of these useful additions that may be called for. The handles are separate pieces and are attached by dampening the points of contact with slip, the burning operating to make them as one piece.

Plates and dishes are made by a process called "Flat pressing." The clay is carefully weighed out into balls, and then beaten out into a flat disc. The

in the Royal Worcester. The model is cut up into pieces for the purpose of making moulds, and what at first sight seems a sacrilege, is, in truth, a necessary step in the art. These moulds are usually from twenty to thirty in number, and are made to present as little seam as possible.

Instead of the clay paste, slip is used in the working of the moulds. It is poured into an orifice left open for that purpose, and is permitted to stand for a short time. The remainder is poured out, and it is found that quite a crust has adhered to the mould. Before very long, the crust is dry enough for removal from the mould, and in this state, all of the pieces are assembled before the one workman. He trims away all superfluous clay, and applying slip to the



glazed, and large tubes, containing the various liquids, stand about in apparent confusion. There are a number of glazes, but all are, in fact, so many kinds of glass, and lead, flint, borax, etc., are the component parts. It is a simple process, but still requires an experienced hand to evenly distribute over the surfaces, the glaze cream, for it is an even coat that is required. From the time that the glaze is dried, to entering the "Glost Oven," it is absolute cleanliness that surrounds the ware, even dust being carefully watched for. The glost oven is for the purpose of fixing the glaze, and requires about sixteen hours of firing and twice as many to cool. From here the ware goes to the White Warehouse, and is there stored until called for from the decorating department.

Without the slightest doubt, the most interesting portion of all the Royal Worcester Works is the Decorating Department, and the visitor here becomes impressed with the true existence of the piece of ware he has followed in the former stages of its making. It now becomes Royal Worcester. The colors used in the painting are all metallic oxides, and the gold used is ground in the works. The pure metal comes from the assayer, and in this shape looks like brown grains of coffee. The chemist mixes a little flux with the gold, and a little mercury, and the mass is then ground for some thirty hours.

The painters and decorators of the Royal Worcester do work for that firm alone, the greater number of them having grown up in the works and under special tuition for their respective branches of the work. It is the boast of the Royal Worcester that their decorators are not only artists, but exclusively their own. For in the china business, the "exclusive" is the desideratum which is striven for.

The gilding is a separate department in decoration, and the elaborate patterns are all traced by hand. Circular designs are made with the assistance of a gilders lathe.

The painting process is, to the ordinary eye, anything but indicative of what the finished product will be. Many times during the decoration of one object, it is fired in the mufflers heated upon the reverberating principle. It is after repeated firings that the true colors begin to show, and the designs to take upon themselves their final beauty. Printing is used to a certain extent, and for this purpose women are employed,

but as a rule it is utilized only for the repetition of outlines.

When the ware is drawn from the Enameling Muffler, and is after close scrutiny deemed complete, it is taken to the Burnishing Room, where the last act is performed. Here it is taken by women, and the gilding is cleaned and carefully burnished with a tool of agate or bloodstone, this changing the dull yellow to brilliant gold. Where patterns are chased upon the gold, only the portion that is bright is traced by the finely pointed burnisher.

An ordinary piece of ware may thus be traced through the hands of eighteen different operators, namely: The miller, the slip maker, the preparer of clay, the baller, the thrower, the carrier, the turner, the handler, the biscuit fireman, the scourer, the dipper, the glost fireman, the sorter, the printer, the painter, the gilder, the enamel fireman and the burnisher. This is certainly an array of skilled talent, and it is easily seen how the Royal Worcester Works can give employment to a thousand busy hands.

To return to the royal exhibit of wares at Chicago. Collectively considered, the display in the Liberal Arts Building is marked by the variety of the beautiful forms and the subdued but rich tones of the decorations. The bronzes and golds are of soft texture and are a harmonious contrast with the ivory tints which the major portion of the ware presents.

Two new colors have been here placed upon exhibition and were introduced for the especial occasion. The "rose coral" is shown in a desert service of Italian Renaissance, complete with plates, comports, lamps, flower holders, etc. The other is the "Pompeian Green," of which there is an inkstand of German Renaissance, and a fine lamp in Italian Renaissance.

*To be continued.*

#### HOW TO KEEP BUSY.

It is an old and rather well-proved assertion that when all other lines of business are dull the printers are busy! The solution of this condition of things is easy to arrive at. One might as well say when the community is in health the doctors are idle, for when the community feels the need of a physician, and only then, it turns to the doctors. If general trade is dull, merchants and manufacturers seek the printers, and

by more liberal use, not only of advertising, but of all forms of publicity, bring business back to a healthy condition.—*Fame.*

#### FIRE CLAYS AND THEIR PROPER APPLICATION,

THE varieties of fire clays dug from clay mines are many and greatly differing in composition, though equally valuable where put to their proper uses.

Too much stress is laid upon the fact that a clay must be extremely refractory before it can be employed extensively in the manufacture of fire brick.

As many mistakes have been made by submitting a formula for a fire brick mixture with too little of what might be considered an unrefractory clay, as by introducing too much of it.

In as much as God has provided at each source of supply a variety of clays, each of which is necessary to play its special part in overcoming either physical or chemical action brought to bear upon the brick, it is our place to see to it that this value is realized and appreciated.

To be sure, a clay which shows by chemical analysis, but slight traces of alkalis, magnesia, lime or sesqui-oxide of iron is, by nature, very refractory, while a variety of clay which contains 4 per cent. of the sesqui-oxide of iron, or a clay carrying 3 per cent. of alkalis would be considered unrefractory in themselves.

Just here it seems to be the tendency to draw a hasty conclusion, and say inasmuch as a clay is, in itself, the most refractory, the more of it we can afford to put into one mixture, the better fire brick we are going to manufacture.

This is a rule upheld by much of the literature to-day upon this subject, thus throwing many grades of clay into disfavor, which, for certain purposes, are the most desirable.

There are many places where even brick manufactured from the best clays, that is to say which are, in themselves, the most refractory, have failed utterly.

This failure is not due to physical conditions, but chemical action alone. To-day this subject is being studied very closely, and the true worth of clays, which would seem to the unscientific man almost useless, are being realized as a means of meeting these problems with an adequate solution. C. F.



## NEW CLAY PREPARING MACHINES.

NOTWITHSTANDING the fact that a larger variety of clayworking machines and appliances is already manufactured by J. W. Penfield & Son, of Willoughby, Ohio, than by any other firm. Messrs. Penfield & Son are constantly adding to their list and producing new and useful machinery of im-

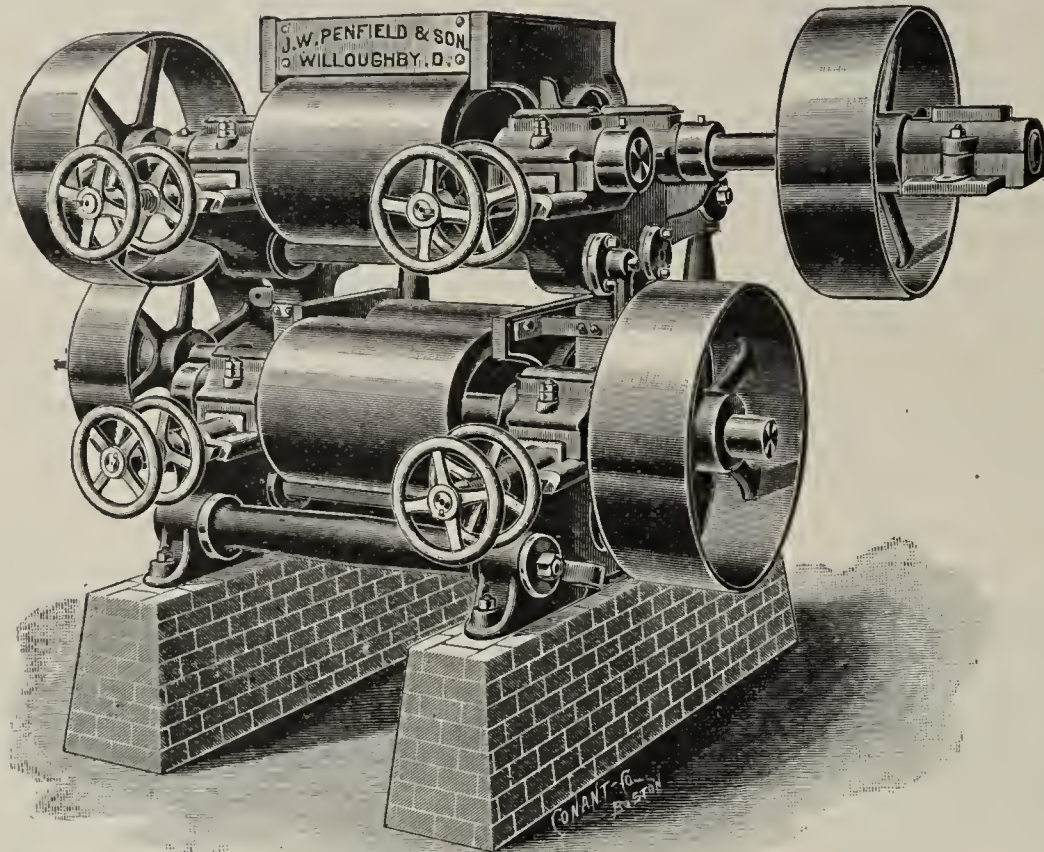
especially constructed for such work. This permits the placing of the rollers as closely together as may be desired, and renders possible the thorough reduction of the material passing through the crusher. Each roller bearing is provided with a double set of hand wheels by means of which the distance between the rollers is quickly regulated. The second hand wheel of each set acts

set wider apart than the lower ones. The crusher is strong, substantial and nicely finished throughout.

THE PENFIELD No. 12 OPEN TOP PUG MILL is an extra heavy, double geared machine. The main shaft is cast iron, of large diameter, and is provided with steel faced, Norway iron knives. Thus all the wearing advantages of steel knives are secured, while if a stone or other hard substance should get between a knife and the tub, the knife will bend instead of breaking and can be taken out and straightened, making it as good as new. The knives fit in the shaft and can be readily taken out without removing the shaft. They also can be adjusted to any required angle to secure the desired amount of pugging. If the clay requires considerable pugging, the knives can be arranged with a small amount of angle and will feed the clay forward slowly, permitting thorough manipulation. If less pugging is needed and large capacity is required, the angle of the knives can be increased, thus increasing the speed with which the clay is fed forward. This feature of the machine, permitting the adjustment of the knives to suit the particular quality of clay that is handled and the amount of preparation necessary, is an advantage which should not be overlooked, being a feature which insures the ready adaptability of the machine to any kind of clay.

The tub is provided with a tapering end, tending to compress the clay and pug it under pressure. The bearings are out of the clay, another decided advantage.

THE PENFIELD No. 8 OPEN TOP PUG MILL is a single geared machine, embodying a number of valuable features. The main shaft is forged, and enlarged at the rear bearing. The front of the machine is provided with an adjustable



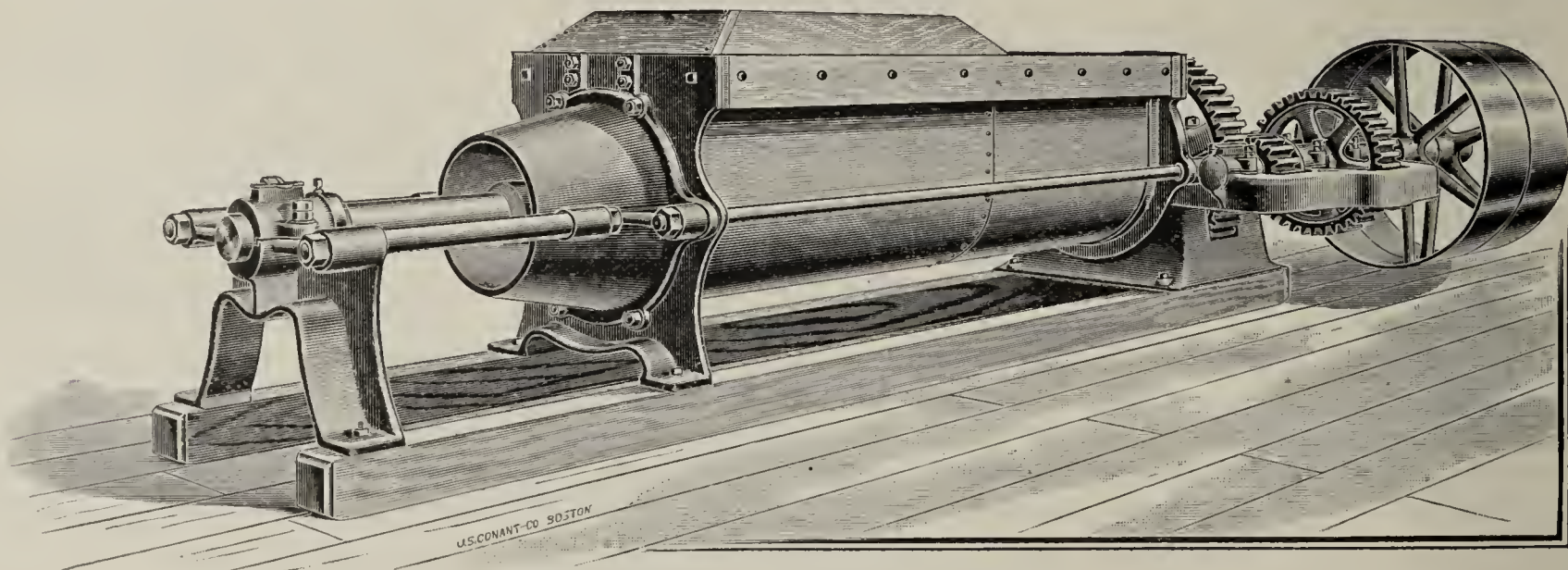
PENFIELD 24-INCH 4-ROLL CRUSHER.

proved design and increased capabilities.

Parties desiring to secure machinery for suitably preparing their clay for the manufacture of brick will be interested in the brief description, as given herewith, of three of their latest productions.

The new 24-INCH PENFIELD FOUR ROLL CRUSHER is constructed in a most careful and painstaking manner and is designed for especially fine work. The rollers, after being cast, are ground off perfectly smooth and true by a machine

as a jamb nut, and rigidly maintains the position of the roller as adjusted. The bearings are long and of improved design. Each roller shaft is provided with a strong, nicely fitted, and polished set collar to prevent end motion. There are no gears or frictions, but each roller has an independent positive motion. The rollers are 18 inches in diameter and 24 inches long, and can be run at equal or differential speeds as may be desired. As a rule the upper rollers are



PENFIELD No. 12 OPEN TOP PUG MILL.



opening which can be instantly regulated by means of a handwheel, according as a great amount of pugging, or less pugging and greater capacity may be sought after. The bearings are extra long and of novel pattern, the tub is of heavy boiler plate, and in fact the machine is constructed in a serviceable, reliable manner throughout.

Messrs. Penfield & Son will take pleasure in furnishing further particulars of any of their machinery upon applica-

of great value. It will pay any of our readers who may be in the neighborhood of Pittsburgh, to see this plant and the working of the Simpson Brick Press.

Written for the Clay-Worker.

#### DOWN IN MEXICO.

(Continued from May Number.)

IN THE last number we were left enjoying ourselves in the garden of the Spanish Don, sipping "White wine and red," but having sufficiently

and it is surprising to see the loads they will carry.

The brickyard was almost in the heart of the city, with a wall around it, like that of a prison, made of the large sun dried, or adobe bricks. It occupied about two acres, having a large gate on one side, which was kept securely fastened and a man constantly on guard. There was a peep-hole through the portal, through which the approach of any one could be seen. No one was permitted to enter without permission, and the workmen, when in, were not allowed to go out during working hours.

The brick kiln was a curiosity; it was built circular, about 30 feet in diameter, the wall about 4 feet thick at the bottom, and three feet thick at the top; there was no opening whatever to it, but a winding walk-way, like that represented in the Tower of Babel, led gradually up around the outside, landing on the broad terraced top.

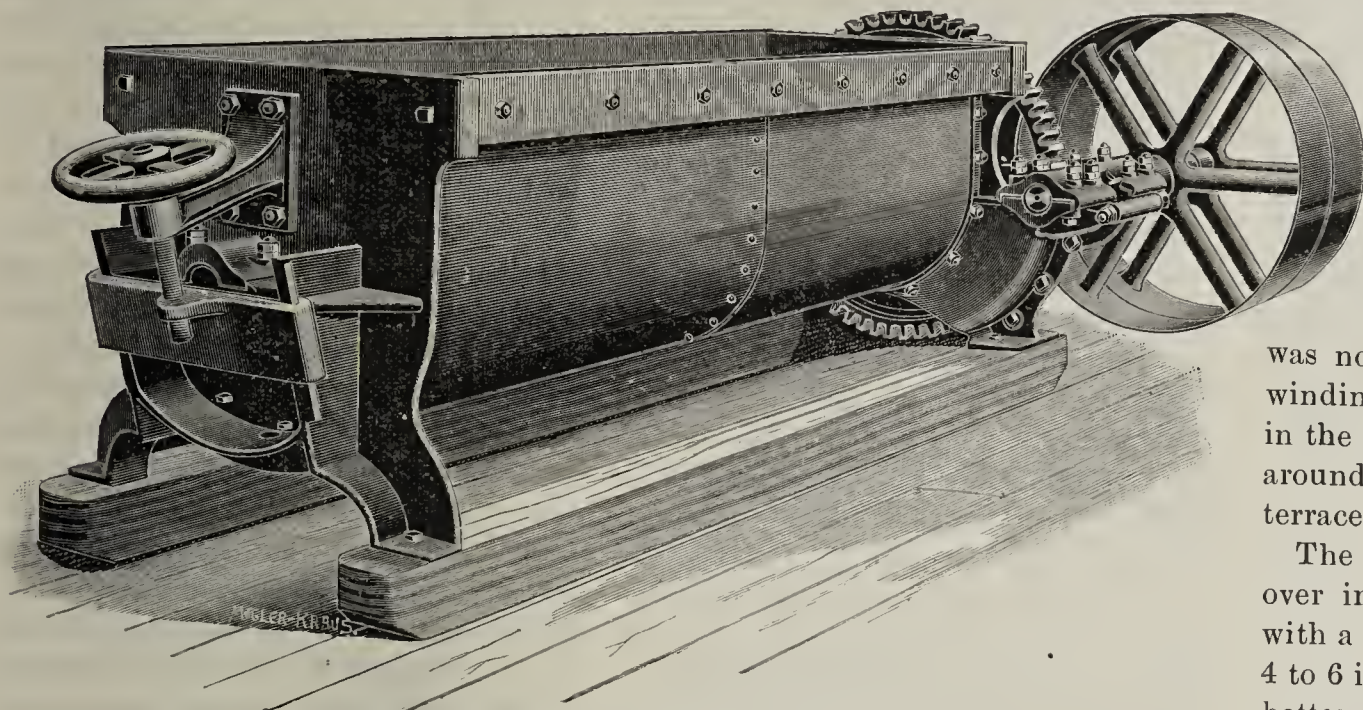
The bottom of the kiln was arched over in ribs, the arches built of stone, with a space between the ribs, probably 4 to 6 inches wide. Under this arched bottom, which formed a sort of basement, the firing was done.

In setting the kiln, the setters were let down into it from the top, and the bricks brought up the winding stairs on the backs of the carriers, in place of wheelers, then with a rope slipped around about a dozen at a time, they are lowered to the setters. They would begin at the low part of the arch next the wall, and gradually bring it up until level across, then carry up the setting very similar to that in this country.

The lack of fuel is the great drawback in Mexico. Wood is brought to Zacatecus on donkeys for over ninety miles; it is cut about three feet long, the sticks are small, but very heavy; it is sold by weight and is worth 1 cent to 1½ cents per pound. So one can readily understand why mainly sun-dried bricks are used in Mexico.

The fuel used in this yard, as in all others, where used at all, was mainly horse manure. (The donkey, also, should have credit for his share). Just enough wood was used to get the fire well started, and an occasional stick to keep up a blaze.

There being no freezing, thawing, or other action of the atmosphere to disintegrate the brick, it is not necessary to burn them hard as we do. The hardest brick were about like our good



PENFIELD, NO. 8 OPEN TOP PUG MILL.

tion, and will also be glad to mail their descriptive catalogues, to interested parties.

#### A 20-MONTHS OLD TOWN.

THE sudden springing into existence of new towns, is one of the features of American life and civilization. All the world knows of Pullman as a city of mushroom growth, but it remains for the town of New Kensington, Pa., to be more wonderful still. This town is now just twenty months old, and has over eight thousand inhabitants. It boasts of the largest glass works in the world. It also boasts of one of the best equipped brick plants in the country. The Kensington Brick Works is a model plant of its kind. They have in operation a Simpson 4-mold Brick Press, and the work they have done on the machine is especially commendable. They make a fine buff brick from a splendid bed of fire clay they have on their land, as well as red brick from the shale, found in abundance in the bluff directly behind their works. They are also making roman brick 12x4x1½ inches, from their fire clay, of a very fine quality. The "Simpson" is making as many of this kind brick, as the ordinary size at each pressure of the machine, which is an achievement

sobered up by this time, we will look into the manner of brickmaking in this vicinity.

Getting down to business, we arranged to supply our Mexican friends with machinery and supplies suited to his work. Our trip to Zacatecus at this time was for the purpose of examining his clay, etc., so as to provide just what was needed, for it was stipulated that every thing must be guaranteed. As this gentleman had not only agreed to pay our expenses, but had advanced the money for same to come down and look over his works and advise him as to just what he needed, we knew we were dealing with a business man, so we closed a contract for machinery and supplies amounting to four car loads, the freight on which amounted to almost exactly the price of the material.

Having closed our contract we returned home to prepare the shipment, nearly everything being made specially to suit this case. As soon as our shipment reached its destination, we again made the trip to Zacatecus, to put it in running order.

As there are no wagons nor teams in Mexico for hauling heavy loads, everything too heavy to carry was rolled, and the balance slung on donkeys or greasers,



salmon, and the whole kiln would average up about like one that had been watersmoked and brought up to the point of raising the heat, and then closing up; in fact, the fishing worms were hardly well cooked.

As the yard was the first place we got into, we have drifted into a description of the same, and left to the last what should have been first, and that is, the clay.

On looking around the yard and in all the surrounding localities there was not the sign of any clay; nothing but rocks, but the clay got there, just the same.

Following a string of 40 or 50 donkeys with pack saddles on their backs, but no bridles on their heads, trudging after a leader, with a tinkling bell, down the narrow streets, and along winding paths for a mile and a half, we came into the valley, and at the foot of the mountain among the rocks, the Peons were getting out the clay.

We had made for them two large rotary screens, 10 feet long, 4 feet at the large end and 30 inches at the small end, with a quarter inch mesh, each arranged with a double crank and two greasers attached when in operation. The clay was passed through very fast, and as every stone or other substance not wanted, was screened out, the clay was left in the finest condition for work.

The donkeys stood around nibbling at the Spanish daggers, cactus, etc., but at the word of command, would march up to the screens and receive their load, about two bushels of clay, one on each side, and immediately step aside while another would take his place to be loaded. All being ready, the driver would call the word of command, when the leader would fall in like an orderly sergeant at the head of his company, and the rest would follow, one close behind the other, winding slowly up the mountain to the brickyard in the city. Thus back and forth they go, carrying clay to make 20,000 brick per day.

When the brick are ready for delivery they are taken from the kiln in the same manner described when putting them in; that is, a rope is looped around about a dozen brick, then they are yanked up to the top of the wall and then carried down the Tower of Babel stairway. A peculiar pannier is made for the donkey, on which to carry brick. A board stands out on each side about level with the donkey's belly, held in place by girth and braces from the top

of the saddle. The brick are stacked up from each side until they arch over the top. Each donkey carries about 100 at a load. They are loaded up in trains, just as described when carrying clay, and driven off to the building. One man handles the whole train and unloads all the brick, and one would be surprised how quickly he will dump 20 or 30 loads.

The donkey suits the description of Santa Claus, in "*The night before Christmas*," for he has a little, round belly, and there is very little daylight under him. The driver brings them up one at a time, and with a *know-how* twist, the saddle is turned bottom side up, the brick are on the ground, and with a reverse twist, the saddle is back in place and the donkey off nibbling cactus or thistles. The brick are carried onto the building on a pannier resting on the back, held by a strap passing around the forehead. Nearly all heavy loads are carried in this way. The men wear a sort of a helmet hat, which protects the head from the strain of the strap.

Of course, there are but few yards in Mexico making brick by machinery, the greater portion being adobes. These are not generally made on large yards, nor by any great number of hands together. You will see two greasers working together at any point where they can get the clay convenient. One will scratch around among the rocks, and carry the clay on his back to the other who has formed his yard in some level place.

This one will have a single mold about 3 to 4 inches thick by 6 by 12; he will have a bucket of water and a sort of trowel; he will make a little pile of the clay and mix it up and work it over, then fill his bottomless mold on the ground near by, then he will wet the top and slick it over and draw his mold, set it over, mix enough for another brick and thus continue all day; they are edged and turned and hacked until thoroughly dry and ready for use.

(To be Continued.)

#### JUNE.

Just to lie and dream forever;  
O flowery June,  
Tell me that my ears may never  
Miss thy tune.  
Sighing through the meadow rushes;  
Whispering where the wild rose blushes;  
Dreamy in the twilight hushes,  
O queenly June!

—Walter M. Hazeltine.

#### MRIOUS.

She frowned on him and called him Mr.,  
Because in fun he'd merely Kr.,  
And then, in spite,  
The following nite,  
This naughty Mr. Kr. Sr.

—Life.

#### NEW YORK NEWS.

IN THE May number of the CLAY-WORKER mention was made of one of the yards commencing to mould on the 19th of April. The reason given by the proprietor for starting so early in the season, when the outlook was so far from promising, was rather original. He was afraid that he would not be able to get men enough to run his yard, and his was the only yard that had started on that date. If that excuse had not been sufficient he would probably have said that he would be out of stock and had a contract to fill, which was not true. He has still old stock on hand and is not shipping on contract, but sending to New York market. From the 19th of April to the 14th of May, the weather has permitted them to mould only 12 pits of brick of 33 M to a pit.

All the yards were ready to mould on the 1st of May, which came on Monday. It rained every day during the week, so that it was the 8th of May before a general start was made. If all the manufacturers from Keyport to Albany had made no preparation to mould before that date, it would have been a decided benefit to them, and would have caused a firmer market and possibly one that would have continued through the season.

#### THE EFFECT OF THE WEATHER.

"Man proposes and God disposes." If the Supreme Being had not interposed, by sending wet weather to upset the plans of the majority of the manufacturers, there would be quite a number of new brick burned and ready to ship on the market at the present date. Last week was the first ringer the men have made this season. The Haverstraw yards were slow getting ready, and those who had stock were rather inclined to hold back shipments, and, as a result, the market made an advance that was most marked. From a five dollar rate for Hackensack of two weeks ago, at present \$6.25 is the going figure with a quicker movement.

If the weather had been uniformly fine the market would have been very low, as the new stock would have kept the market full so that the buyers could have made their own price, but this backward spring has retarded building operations so, that with a few days of good weather the consumption of brick will have increased, and the shortness of supply have placed the market in the hands of the seller. All this brought



about, not by man's judgement, but by the effects of the weather on the trade.

#### WILL THIS MARKET LAST?

Does the state of the building trade warrant the continuance of such prices for any length of time? Taking the number of permits out up to date, one would say, "No, as there are less out this year than last." But again, as the trade is far behind by lateness of the season, will not this continue to hold up the market? "Yes, if the manufacturer will keep his stock under his shed and ship in quantities that will keep the market supplied." Will he do this? is the question.

Judging from past knowledge and present appearances, unless something very unexpected turns up before July 1st, there will be a fall in prices to the five dollar rate. Last week one of the yards burned their first kiln, small to be sure. This week there are three yards burning, on two they are burning a 10-arch kiln, on the other 5-arch. Just as soon as they are cool they will be shipped, and so it will be with all yards along the Hudson; they will make small kilns, about enough to load a barge, and ship them, hoping to realize the present price, as they did when they shipped last spring, and the result will be that thirty or forty barges will make the market at one time, and then it will be the buyers' innings, as it has been in times past.

#### LABOR AS A FACTOR.

Labor has been rather scarce this season, so much so, that yards that have wanted to run two machines a day, could not get men enough, and what they did have were not old hands. With the advent last week of good weather, like the mosquito, they have commenced to come around in goodly numbers, so that all the yards are now full-handed—that is, a day or so after pay day. Pay day is on Saturday, and it takes some of the men till the middle of the next week to find out "Where they are at." Gov. Flower, of New York, has signed the ten hour bill for work on the yards of that State, so that labor might possibly help keep up prices. It is a sure thing that the manufacturer will be the one who will do all he can to get his stock on the market, let the result be what it may, and then wonder why the other fellow did not hold his stock.

#### WILL FINANCIAL TROUBLE AFFECT THE TRADE?

At present, the real estate market in

New York City is in very good shape. Prices rule strong, and, in fact, as collateral security, real estate seems to have the call over stock at the banks and private lenders, so far as low rate of interest is concerned.

The class of building that is now being erected is not of the speculation kind; that kind has in the past been largely erected in the upper part of the city, where the contractor has had to wait one or two years before a purchaser came around, and in many cases he was forced to the wall by the tightness of money, thereby causing loss to a number, the brick manufacturer among them.

Money seeking investment is erratic. At times it is rail road stocks, at other times industrials, and then it comes back to real estate. It seems to be gradually taking hold of real estate, and then there will be an improvement in the brick industry, as there is plenty of money always to be found where there is a good, permanent investment. More new buildings and a slight curtailment of quantity made would place the brick-maker in shape.

#### OLD STOCK ON HAND.

The Hackensack yards do not contain a very large amount. One yard has between two and three million, and as they do not ship to New York unless a very good price prevails, it is not likely that any of that stock will go there. Another yard has about one and a half million. Two other yards have a few arches, while another has none. There never has been so small a number of arches under the sheds at this season of the year, as at present. On one of the yards that laid idle last season, the owner has been making some repairs and talks of starting in the near future. It would seem as if getting ready to make brick in June, was out of season, still he could fill the shed and hold them till satisfactory returns would result, as by the time he would have a kiln ready there would be a full market. As it has always ruled, no matter how active the demand, during July and August, there was always a shortening of prices. I have failed to find a manufacturer that has any confidence in present prices after new brick begin to come on the market. They say, "Get in all you can and as soon as you can, so that you will be better able to hold later. Just as sure as daylight, the big yards will rush for all they are worth. Put all in each kiln, burn and ship as soon as possible." We might as well have a hand

in pulling down prices as they. This may be good logic, but it is not good policy. There are men in the trade who, if they thought that by shipping they could ruin their neighbors, would do it.

#### STRAWS.

Some of our manufacturers who have land, are ploughing it and planting corn and potatoes this spring. For some, it is something new to cultivate their ground—possibly they think that salt and potatoes will beat snowballs for a diet; the corn will help keep the horses when snow is on the ground.

The local trade is quite favorable thus far; if it holds its own during the summer it will do well. The financial spasm that has struck the country, may cause a temporary suspension of building. If such should occur, the yards here will feel it very much, as they dispose of several million around this vicinity.

Patterson and Passaic, on New York and Susquehanna R. R., the one five and the other seven miles from Hackensack, have consumed large quantities of brick from here in the past three years. During the winter there was no call. This spring the demand is light. One yard that ships all its stock to these places, shipped but very little through the winter. When they burned their last kiln in October, they had over four million brick in stock; to-day, they have at least three million on hand, and are running only one machine of 36 M per day. At this time last season they were out of brick, and were buying to supply their customers, as well as moulding 75 M each day—such is trade in brick.

#### CHANGE OF BRICK MARKET.

Last summer in one of my letters I said, that if any of the craft should be in New York City and go to the foot of West 30th street, they would be surprised at the number of boats that would be found there with cargoes of brick. All that part of the street that was occupied by commission men is deserted. The needs of the pier for garbage dump, has forced the market still farther up town. It is now located at the foot of 52nd Street, North River; how long to remain, it is hard to tell, as the city is growing and wharf room limited. When full shipments are in order, with forty or fifty barges, 100 feet long and 30 feet wide at the pier, they take up some room. In my recollection, this is the fourth location for it. First, at the foot of Amos Street, when the vessel would



not carry over 45 M. From there to the foot of West 11th Street, when barges first came in use. Then they were sent to West 30th Street, and have remained there quite a number of years. There is only one commission man in the trade to-day that sold brick in the good old times at Amos Street, and he met his financial Waterloo on 30th Street, but is still at it. In the fifties, his office was in his hat, now he runs an office and attends to business, as competition keeps him stirring. The commission man never had as good office facilities as they have at present. The firm of Canda & Kane, whose headquarters are at 32nd Street, has erected a fine large building. The ground floor is all occupied by commission men. The next floor is taken up by the different branches of their large business. In fact, all the commission men are tenants of Canda & Kane. History repeats itself, we are told. One of the prime causes of the change of market to 30th Street, was because Peck & Martin, then the largest dealers in building material, had their office and yard there. Many manufacturers thought it would have been better if it had been somewhere else—it is not for men to say. Within the past few years the firm of Peck & Martin has ceased to exist, and now another change takes place right at the door of the heaviest dealers in the trade. They can look out of their office window and see all that is on the market—handy, is it not?

One of the commission men vacated an office on 30th Street that was built for the purpose of an office for an organization of brick manufacturers, which, if had been carried on, would have revolutionized the trade. At some future time I will give your readers its history.

## MARKET.

At present good Haverstraws will bring \$6.50; Hackensack \$6.25, with but few shipments. Possibly before this reaches your readers the rates will be lower.

A. N. OLDTIMER.

## AS IT SHOULD BE.

She hailed a cable car and then  
She turned to say good-bye;  
She said it once and o'er again,  
And wiped her tearful eye,  
And when she finished her farewell  
She found to her dismay  
That cable car—oh! sad to tell—  
Was several blocks away.

—Washington Star..

## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## More Light.

Editor Clay-Worker:

Although this is my *maiden paper* to your valuable columns and being at present located under the shadows of the snow-capped Rockies, where they make brick *without straw*, I am not a stranger to the use of coal in brick and cannot restrain from accepting the opportunity offered by the request of Mr. C. Houghton, Carthage, N. Y., in the May number of CLAY-WORKER, for some hints on using coal screenings in brick kilns.

In the first place it is a difficult undertaking for even a practical brickmaker to state the amounts of coal to be used to an advantage in clay which he has never seen and of which he knows nothing.

Throughout parts of New York State coal is mixed in all the brick made, but a larger quantity is put in the brick which are set in the heads, than those set in the body of the kiln, and by using it in this manner about one bushel to the M is put in the brick set in the body of the kiln, or as they are termed by the *profession*, "Single Coal," while in those set in the heads and termed "Double Coal," about four bushels to the M.

Where coal is not used in the body of the kiln and only on the heads, about two bushels to the M will be found sufficient to hold the heat on the heads.

Hard coal screenings are preferred.

In firing a kiln of brick with coal in it, is customary to dry off from 36 to 48 hours, and then begin to heat up and fire hard until the required amount of heat to make hard brick is raised all through the arches, and then hold it at that heat until the kiln is settled and then complete.

In order to settle the heads with the centre, fill one end of the arches with good wood and close the doors tight, open the opposite end and fire for about six hours with open doors, change fires in this manner about every six hours until kiln is complete.

In reply to the question, "Is it a safe process for a beginner to try?" I would say, that I have made and burned brick in both the East and West, with and

without coal, and with the practical knowledge I have acquired by years of experience, I would not advise any one to try experiments, at least such as you contemplate, without some practical knowledge, and I doubt if any up and up brickmaker would so advise you. Nevertheless, if you have plenty of money and a limited amount of experience and wish to lose the first to gain the latter, try it. At the same time, if you wish to make a success of the brick business and at the same time enlarge your bank account, take the advice of one who has been *through the mill*, and secure the services of a practical man—at any cost—to do your burning for a time at least, until you "catch on."

If you do not know of one, advertise in these columns and you will doubtless find some one who will give you more valuable *pointers* in one month's time than you could acquire in a year's experimenting and devotion to correspondence and brickmaking literature. Do not mistake me and think for a moment that I am opposed to obtaining knowledge from correspondence, as such is not the case, for I have gained much valuable information from these columns and its able contributors, and expect to learn much more.

Denver, Colo.

TENDERFOOT.

## A Trip to Europe.

(Continued from May.)

Editor Clay-Worker:

The next works I visited were within a few miles of Middlesbrough, in Yorkshire. These works were built for the manufacture of fine pressed and ornamental brick exclusively, and was intended to be a model plant. The works cost about \$125,000, which, considering the difference in the purchasing power of money there and here, would mean anywhere from \$150,000 to \$200,000. For this sum we would expect to get a pretty good sort of a brick plant in America, with a capacity of at least 100 M per day.

At the works I am describing, they turn out about 10 M plain pressed brick and perhaps 3,000 ornamental and enameled brick per day, and I very much doubt if they average this many. The clay is brought into the works in dump wagons and spread over the floor in a large shed to dry. The floor is covered with rows of 1-inch steam-heated pipes about 12 inches apart. The clay is dumped on and between these rows of pipes, and when dry enough is gathered up and taken to a large dry grinding



pan. After being ground, it goes through a fine screen, then through a pug mill and is made into pressed brick through one of Mr. Johnson's new patent combination machines. The ornamental brick, I think, were made on an Auger machine, and pressed on Titley patent screw presses. Great care was taken with these and they looked very handsome. The object in drying the clay, and then grinding in a dry pan and screening, was to ensure the strata of clay being thoroughly mixed, and the texture of the brick a uniform fineness.

In addition to the machinery mentioned, the plant consists of a fine battery of boilers, a superb pair of engines, large drying sheds, covered with iron plates and heated with exhaust steam, a large Hoffman Continuous kiln, and about 4 small square down draft kilns. The latter are used principally, for enameled brick—a branch which has been pursued considerably, though not with the success attained at Leeds and other places. The pressed front brick are burned in the Hoffman kiln, which was somewhat of a revelation to me, although they get quite a percentage that will not go for first-class quality brick.

The brick made at these works are considered a pretty good quality, probably a little above the average, but would not bear comparison with the front brick made at a score of yards I could name in different parts of America. This has been a very costly plant, and I believe they have changed their machinery two or three times, but it was difficult to see where the value was for the amount of capital expended, which is out of all proportion to the production. The manager of the works, who is also a considerable stockholder, is a very pleasant and courteous gentleman. He intends coming over here on a visit during the World's Fair, and promised to take a look at some of the American brick yards. He will probably get some pointers.

I next visited a common brickyard, belonging to an old friend of mine, and renewed our acquaintance at the same time. Here they make on wire cut off machines, and dry on iron floors heated by steam. The yard was standing, (no work) still at the time of my visit, making some repairs, and there was nothing new to be seen.

After this, I went to see a large fire brick works at Crook, in the county of Durham. This yard is one of the small side issues of one of the largest firms of

iron ore and coal mine operators in England. Their names ought to be known to every one who is familiar with the early history of railways. The founder of this firm, Joseph Pease, and his father, Edward Pease, were the men who took George Stephenson by the hand, and with the money furnished by themselves and their friends, built and operated the first public railroad the world ever saw, viz., The Stockton & Darlington Railway. True, it was only 12 miles in length when first opened, and the first locomotive, (now preserved as a priceless relic,) seems to us now a crazy looking affair, but they were the nucleus of the most wonderful and practical system of transportation the world has ever seen, and which now covers, like a net-work, the surface of every civilized country on the earth.

But to return to the brick works. This being a fire brick plant, was of special interest to me, being right in my present line of business. The capacity of the works is about 25,000 fire brick, including furnace blocks and other shape work, and 10,000 silica brick, per day. They were running full at the time of my visit and working over time. The works are substantially built, and very conveniently arranged for economical working by the hand method. The fire clay, or "seggar" clay, as it is locally termed, is brought from the neighboring coal mines, and is then ground and pugged in the old fire brick mill. This consists of a stationary perforated pan, in which revolve a pair of immense crushing rolls, chaser fashion, the clay is elevated and screened, and passes through a vertical pug mill. From the pug mill the clay drops into iron side-tip wagons, which run on a light tramway to the moulder's benches. Here the bricks are moulded very stiff in brass moulds and set down edgewise on the floors to dry. The clay is never touched by hand from the time the rough clay is shoveled into the grinding mill until it reaches the moulders to be made into brick. About 2,500 9-inch brick constitutes a moulder's day's work. Each moulder has a space of floor to himself, about 14 feet in width that being the distance between each tramway. The brick are taken to the kilns on small cars, running on the same tramways, and as it is only 7 feet from the centre of each strip of dry floor to the track, this forms a very convenient arrangement, and quite a saving in expense over the use of wheelbarrows, of

which I did not see one inside the works.

The material for the silica brick is prepared in much the same manner, with the addition of a rock crusher, which breaks it up into pieces about egg size before it goes to the grinding mill. The silica brick are moulded by hand and then pressed in a small hand press and carried to the dry floor on iron pallets with feet, holding 2 brick each, on which they are left to dry. They have a very large demand for these silica brick or "ganister" brick as they call them in the county of Durham.

The kilns here are claimed to be a specialty. They are what I should call side-fired Newcastle kilns. They hold about 12 to 15 thousand each, and from what I saw, give good results. They are claimed to take only about 700 lbs. of coal to the thousand bricks, which I should consider good enough for any except a continuous kiln. Everything at this plant is heated with steam, which costs them nothing. The waste gases from a coke plant, belonging to the same firm, used under a large battery of boilers, gives an abundance of steam for all purposes.

One other place that I visited, I must briefly mention. This was the sewer pipe and pressed and paving brick works of which I was manager prior to my coming to America, and where I spent the happiest days of my life. These works have been standing still some years, internal dissensions among the company, and bad management, being the cause. It has now passed into other hands, and at the time of my visit was being put into shape to start up. Here I found many of the old workmen, and numbers of other friends, who, without any exception, would be glad if I would go back to the old place.

I have taken up a great deal more space than I intended, and will, therefore, say, Mr. Editor, use your pencil and cross out what you have not room for.

ALFRED CROSSLEY,

Louisville, Ky.

#### Salt Lake Brick at the World's Fair.

*Editor Clay-Worker:*

Please find enclosed \$2.00 for subscription to CLAY-WORKER for 1893. I look on the CLAY-WORKER as a valued friend to the craft. The Salt Lake Pressed Brick Co. are putting in an addition to their plant in the shape of a Stedman Disintegrator, and we intend to turn out a better class of brick. The



company have sent a few brick to the World's Fair, not as a special selection, but merely to show our brethren in the East what we are striving to do here in the way of furthering the progress of the brickmaking industry in the top of the mountains of Utah. The outlook for the season is very good.

JAS. MAXWELL,  
Salt Lake City.

#### A Progressive Oregonian.

*Editor Clay-Worker:*

Enclosed please find amount due you for subscription to CLAY-WORKER. Please excuse delay. Business was very dull for some time and common brick around Portland are very cheap. Have been doing a great deal of experimenting and built two kilns. I am not a big capitalist, but a man who has to work hard for a living the year round. My plant is not a big one, yet I had to struggle along most of the time with poor clays. It is situated near the bank of the navigable Willamette river, five miles above Portland. It consists of a fine round down draft kiln, and a smaller square up draft kiln, a good stock of expensive patterns and molds for manufacturing ornamental flower pots, vases, brackets and other things. I have been making common brick and terra cotta on a small scale for the last twelve years. Last year I bought a tract of land 70 miles from Portland and am using some of the clay for pottery. This clay takes a good, fine glaze and I intend to make floor tiles, buff brick, enamel and glazed brick of it, having made some good samples of the latter already.

Milwaukee, Ore. CHAS. FISHER.

#### A Singular Accident.

*Editor Clay-Worker:*

The Standard Brick Works, formerly owned by Paradine & McCarty, of Erie, Pa., met with a severe and peculiar loss on May 9th.

During a regular deluge of rain, a small stream that is known as Mill Creek, being overcharged with water, backed up into a kiln of red-hot brick, causing an explosion that made quite a heavy loss to the Standard Co. The concussion was so heavy that the hot bricks were thrown into the air, setting fire to the kiln shed, destroying the shed, also blowing the furnaces open and cracking the heavy walls in many places. The kiln was a long one, divided in the centre, holding 210 M in each end; one end being filled with green bricks, about

ready to set fire to, were thrown down by the explosion and water melting the arches into mud.

Mr. McCarty's loss is quite heavy, as he also had about 80 M destroyed on the yard, but he has lots of pluck and is pushing ahead again.

Bro. Dunn also had the kiln doors blown open by the same flood of water, chilling many brick.

Deubenheifer also met with a loss of about 200,000 that were on his yard drying. These losses make brick rather scarce in Erie just now, but somehow the old machines keep on grinding them out every day. Just the same, quite a large amount of building is being done this season and prospects bright for a good seasons trade.

Street paving commences shortly upon several of the city streets. Vitrified brick are to be used. We claim if they are properly laid and the brick are of good quality, these first jobs are only the beginning of brick pavements in Erie.

W. R. O.

#### A Knickerbocker Plant.

*Editor Clay-Worker:*

Please find enclosed check for CLAY-WORKER. Writing for publication is not much in our line, however, will give a brief description of our works. We have a Hilton soft mud machine and a Penfield stiff mud, a Penfield pug mill and a Potts disintegrator. Make drain tile mostly, on the stiff mud machine and are going to start soon on end cut paving brick. We have one common clamp kiln, holding about 417,000 another 160,000, a Eudaly up draft round kiln, 200,000 capacity, and one of his down draft round kilns, which we use principally for burning front brick and drain tile. All our wares are dried on pallets in dry sheds, the yards holding about 200,000, make 30,000 soft mud brick per day. Clay is a very strong, tough, blue clay, which has to be reduced with about one-third loam. This lies on top of clay, use the bank about 30 feet deep, that being as deep as the amount of loam on top will allow us to go. Clay is taken to machine on cars drawn by one horse on street track, and as fast as soft mud machine can use it, and have to go about 1,000 feet after it. Do all our burning with coal, using hard for water-smoking and soft for finishing. The market is very good here this spring, and all are out of brick. We are burning our first kiln of 200 M now.

M. J. MECUSKER & SON.

Jamestown, N. Y.

#### Good Tidings From the Northwest.

*Editor Clay-Worker:*

I am almost too busy to write these few lines, but it might do some of your readers good to know that there is such a place in Wisconsin where there is a brickyard on almost every section of land and plenty of clay everywhere, and still we are not able to supply the demand. Our prices are too low for brick-makers to get rich on, but it is an inducement for every man to build of brick instead of lumber. There are many yards, but none of them have, as yet, made an effort to make anything but common brick. There is a demand for fancy brick at good prices, and a factory down here would do first rate.

We are getting a better price for brick this year than last, but there is only a few thousand left of the old stock.

Our prices for select, \$7.50.

Hand made for kiln run, 6.00.

Machine made, kiln run, 5.50,

Large contracts, still cheaper. So you will see that any one who wants to build can build cheaper of brick. Masons are getting from \$2.50 to \$3.50 per day. Most of the yards are running eleven hours a day, but I have made up my mind that ten hours is enough for any one to work. JOHN ROFFERS.

De Pere, Wis., May 13th.

#### ARRANGING FOR A CLAY EXHIBIT.

THE Executive Committee of the Illinois Brick and Tile Association met at the Tremont House, May 25th and 26th to make final arrangements for the clay exhibit of Illinois at the World's Fair, for which the State Legislature recently made an appropriation. The plans for a pavilion in the building of Mines and Mining, were adopted, and the members of the committee will at once make a canvass of the entire state for samples of the various clays, natural, burned and unburned. All owners of clay lands and manufacturers of native clays are earnestly urged to communicate at once with one of the committeemen, whose names and addresses are J. E. Chandler, Bushnell, Ill.; G. C. Stoll, Grant Park, Ill.; Wm. Hammerschmidt, Lombard, Ill.; Joseph Stafford, Springfield, Ill. On account of the very limited time in which to complete the exhibit, it is the urgent desire of the committee that manufacturers write for shipping directions immediately to

Grant Park, Ill.

G. C. STOLL.



**THE CLAY-WORKER.**OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
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T. A. RANDALL &amp; CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

**THE COMMERCIAL SITUATION.**

No country in the world is richer in material resources, no country should be more prosperous because of the natural advantages which accrue to her than America. Nevertheless, there has not been a time in recent years when business men were sticking closer to their desks, nor with more anxiety than at present. We are surrounded with the natural conditions of prosperity, yet hampered by the artificial impediments of a faulty financial system which brings us into this unstable condition. This is food for thought for all intelligent people. On the one hand, all of the natural conditions of prosperity; on the other, depression which is the result of unwise legislation. We are not of those who prophesy a great financial panic and a period of great depression. We will have nothing to compare with the lean years following 1873. Then, nearly every one was badly in debt. In our own city, as a fair example, nearly all were borrowers. To-day there is relatively a small amount of mortgaged property. Nearly all have a little ready cash, some property and a balance on the right side of the ledger, and there are large amounts of surplus capital. We take our own locality in an illustrative sense, it's condition is representative of most of the towns and cities of our country. It makes a great difference in the financial situation as to

whether the large majority are in debt or out of debt. The present flurry is certain to have some effect upon building work. It will make us all thoughtful; we will reduce expenses and in that way we will learn a valuable lesson. In times of prosperity, the politicians can "play horse" with the public. It is now time for the public to look to the politicians. The remedy is in the hands of the people, and with prompt measures the trouble will soon be over.

**KNOWLEDGE OF COSTS.**

To one not acquainted with the business methods of many people, it might appear startling to hear the statement made that very few clayworkers know what their product is costing them. When the market is brisk they are not particular; when it is depressed, they assume the costs or estimates by thumb rule, and nearly always their hopes influence their judgement. They hope that the cost is low, and they form their judgement accordingly. Money has been made in different kinds of business in this—a rich country—by skimming off the cream; by careless, irregular methods. The time has been that people who had anything to sell could make money. That condition is vanishing, and the profits are only for those who have the organizing, systematizing and analytical faculties. No man can reduce costs intelligently or properly unless he knows what they are at the various stages of the work.

**AMERICAN AND FOREIGN BRICK WORK.**

The exhibits of brick work at Chicago as compared with those of the French Exposition of 1889 are favorable to the American product so far as the brick are concerned. The arrangement of the brick and clay products in the Paris Exposition was generally more artistic as to design and color than is the case at Chicago, but as to the quality of the brick themselves, their general character and color independent of arrangement in the structure, there can be no question. This information comes from one who is posted on this subject. There can be not the least question but that the best brick made in the world to-day is an America product. There may be some exceptions to this in the way of specialities.

England has given more attention to the manufacture of enameled brick than have we; and it is generally understood

that in this particular they have been more successful, though there is nothing to be ashamed of in what we have done. In may be, and probably is, true that enameled brick of a quality quite as good as those made any place is now being produced in this country. However, this has not been done long enough, nor is the result so fully established that we can as yet claim to have superiority in this direction. It is only within very recent years that our attention, as brick-makers, has been generally and seriously directed to this branch of clay work.

In speaking of the designs in constructive brick work as compared with those of the Paris Exposition of '89, we refer to the little pavilions and exhibits shown at the two great Fairs. In this respect, Chicago is at a disadvantage; though we repeat, for the sake of clearness, the statement that the old world has much to learn from us in the products themselves. It is in the artistic arrangement of brick that we have not been particularly happy.

**FUEL AT THE WORLD'S FAIR.**

At the Philadelphia Exposition the firemen were black, begrimed, greasy, sweaty and no doubt odoriferous. This was in 1876. At Chicago, the firemen are dressed in a uniform of white, and to the passer-by it appears that they have nothing to do; their work is of a supervisory character, they look at the steam gauge, and regulate the fires and the pressure of the steam by the turn of a valve. They have no fuel to handle, there are no ashes to be cared for, the furnace doors are never to be opened, and altogether it seems that if one were seeking a vacation from the ordinary labors of life, he could not have a pleasanter occupation, one more quieting for the time being, than the position as firemen in connection with this great boiler plant, the fuel for which is petroleum.

**EXPOSITION BOILERS.**

All of the boilers in Machinery Hall or the annex to it, are of the water tube type. Here in a row, lined up with military precision for almost if not quite a quarter of a mile in length, are water tube boilers of the various types. One finds the Babcock & Wilcox, the Sterling, Heine, Root, Gill, National and others. The shell boiler of the flue or tubular type does not appear in this



section. This is another mark of the advance in power outfits. It is safe to say that through boilers alone, the consumption of fuel has been reduced one-half. Certainly the great expositions are the markers in the cycles of progress.

#### ROOFING TILE FROM OHIO.

Ohio has been turning out a first-class quality of roofing tile for several years. In her exhibit in the Mines and Mining Building the various products of this character are beautifully and picturesquely arranged. It is worthy the study of the workers in clay. This product has been successful from a constructive and financial standpoint, and we as clayworkers who have been tardy in taking up with the manufacture of roofing material have something to learn from this section. The public is alive to roofing tile. Experience has shown that they are willing and ready to pay for them. The supply has not been at hand. This is one instance where the public demand has been in excess of the supply of clay work. The public has been the leader. We call special attention to the glazed roofing tile which is a part of the exhibit at Chicago.

#### FLOOR TILE.

We can most readily measure our advance in the various arts and sciences by recurring to former expositions. In 1876, America had practically nothing to show in the way of floor tile. The masses of the people were electrified by what they saw from the other side. Now the electrical disturbance will be felt by the people from the other side of the world, when they see what America has done within a few years. No one who knows anything about decorative tiles, floor tiles or others, claims any superiority for the foreign product. Here is the measure of our progress within a few years. In some instances, where the mere art work is to be considered, foreign tiles have an advantage. As to quality of workmanship and material, the character of the coloring, and the general uniformity of the product, there can be no question but that we are leaders rather than followers. Foreign tiles cannot be laid down alongside the American product without distinctly and clearly locating our advantage. Clayworkers know this, but the general public does not. The World's Fair will prove an instructive object lesson in this direction.

#### PHILADELPHIA NEWS.

The financial depression, the tariff, and increased number of failures appear to have no effect on building operations, for with the first sign of open spring and good weather, contractors in all sections started in earnest, and there is every indication that the number of buildings to be erected will by far surpass that of a year ago. Reports gleaned from brickmakers show that they have seldom been in a better condition as to business than they are to day. On the opening of spring, stocks in all the yards were small, so that the machines are hurrying through the work in order to meet the present increased demand. Prices are better than they have been for several years, too. As early as March the larger manufacturers of bricks established a schedule of prices, as follows: Salmon, \$5.75 per M; hard brick, \$8; machine stretchers, \$10 to \$11; hand made, \$11 to \$14; and press brick, \$18 to \$20. The above prices appear to be well sustained even by manufacturers of a limited output.

Vitrified brick is in excellent demand both for building and street purposes.

The organized plasterers and hod carriers have made a demand in this city for increased wages, and threaten to strike unless it is acceded to.

A new pottery has been established at Kennett Square, Chester Co., where they are said to have an excellent deposit of good, suitable clay.

The Ott & Brewer Pottery Company, Trenton, N. J., which has carried on the business for more than 30 years, has failed. The assets of the firm are estimated at \$50,000, and the liabilities amount to \$137,325.46. John Wright has been appointed Receiver. Ex-Congressman John Hart Brewer has been named as complainant in the bill.

A splendid portrait of President Murrell Dobbins has been placed on the walls of the Builders' Exchange.

The golden miniature steam engine that was built by Cyrus Chambers, Esq., when a boy of 16 years, is now being put in order for the Columbian Exposition by the same individual, who has now become a man of 60 years, and is president of the company that manufactures large steam engines and brick machines. It will be exhibited in Section 31, column P. 2 S. 36 and 37, and will be carried to Chicago in a corner of the vest pocket of the maker. The engine is a high pressure, constructed

principally of gold and silver, and composed of 150 pieces. The diameter of the cylinder is one-sixteenth of an inch; length of stroke three-sixteenths of an inch; diameter of fly wheel five-eighths of an inch. The engine, boiler, stack and plate, on which the whole rests, weigh less than one-half ounce. It is believed to have been, when constructed, the smallest working steam engine in the world, and will run 3,000 revolutions per minute.

The brickmakers certainly have no fault to find with demand. Their facilities are taxed. This is also true of the manufacturers of fancy shapes and styles. There is a craze or a fad for odd shapes now, which is not likely to be a permanent thing. All our leading brickmakers, that have been interviewed, say the rest of the season is going to be a very active one. A great deal of new work is to be begun in July. The tightness in the money market has not repressed building activity to any visible extent. Houses rent and sell as fast as built. The construction of projected trolley lines will exert a favorable influence on building. The newest brick machines are a matter of considerable interest to the trade, but our people do not tear out old ones to make room for them. Our big Bourse building is going to be an immense affair, costing, all told, about two million dollars.

ANON.

#### NEW INVENTIONS.

The following is a list of patents pertaining to brick, tile, terra cotta sewer pipe, pottery, etc., and the machinery used in their manufacture, issued since our last number:

- 495,134. Brick Kiln. Napoleon B. Heafer, Bloomington, Ill.
- 495,235. Combination Clay Mill. Calvin W. Vaughn, Cuyahoga Falls, Ohio.
- 495,380. Pug Mill for Brick Mills. H. J. Bond & Louis Hilling, Shawnee, O.
- 496,544. Tile Fastener. A. M. Strusholm, Woodbridge, N. J.
- 496,779. Tile or Brick Machine. E. M. Freese, Plymouth, Ohio.
- 496,982 and 496,983. Brick Cutting Machine, J. A. Snell, Barrington, R. I.
- 497,161. Roofing Tile. Francis Andrew, New York, N. Y.
- 497,234. Tile Construction for Walls, Arches, Etc. J. A. Flint, San Francisco, Cali.
- 497,839. Roller die for Brick or Tile Machines. Jno. Thompson, Bucyrus, Ohio.
- 498,050. Brick kiln. Wm. A. Evans, Zanesville, Ohio.
- 498,203. Brick machine. Henry C. Barker, St. Louis, Mo.



## IN AND ABOUT ST. LOUIS.

The bright prospects of the early part of the season have all been blighted by the financial uncertainty now existing throughout the country. With bank failures on all hands, it was to be expected that the ultra-conservatism which characterizes St. Louis at all times, should be given full play, and at the first suggestion of panic from New York and the Eastern money centers, the strong boxes of the capitalists had an extra rivet put in, and as a consequence, the building business—always the first to suffer from such causes—has experienced a decided chill. With no building there is, of course, no demand for brick, and to induce an artificial one, prices have been lowered. Stock brick are now quoted at \$15.00 per M., a decline of \$5.00 in five months. There seems little probability of any improvement either, as building permits up to the present show a decline of 2 per cent. from last year, and no jobs of any importance are projected. The only thing keeping the yards busy now is small jobs, which, on the aggregate, keep sales up to about, or a little in advance, perhaps, of those of last year; still the increase which was reasonably expected has failed to materialize.

The playing out of clay supplies becomes a more troublesome one as time goes on, and at the end of this year Anthony Ittner will discontinue his St. Louis yard. This, however, will mean no falling off in his manufacture, as he will construct at Belleville, Ills., a new yard with a daily capacity of 100,000 brick. This is 20,000 in excess of the capacity of the St. Louis yard. The new yard will adjoin the other at Belleville, and the clay sheds are now being built. He expects to have it in operation by the opening of the building season of '94.

The St. Louis Press Brick Company has shut down two of its presses in the yards at Glen Carbon, Ills. In explanation they say it is because they have not enough clay shedded to keep the yard running at its full capacity, the persistent wet weather, experienced up to the present, having handicapped them considerably.

The Hydraulic Press Brick Company has added a new brick to its already mammoth line. It is the rock enamel, which is already known in the East, but which now makes its first appearance in the West. It is very handsome, and will undoubtedly be much in demand for use in the palatial residences, of which St. Louis has so large a share. They have also adopted a new idea for the display of their product. A large and well lighted room opposite their suite of offices in the Odd Fellow's building has been set aside for their "Exhibit," or sample room. Here all their fancy brick are shown just as they would appear in

a wall. They have been set in different colored mortars, and anybody can readily see the different appearance given by the different settings.

The Findlay (Ohio) yard of this company is not at all worried by the failure of the gas supply in that mushroom city. They are now using oil and say that so long as that fuel can be shipped there from Pennsylvania or Ohio, they will continue to use it; if it gives out, they will burn coal, or, if necessary, wood, but the yard will be kept in operation, just the same.

The Illinois Supply and Construction Company express themselves as pleased with the condition of their business. They say they could wish that money was more plentiful and prices a little better, but they are kept running at full capacity to get out the brick they sell.

There has been some agitation here for the use of paving brick, and while nothing definite has been accomplished, a great many more people have heard that there is such a thing. The suggestion has been made that it be given a trial in alleys. If this plan is adopted it will be a strong test for the new paving material, as these thoroughfares are for the accommodation of only the heaviest kind of traffic. The principal reason perhaps why the question has made so little headway here is because of the failure of any one to take enough interest in the matter to "push" it. The Gale-borough people have all they can do to fill orders already coming in to them without working up new territory, and the Illinois Supply and Construction Company people claim that their plant is kept rushed to supply the demand for ordinary brick.

The smoke consuming ordinance, which a couple of months ago was such a bugaboo, seems to have lost its terrors. An effort has been made to raise, by popular subscription, enough funds to put the law into effect, which has been only moderately successful in spite of the fact that it has been vociferously backed by every daily paper in St. Louis. The general opinion among business men is, that the ordinance is an excellent thing—for the other fellow. The brick men realize that they are the worst offenders, but claim that they cannot be suppressed until the powers that be devise some means to burn brick without smoke. Any effort at arbitrary action will be sturdily resisted and fought out to the end in the courts.

TERRA COTTA.

## OHIO VALLEY NEWS.

The general business depression is felt in the clayworking circles of the valley and the demand for their various products is only fair. The backward and rainy spring has kept sewer and paving contractors back a great deal in their work, and this has been, in a measure, a damper to the business.

Mrs. Mary J. Crawford has entered suit against the Minor Fire Clay Co., of

Empire, Ohio, for \$5,000 damages for the death of her son in March, caused by the explosion of the boiler at plant of the company. The boy was not in the employ of the company, but was sitting in the engine room at the time of the accident.

Jefferson Sultsman, Receiver of the Jefferson Fire Clay Co., of Toronto, Ohio, filed his report with the Court on May 17th, and has about closed up their business. The creditors will all be paid in full and the stock holders will realize all they invested. The appointment of the receiver was brought about by the inability of the partners to get along harmoniously, more than from any financial trouble.

The works of the defunct Phoenix Fire Clay Co., of Malvern, Ohio, will be soon put in operation again by a new firm known as the Myers-Hartford Clay Manufacturing Co. This company is composed of Mr. W. F. Myers of the Ohio Valley Fire Clay Co., of Toronto, Ohio, and Messrs. Will and Elmer Hartford, late of the Royal Clay Manufacturing Co., of Uhrichsville, Ohio. The resumption of these works will be an important thing for Malvern, as they have been idle since September, 1891. Only the sewer pipe department will be operated at present.

The contract for furnishing paving brick for use of the District Government, at Washington this spring, has been let at prices way below any previous season. This contract has always previously been awarded to some of the brick manufacturers of this valley, but some central Ohio manufacturers were the successful bidders. "After their brick is subjected to the rigid examination by the Government Engineers, and they comply with all sorts of red tape requirements" said a prominent brick manufacturer "they will then know more about Washington City contracts."

The John Porter Co., of New Cumberland, W. Va., has in course of construction a mammoth brick kiln at their Clifton Works. It will be one hundred and seventy-five feet long, sixty-four wide, and will contain sixteen compartments, each to hold 30,000 brick. The draught will be furnished by a stack one hundred and thirty feet high. The kiln will be fired from the top with coal slack. When completed they will be filling and drawing brick from it continuously.

The Tiltonville Sanitary Pottery Co., of Tiltonville, Ohio was burned to the ground on May 28th. The fire occurred in the night and the origin is unknown. It was a small plant, employing about fifty skilled workmen, and were doing a very profitable business. The loss is estimated at \$40,000 with \$12,000 insurance. The city of Toronto, Ohio, has made a flattering offer, both in shape of a site and a liberal bonus, as an inducement to have it built there, and in all probability they will accept, rebuilding on a much larger scale. BUCKEYE.



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## BOOKS FOR BRICKMAKERS.

- "BRICKMAKER'S MANUAL,"**  
Morrison and Reep, \$3.00
- "BRICKMAKING AND BURNING,"**  
J. W. Crary, Sr., \$2.50
- "TABLE OF ANALYSES OF CLAYS,"**  
Alfred Crossley, \$1.00
- "DURABILITY OF BRICK PAVEMENTS,"**  
Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.



### Circular of ELEVATORS AND CONVEYORS

FOR HANDLING

Clay, Tile, Etc.,

Adapting the

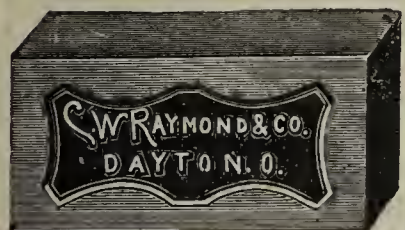
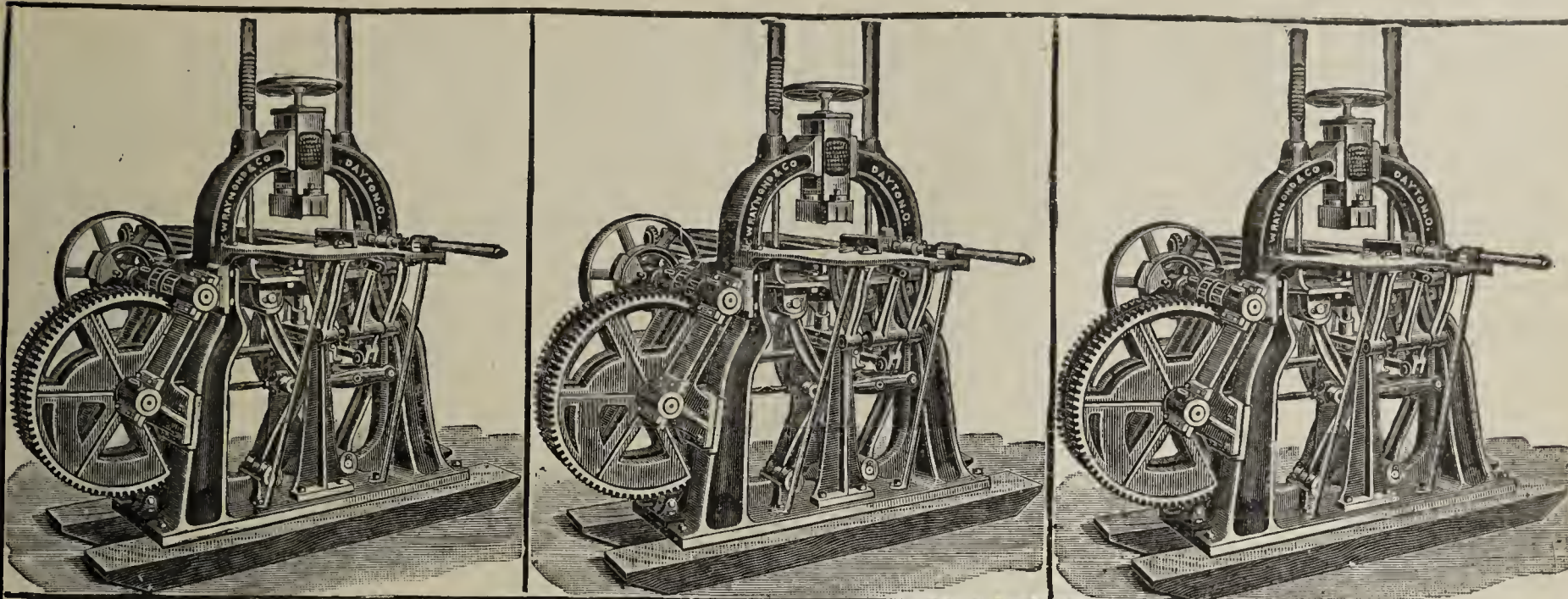
**CURVED SLAT,  
CONTINUOUS PAN,  
LINK BELTING and..  
SPECIAL CHAINS,**

Mailed upon application.

**LINK-BELT MACHINERY COMPANY,**  
CHICAGO, ILL.

**LINK-BELT ENGINEERING CO.,**  
Philadelphia and New York.





Messrs. BURNHAM BROS.,

— OF —

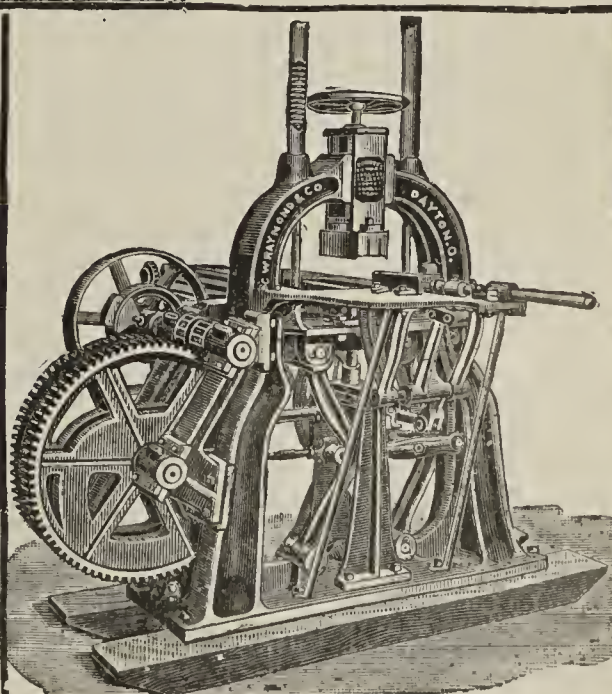
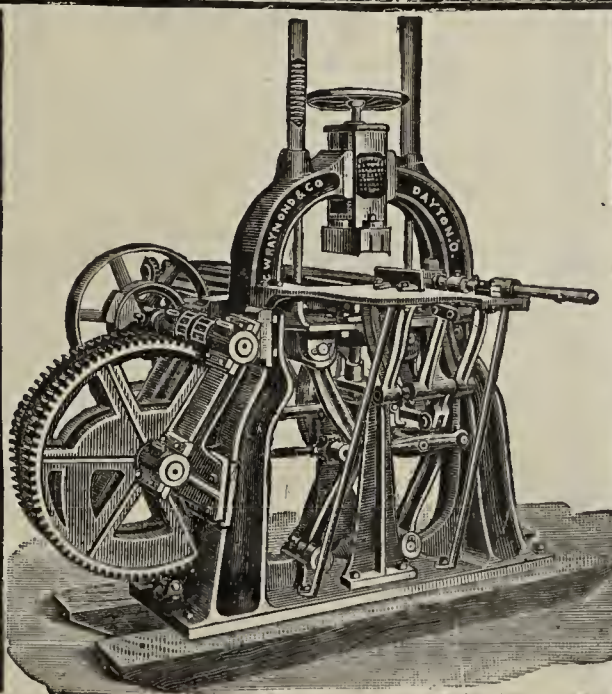
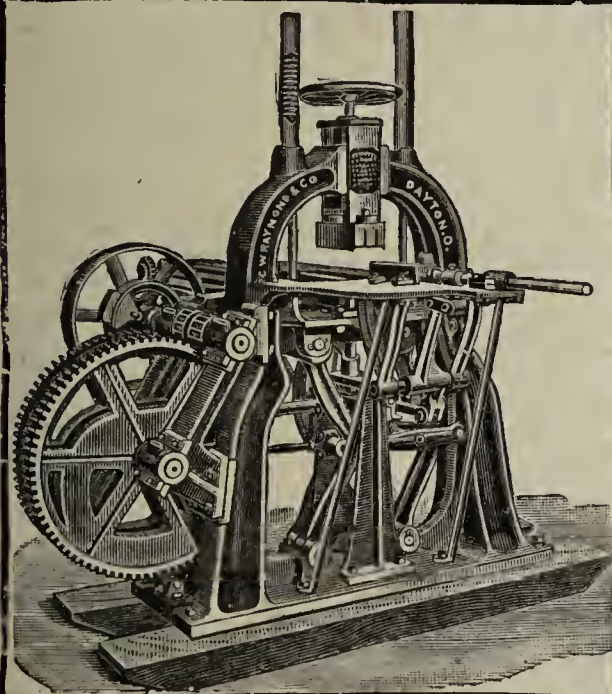
MILWAUKEE, WIS.,

— INVESTIGATED.

They visited Chicago, Cleveland, Willoughby, Bucyrus, Buffalo, New York, and other places, seeing machines, machine men and brickmakers. After thoroughly examining, among other things, the merits of all presses on the market, they placed their order for TWO COLUMBIAN SPECIAL PRESSES, manufactured by

C. W. RAYMOND & CO.,

— DAYTON, OHIO.





## EDITORIAL NOTES and CLIPPINGS.

A. A. Graves, Winooski, Vt., will establish a brick plant.

The Hutmacher Brick Co., Quincy, Ill., has increased its capital stock to \$25,000.

Nicholas Doran, an old brickmaker of Logansport, Ind., died on the 6th inst.

Harry Wolfe & George Maddy, of Muncie, Ind., will erect a plant for the manufacture of brick.

A new brickyard in which Col. Johnson is interested, will be established at Newport, Idaho.

The Thompson Pressed Brick Co., Denver, Colo., has been incorporated with a capital stock of \$30,000.

The Barnard Brick Works, Bellaire, Ohio, will add \$10,000 worth of improvements to their plant this summer.

Stevenson & Co., Wellsville, Ohio, show a large, handsome cut of their new grinding pan on page 769 of this issue.

C. S. Cummings, of Gloversville, N. Y., has purchased 54 acres of clay land near that place, and will manufacture pressed brick.

The Sanitary Pottery Works, Tiltonville, O., were destroyed by fire the 29th of May. Among the contents burned was a fine exhibit intended for the World's Fair.

The Ossian (Ind.) Brick Mfg. Co. has been incorporated. The directors are, F. A. Doan, V. M. Hatfield, A. S. Elzey, I. H. Porter, John Rex, E. O. Vail and H. O. Stine. Capital stock \$6,000.

A boiler explosion at the brickyard operated by Jas. Erskine and Wm. Gettiss at Carbon Hill, O., resulted in the death of one of the employees and the serious injury of two more. Part of the buildings was almost entirely demolished.

Dr. J. Mullane, Lyons, Ind., is interested in the development of extensive deposits of brick, pottery and fire clay near that town, and will be pleased to correspond with any one looking for a desirable site for the location of a clay manufactory.

The Simpson Brick Press Co., 89 Washington St., Chicago, Ill., are issuing an exceedingly handy guide to all the buildings in the World's Fair, and showing the location of their exhibit in the Machinery Hall, which is near the Eastern entrance. Send for one.

Wyatt Owen, president of the South Baltimore Brick and Tile Co., 6 South St., Baltimore, Md., wants several sets of car pushers, to be used at their works for pushing iron cars into the drying ovens. Manufacturers are requested to send circulars and price list.

The Centinela Brick Kiln and Dryer Co., of Centinela, Cal., has just completed and set in operation one of their continuous brick kilns for the Golden Pressed Brick Co., of Denver, Colo., at their extensive works at Golden, Colo., for burning dry pressed brick only. The kiln proves to be an entire success.

Louis H. Reppell writes that his kiln is meeting with universal success. Among those who have recently put in the Reppell kiln are, The Date-Goodwin Brick Co., of Des Moines, Iowa, The Standard Fire Brick Co., Pueblo, Colo., John Nims, of Nevada, Mo., and the Kansas City Hydraulic Press Brick Co., Kansas City, Mo.

Fletcher & Thomas, Indianapolis, Ind., report having an exceedingly good trade in their line. Since the middle of May they have put in a Monarch machine on the new yard of Tingley & Case, Marion, Ind. Also, complete steam power Quaker outfits at Dunkirk, Redkey and Mitchell, Ind., and Peoria, Ill. The new model Quaker has proved a grand success.

The Southern Brick and Tile Mfg. Co., of New Orleans, La., has been organized by Mr. Maurice J. Hart, who is president of the company. The directors are, Messrs. Alex. Muir, Samuel Hart, J. Hernandez and C. J. Levy. The company have purchased 2,700 acres of land at Maudeville, La., where their plant will be constructed. They have a capital stock of \$100,000.

Messrs. H. W. Clossen & Co., Baltimore, Md., intend enlarging their brick plant, putting in new machinery, kilns, etc. With this in view, they have purchased 6 acres of land on the water front adjoining their brickyard, thus giving them 15 acres of clay land from 15 to 20 feet in depth. They will soon be in the market for clay preparing machinery, wet pans, dryers, machines, kilns, etc., etc.

Bernard Gaine, employed at the Long Island Brick Co., Greenport, N. Y., met with a horrible death on the 6th inst. While oiling one of the shafts which was revolving at a rapid rate, his clothing became entangled in one of the wheels. He was caught and carried around several

times before he was released. His arms and legs were crushed and mangled. He died almost instantly from internal injuries.

The Lafayette Freight Elevator. This device for automatically conveying freight, invented and patented by Mr. L. Boudreau, of Manchester, N. H., and known as the Boudreau system, will, we are informed, be placed upon the market hereafter either with or without royalty, and Mr. Boudreau solicits correspondence either for the purpose of selling territorial rights or placing the freight conveyor wherever desired.

"The Jeffrey Mfg. Co's. exhibit in the Machinery Hall, Section 26, at the World's Fair, will be of interest to all users of machinery. In planning their exhibit they have aimed to show a full line of their manufacture, consisting of chain elevating and conveying machinery, and a more complete exhibit of their manufacture could not be made. They have also a large display of their Mining Machinery in the Department of Mines and Mining. All will be welcomed at their displays."

Mr. George D. Smith, of Guemes, Wash., writes that, notwithstanding that there has been a few unsuccessful attempts to make fine pressed brick in that section, there is an abundance of good clay from which a high grade of front and ornamental brick may be made, and that parties desiring to engage in the business will find there every natural facility for a first-class plant. The market is an exceptionally good one, the front brick now being shipped from St. Louis, Kansas City and other Eastern points and bring \$50 to \$55 a thousand. Mr. Smith will be pleased to correspond with any one desiring further information.

Messrs. Sercombe, Osman & Warren write that their "Perfect" kiln, which is described on page 696, is rapidly gaining the confidence of brickmakers in all parts of the world. Upwards of thirty odd kilns are now in course of erection, the latest addition to the list being the Franklin Paving Brick Co., of Franklin, Pa. Mr. Geo. Warren of the firm is now on his way to the States, and proposes to give his personal attention to the introduction of the "Perfect" kiln in this country. Letters addressed to

Geo. Warren, care of L. Hancock, Fords, N. J. will reach him.

The J. H. & D. Lake Co., manufacturers of all kinds of Friction Clutch Pulleys, having outgrown their old quarters at Hornellsville, N. Y., have recently completed and removed to their handsome new offices and foundry at Massillon, Ohio, where, with enlarged facilities, they are prepared to meet the growing demand for their business. An interesting feature regarding the rapid growth of the Lake Co. is the fact that it came almost exclusively from advertising, for with the exception of a limited amount of traveling, they have had no representative out on the road, except their card in the various class journals.

The Purington Paving Brick Co's Plant at Galesburgh, Ill., was destroyed by fire on the night of May 17th. All of the buildings, except the engine and boiler house, and the hot air dryer, were destroyed. Both machine houses and the Iron Clad Dryer were a total loss. The machinery was badly demoralized, but the brick machines, pug mills and dry pans can be repaired. Loss about \$22,000; insurance \$15,000. The plant is now being rebuilt, and they hope to be making brick in about six weeks. The fire caught through the carpenter shop; cause unknown. The new St. Louis Co's Plant is running in good shape and will fill the orders of the Purington Co.

After investigating the heating and ventilating systems of a number of the foremost and largest churches in America, it has been decided to award the Buffalo Forge Co., Buffalo, N. Y., contracts for the heating and ventilating plants for the new Christ M. E. Church, Pittsburgh, Pa., and Calvary M. E. Church, Allegheny, Pa. By far these two churches are the largest edifices in either of these enterprising cities. The estimated cost of each of the buildings is three hundred thousand dollars. The heating apparatus consists, in each instance, of 12-foot Fans and Heaters, containing 6,000 feet of 1-inch pipe. In every example of church heating and ventilating installed by this Company, the apparatus is so built that it can be used as a cooling machine in summer, as well

(Continued on Page 742.)

.... SEND FOR CATALOGUE ....

OVER 20000 BEST AND CHEAPEST IN USE  
PULSOMETER STEAM PUMP  
FOR ALL KNOWN PURPOSES

PULSOMETER STEAM PUMP CO. SOLE OWNERS-NEW YORK.

(COPYRIGHTED 1891)

ESPECIALLY ADAPTED FOR UN-WATERING CLAY PITS.

## Victor Testimony.

Every agent admits that with the exception of the bicycle he sells

## Victor Bicycles are Best.

Such straws show conclusively the way the wind blows.

### OVERMAN WHEEL CO.,

BOSTON,  
WASHINGTON,

DENVER,  
SAN FRANCISCO.



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

**RUSHVILLE, IND.**

REFERENCE: Rush County National Bank.



(Continued from Page 740.)

as a heating and ventilating plant combined during cold weather. Arrangement is further provided that during the moderate weather, hot air and cold air can be mixed, and thus the ventilation is kept up without overheating the audience room. The machinery and materials employed in the heating and ventilating plan of the above named buildings, constitute more than two carloads.

Nothing shows the progress of making brick by the dry press process as the strides it is making in states where the trade has been monopolized by the older methods. The success of the Simpson Brick Press Co., with their machine in Pittsburgh, Pa., is a good illustration of this point. Two years ago not a single dry press machine of any kind was in use in that city. Now there are four Simpson Brick Presses in successful operation in Pittsburgh and neighborhood, and eight in different parts of the State of Pennsylvania. Sankey Bros., of that city, have been long prominent, as a firm, making good brick with the soft mud process, but they saw the "Hand writing on the wall," and are now using a Simpson Press. The beauty of the product they are turning out cannot be excelled. It simply challenges criticism. Any one visiting Pittsburgh should not fail to see their yard and see for themselves what abundant wealth there is in the Pittsburgh hills when made into brick with a Simpson Press.

The trade of the Bonnot Company, Canton, Ohio, continues very lively. The number of pottery plants equipped with machinery made by this Company is still on the increase. Their washing outfits for potteries have been largely furnished by this Company, and potter's machinery has been in general demand. The "Bonnot" Clay Mill especially, has had a large sale. The long and continued use of the Bonnot Filter Press in the various plants of the country, has placed that press at the head of the list. Recent improvements have added very largely to the capacity of the press. In addition to the pottery equipments, the Company have recently started a number of brick plant equipments; among the late sales of brick plants being the Cleveland Brick Co., and the Cambridge Brick Co. Both of these plants will be of the best modern design. The latest addition to the list of clayworking machinery manufactured by the Bonnot Company is a repress which possesses some valuable new features. This machine is the invention of Mr. Frey, the well-known inventor of brick machinery. The catalogue of the Bonnot Co. describes their clayworking machinery.

P. L. Youngren, Patentee of an improved Continuous Kiln, reports business brisk in his line on the Pacific Coast. Among those who have recently adopted his kiln are: The Fortin Brick Co., of Oakland, who will have two of these kilns on their new yard; the Peterson Brick Co., of San Jose, Cali., one kiln just completed; Kunze & Co., of Hockton, Cali., one kiln under construction. The California Bridge Co., San Francisco Cali., are also contemplating erecting one of these kilns in the near future. Those who doubt the efficiency of the Modern Continuous Kiln, would learn something on a tour to the Pacific Coast, there being nearly 20 of this class of kilns within a distance of 50 miles from San Francisco.

## COLORIFIC.

For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market, are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of WESTBROOK & WELLS, Ogdensburg, N. Y.

### Use The Heat From Cooling Kilns.

We have a Patent Pending for which we believe is the only proper way of conducting heat from cooling kilns. Can be applied to all down draft kilns that are within reasonable distance of each other. We enter the heat from cooling kilns into fire box of near kiln, where we also admit cold air. Regulating hot and cold air with dampers, at will. Parties wishing to use this system should write to

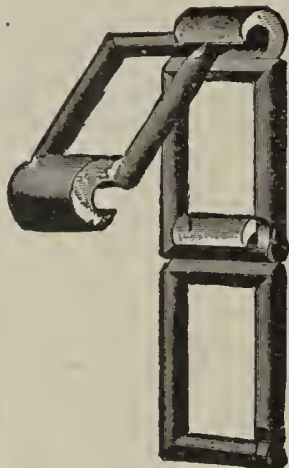
JOSEPH HICKSON,  
Mt. Gilead, Ohio.

5-tf-d

## ELEVATORS

..FOR..

Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.



## JEFFREY CHAIN BELTING,

—ALSO—

Malleable, Steel, Cable and Special Chains,

DESIGNED FOR.....

Elevators, Conveyors, Drive Belts,

FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc,

Send for REDUCED PRICE LIST. Address

**THE JEFFREY M'F'G CO.,**

Chicago Office & Salesroom: 48 S. Canal Street  
New York Branch: 163 Washington Street.

Columbus, Ohio.



## NEW DISCOVERY KILN.

It Heads the Procession!

Patented April 13, 1866.  
" Nov. 17, 1891.

The New Discovery is THE KILN you are looking for if you want THE BEST KILN EXTANT for burning ALL KINDS of clay products.

ITS SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES AND SYSTEM IN USE. Those who are using it, and they are many, THINK SO TOO.

If you will investigate and learn what the New Discovery can do you will be WITH US.

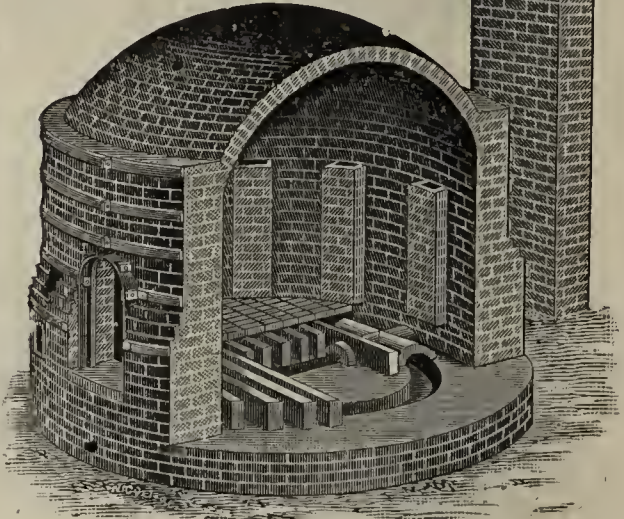
This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The New Discovery HAS PROGRESSED and is still at it.

I DON'T KNOW IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

For circulars, address,

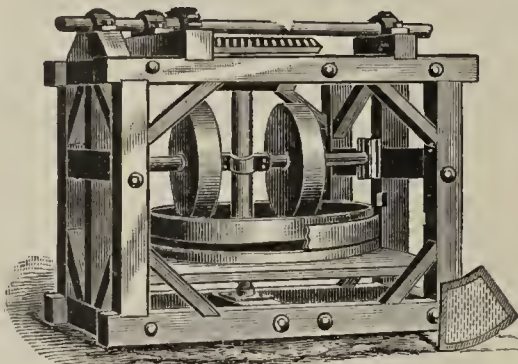
**E. M. PIKE, Chenoa, Ills.**



## EAGLE IRON WORKS,

DES MOINES, IOWA.

FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.



DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## IMPORTANT!

Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.



# LITTLE IN NAME ONLY.

25,000 Per 10 Hours Guaranteed.

JAMES FLOREY,

MANUFACTURER OF

✠ BUILDING ✠ BRICKS ✠

WORKS: BRYN MAWR AND BERWYN.

[Copy]

Bryn Mahr, Pa., May 15, 1893.

The Wallace Manufacturing Co.,

Frankfort, Ind.

Dear Sirs:—Enclosed please find my check in payment of Little Wonder and Cunningham's Automatic Table. I am very much pleased with machine and cutting table, and after a thorough and complete test, I am satisfied it is one of the best Auger Machines in the market to-day. I am making splendid bricks, and from 35,000 to 40,000 per day. The cutting table works like a charm; it makes a nice smooth cut, and perfectly straight, and very easily operated. I have not lost one hour since I started the machine on April 8th. I would recommend them to any one desiring a durable and efficient machine. Wishing you continued success, I remain

Very truly yours,

[Signed] JAMES FLOREY.

*Mr. James Florey gives the above opinion after years of experience with other machinery, and is capable of making comparisons and giving advice.*

*Buy the LITTLE or BIG WONDER and CUNNINGHAM'S AUTOMATIC CUTTER, and you will win.*

THE WALLACE MFG. CO.,

FRANKFORT, IND.



# Sheriff's Sale.

BY VIRTUE OF A DECREE to me directed, from the Clerk of the Superior Court of Marion County, Indiana, I will expose at public sale to the highest bidder on Monday the 26th day of June, A. D., 1893, between the hours of 10 o'clock A. M. and 4 o'clock P. M. of said day at John Johnson's Brickyard, one mile west of Haughville, Marion County, Indiana, the following described property, to-wit:

One Brick Machine, one Sander, one No. 2 A Disintegrator, one No. 2 Wheel Truck, one Elevator, all made by C. & A. POTTS & CO. One second-hand Boiler and Engine.

Taken as the property of JOHN JOHNSON at the suit of C. & A. POTTS & CO.

Said sale to be made without any relief from valuation or appraisement laws.

ROBERT F. EMMETT,  
Sheriff Marion County.

June 10th, A. D., 1893.

Claypool & Claypool, Attorneys for Plaintiff.

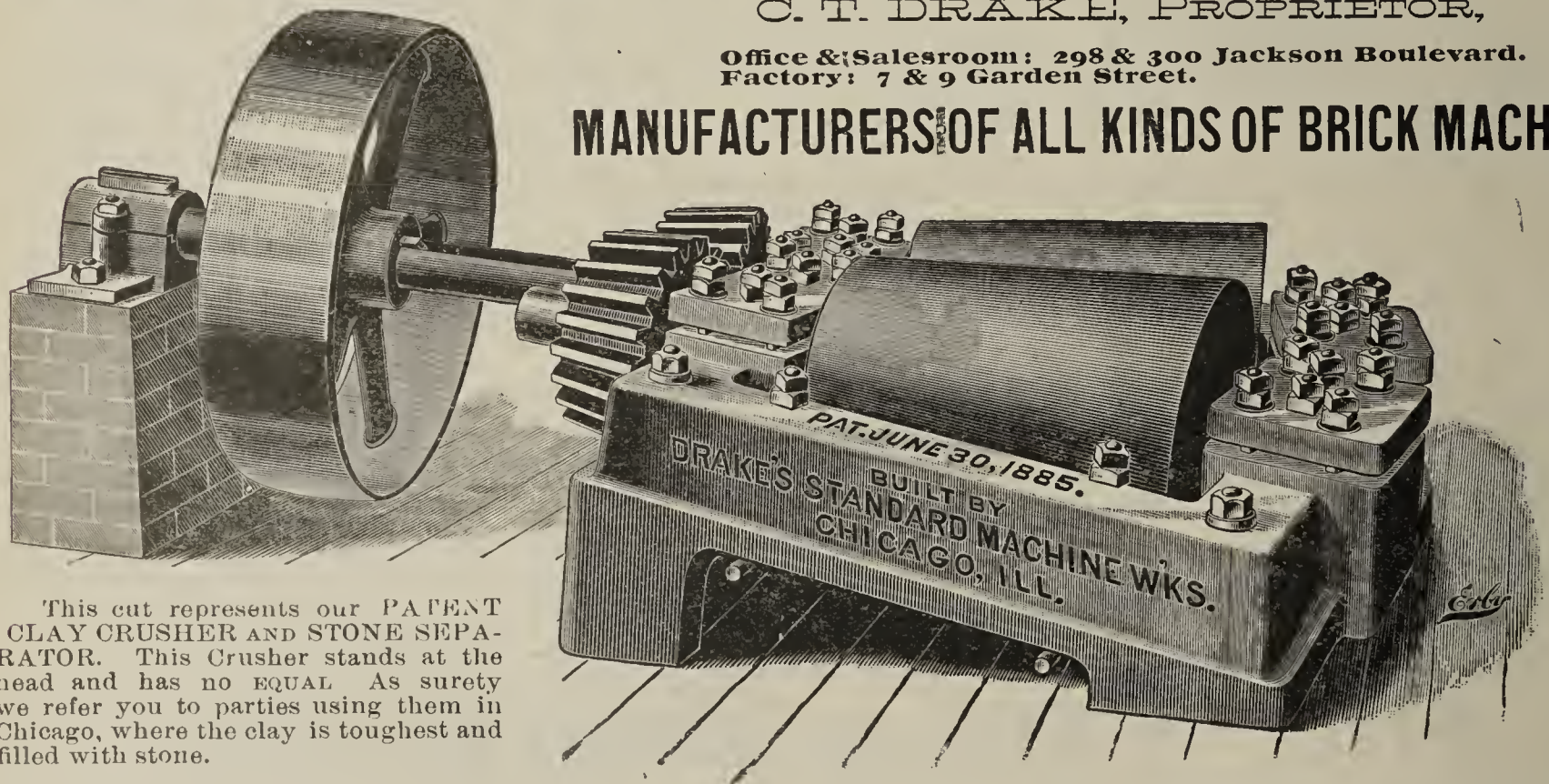
The above machinery is complete and in good running order. It includes Horizontal Stock Brick Machine, No. 2 A Disintegrator, Mould Sander, Moulds, one 30 ft. Elevator, Trucks, Shafting, Pulleys and Belts, one 20 H. P. Engine and 25 H. P. Boiler. This machinery has not made over one-half million brick, has been well covered and protected from the weather, and is to-day as good as new. For further information and particulars, address C. & A. POTTS & CO., 416-20 W. Wash. St., INDIANAPOLIS, IND.

## DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY



This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 11 crushers; Hayt & Alsip Co. is running 6 crushers; Purington-Kimbell Brick Co. is running 8 crushers; May, Purington & Bonner B. Co. is running 4 crushers; J. B. Legnard is running 2 crushers; Weekler Brick Co. is running 1 crusher; Adam J. Weekler is running 1 crusher; Weekler Prussing Brick Co. is running 1 crusher; Chicago Brick Co. is running 2 crushers; Union Brick Co. is running 2 crushers; M. Myers is running 2 crushers; Wahl Bros. are running 4 crushers; Pullman Brick Co. is running 2 crushers; Fred Zapel is running 1 crusher; Myers & Toll are running 2 crushers; Harms & Schlake Brick Co. is running 1 crusher; L. Wehrheim & Son are running 1 crusher; Alexander Burké is running 1 crusher; John Sexton is running 1 crusher; John Busse, Jr., & Co. is running 1 crusher; John Busse is running 1 crusher; Weber & LaBahn Brick Co. is running 2 crushers; George Lill is running 2 crushers; Legnard & Madden are running 2 crushers; Turner Brick Co. is running 1 crusher; Mayer & Toll are running 2 Crushers; Purington Brick Co. is running 2 crushers; Kuester & Tharrow are running 1 crusher; Reimer, Labahu & Kuester are running 1 crusher; Dumesniel Bros. Co., Louisville, Ky., are running 1 crusher; Mason City Brick & Tile Co., Mason City, Ia., is running 1 crusher; Eagle Clay Works, Streator, Ill., is running 1 crusher.

**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

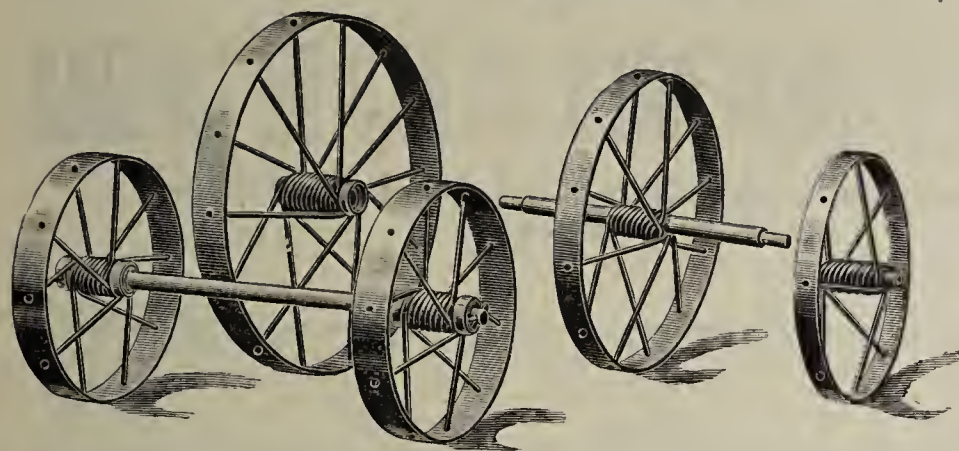


# THE MAN who put straw IN BRICKS

was an inventor. Were he living, I would procure a **PATENT** for him. As it is, I would be pleased to do your work. Write to me about your device and enclose stamp for reply.

EDWARD C. WEAVER,  
900 F. St., N. W., Washington, D. C.

## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,  
**THE ARNOLD METAL WHEEL CO., New London, O.**

Headquarters for Brickyard Supplies in 1893 will be at the same place it was in 1892, at

**New London, Ohio,**  
**ADDRESS. D. J. C. Arnold.**

Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

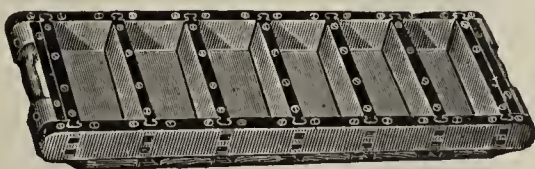
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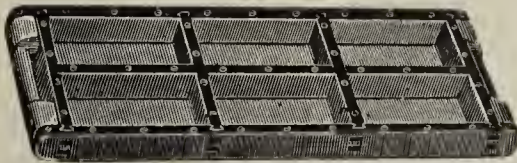
**See!** You can buy them for less money now than ever before. Prices reduced but the standard of quality is maintained. Order now for future delivery. Satisfaction guaranteed. Standard sizes carried in stock.

Some odd sizes at about half price. Send for list.

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Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**FOR SALE.** A Tallcot (Croton) brick machine, in good order. Address, N, Care Clay-Worker.  
4. 4. c.

**WANTED.** Agents to handle a full line of dry press brick machinery. Address  
5-tf-1 Howe, Care Clay-Worker.

**FOR SALE.** One three-mold Andrews dry press. Latest, heaviest pattern. In good order. Apply to MISSOULA BRICK AND SEWER PIPE Wks., Missoula, Mont.  
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**FOR SALE.** Thos. Oliff hand repress, as good as new; used only two months. Will sell cheap. Address W. B. Co., Care Clay-Worker.  
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**FOR SALE.** Martin Soft Mud Machine and Pug Mill, Creager Disintegrator. 20,000 six brick Pallets in good order. Address,  
6. 1. d. WALTER D. HEDDEN,  
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**A MODERN BRICK PLANT IN THE SOUTH—FOR SALE OR LEASE.**—Daily capacity 25,000. Good reasons given for making this offer. For description, terms, etc., address  
JOHN M. ELLIOTT,  
Easton, Md.  
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**WANTED** a thoroughly competent, practical man, 28 years' experience in France, Germany and America in the manufacture of encaustic tile, position as superintendent or foreman, address  
PHILLIP GLOSS,  
McKees Rock P. O., Penn.  
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**WANTED.** A first-class burner for street paving brick that understands Eudaly Kiln. Address,  
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Care Clay-Worker.

**WANTED.** A good dry press brick setter. Reply stating age, wages and experience. Address,  
6. 3. d. CHARLEMAGNE LUMBER CO.,  
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**WANTED.** To meet or correspond with a good party interested in silica brick and the manufacture of same. B. F. F.  
6. tf. t. Care Clay-Worker.

**WANTED.** Situation as yard foreman of machine yard. Understand burning, management of men and keeping machinery in repair, etc. Can give reference. Address,  
6. 1. c. C. SCOTTON,  
Elwood, Ind.

**WANTED.** A situation as superintendent or burner by a first-class brickmaker. Understands hard and soft mud machines and burning with wood and coal, also a good manager of men. Address,  
6. 1. c. F. G. Z.  
Care Clay-Worker.

**\$1,000** Given away to any one who will build and operate a paving or pressed brick plant in our vicinity and employ twenty or more men. Box 50,  
6. 1. 1p. m. New Plymouth, O.

**WANTED.** Party with capital and experience for the finest body of red clay in the Northwest. Only bed of the kind, inexhaustible and suitable, by actual test, for the very best paving and dry press red brick. Only ten miles from Minneapolis and St. Paul. A. HUMPHREY,  
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**FOR SALE.** Because of failing health—a complete machine brick plant, in gas field, on two railroads, near best gas town in Indiana. WM. H. BRADBURY & SON,  
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**FOR SALE.** One La Tourette Brick and Tile Plunger Mill for Horse or Steam Power attachment, complete. Two brick dies. Eight tile dies from 2 to 8 inches. Two cut-off tables for either brick or tile. Machine is now in use and is in first-class working order. Only sold to make room for a larger one. Capacity 10,000 bricks per day from 2,000 to 80,000 tile, according to size. Price \$200.  
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**FOR SALE.** Two horse-power brick machines in good condition. **FRED. H. BROCKETT,** North Haven, Conn. 1 tf. 1p.

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**FOR SALE CHEAP.** A "Chief" Soft Mud Brick Machine. Has been run one season and is in good running order. Address, **J. M. CRABILL,** Clarinda, Ia. 3 tf 1

**FOR SALE CHEAP.**—A Chief, soft mud brick machine. It is as good as new, having been used but little and is a good machine. Reasons for selling—going out of business. For full particulars address, **OLD MANN,** Care Clay-Worker. 6. tf. d.

**FOR SALE.**—The finest of clays for pavers or hollow blocks, in large quantities—in the bank—can be loaded on cars by steam shovel, within a few miles of gas towns, on competing railroads, where inducements are offered for factories. Address, **P. Care Clay-Worker.** 2. 1. c.

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**FOR SALE AT A SACRIFICE.** One Sword & Sons Brick Machine, of their latest pattern—good as new, but little used. Reason for selling, not adapted to the clay. Also new duplicates which cost \$33.60. Price for above \$250. Apply to **JOHN S. HORLBECK,** Charleston, S. C. 4. 4. c.

**WANTED.** A gentleman with \$10,000 to \$15,000 capital, and the ability to take the business management of an enameled brick manufactory which is now in successful operation, but owing to lack of capital cannot supply the demand for its product, which is a genuine enamel and not a glaze. A splendid opportunity for a good man. For particulars, address **LAKE SIDE,** Care Clay-Worker. 4 tf. t.

**FOR SALE.** A brickyard containing 17 acres of land. Dry by the pallet system, 200,000. A Henry Martin Brick Machine, patent Elevator, and the best Continuous Brick Kiln in the world. Good clay for brick and tiling. Sold 3,000,000 brick the past year. There is always a good demand for brick, there being no stone quarry within 150 miles. Reason for selling, too much other business, my patent kiln taking a great deal of my attention. Address, **CARL F. KAUL,** Madison, Neb. 4. 12. c.

**FOR SALE.** Or will put property in a joint stock company. A valuable clay bank suitable for fire brick, paving brick, sewer pipe, or pottery. There is also a large frame building with 8 foot Dry Pan and Boiler and Engine of 60 h. p. Clay has been tested and will stand the heat of the best clays in Ohio. There can be made a home demand for several thousand dollars worth of paving brick and sewer pipe. For further particulars, address **E. N. MAXWELL,** Texarkana, Ark. 3. 2. d.

**FOR SALE.** Odd size moulds; not used. Eighteen  $8\frac{3}{4} \times 4 \times 2\frac{3}{8}$ . Fourteen  $8\frac{3}{4} \text{ in.} \times 4\frac{1}{2} \text{ in.} \times 2\frac{1}{2} \text{ in.}$  Used a few days, but perfectly good: Eleven  $8\frac{3}{4} \text{ in.} \times 4$  and 1-16-in.  $\times 2$  and 7-16-in. All six brick to the mold and 9-16-in partitions. These will be sold cheap. Address **WELLINGTON MACHINE Co.,** Wellington Ohio 7 tf. d.

**A BARGAIN**—A valuable pressed brick plant in the city of Chicago, well equipped with improved machinery, kilns, etc., which has been turning out a very high grade of front and ornamental brick for several years past, is offered for sale, owing to present owners having other interests which demand their entire attention. The plant is also well adapted for the manufacture of terra cotta. Address **"CHICAGO,"** Care "Clay-Worker." 2 tf d m

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Just the thing for—

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## CHEMICALS, MINERALS, CLAYS AND COLORS,

**For Potters, Terra Cotta and Enamelled Brick Manufacturers.**

Correspondence invited. ....

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27,000,000 Made Annually at St. Louis and  
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ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity.

Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

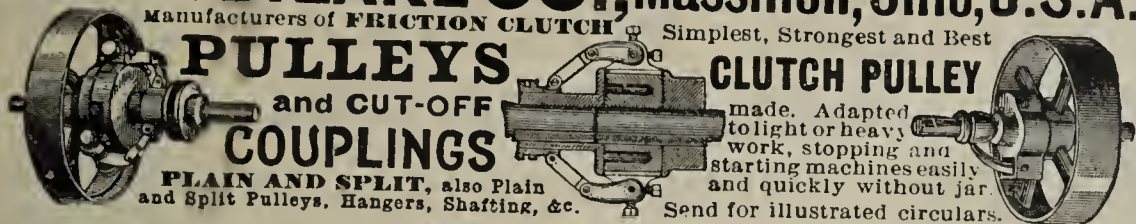
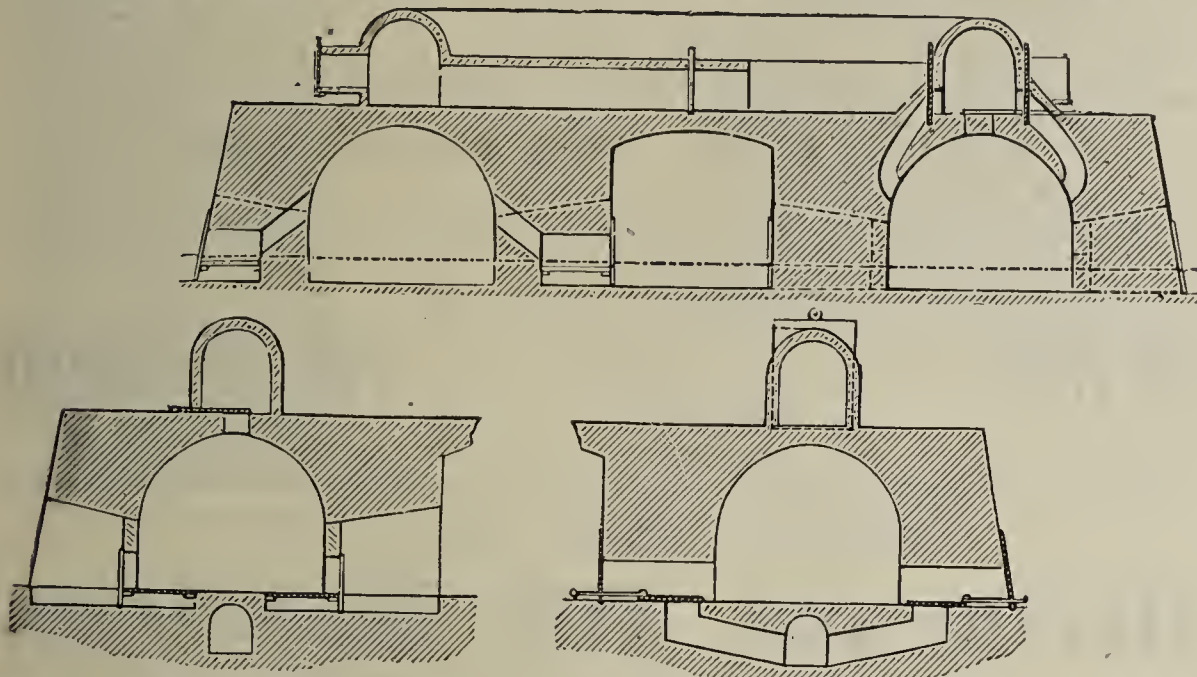
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**J. H. & D. LAKE CO., Massillon, Ohio, U.S.A.****The MONARCH Continuous Kiln.**

If you want a Continuous Kiln that will burn Face Bricks, Dry Pressed Bricks, or Vitrified Paving Bricks, or Fire Bricks, you must get the Monarch. The fuel is not dropped in from the top and mixed with the bricks, and it saves 35 per cent. of fuel over the old style. No expensive valve dampers or feed holes required. It is no experiment. Do not decide on a kiln before writing for circular to

**WM. RADFORD, = = Fort Dodge, Iowa.**

**The Mock Portable Rack and Pallet System** FOR HANDLING BRICKS.

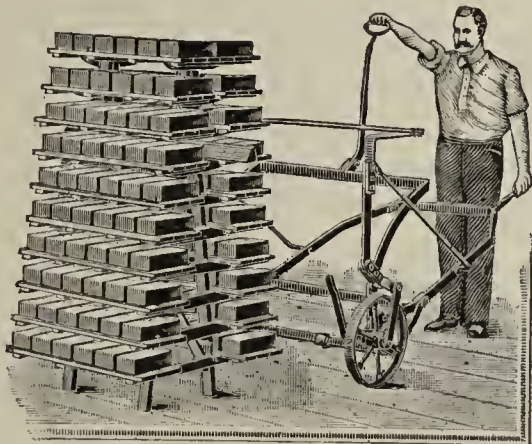
The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

**IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.**

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

**WHAT USERS SAY OF THE MOCK SYSTEM.**

Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

**MOCK BROS.,**  
**MUNCIE, IND.**

Mention the Clay-Worker.

**FOR SALE**—Controlling interest in tile factory at Melvin, Ill. Entire interest in tile factory now operated by us at Bloomington, Ill. Also, one 40 horse-power engine, good as new. One Brewer & Co. tile machine, good as new.

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**WANTED** At the Barberton Brick & Tile Works, a reliable and thoroughly competent man, to set and burn brick and tile. Good references necessary. Have a summer and winter plant, good clay and good location. Would sell an interest in the plant to some experienced and responsible party. Call on or address,

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**FOR SALE.** One 12x16 plain, slide valve engine, including bed stone, Gardner governor, fly-wheel and pulley 72-inch, 18-inch face; has been run for two years, and is offered for sale, as present owners must replace with larger engine. Could be delivered about July 1st. Address,

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**PACIFIC COAST** Offers an exceedingly good chance for a first-class brickmaker who will invest a moderate amount of working capital. Have a new and complete machine plant, patent kilns, good clay, good market. No rains for six months. Hard brick \$8 to \$9. Annual consumption 125 million. First-class connections. Good credit. A better chance never offered. Will meet first-class party in the East, or here.

**SAN FRANCISCO BRICK CO.,**  
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- 1 Acme Brick and Tile Machine.
- 1 Wallace Brick and Tile Machine.
- 1 Centennial Brick and Tile Machine.
- 1 Penfield No. 7 Special Tile Mill.
- 1 Ohio Brick and Tile Machine.
- 1 New Departure Brick and Tile Machine.
- 1 Hoosier Brick and Tile Machine.

Write for particulars. **H. J. VOTAW,**  
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**ATTENTION BRICKMAKERS.** For sale or lease, the most valuable clay beds in the South, situated 12 miles from Savannah, Georgia, and on the lines of the Savannah, Florida & Western and the Florida Central and Peninsula Rail Roads. No hauling, as the clay begins where those two railroads cross each other; and 600 feet from their depots and turnouts. A great deal of available labor and cheap wood. Tests of clays, show vitrified bricks for street paving and fire bricks, red buff and six different shades of reddish brown for building fine fronts. Address,

**A. E. MOYNELO,**  
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**THE UNDERSIGNED** offers for sale to one who can offer proper credentials as to character and business capacity in this line, a one-half interest in a pottery which has come into his hands on account of money advanced. The works are very desirably located, with switch facilities, plenty of ground, good machinery and exclusive clay privileges, and are turning out a good quality of vitrified salt glazed stoneware, together with red ware, fire brick, drain tile, etc. It is the only factory on the Pacific Coast that has succeeded in manufacturing salt glazed stoneware, and, with the addition of more kiln capacity the whole coast can be supplied. Full particulars on application.

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**W. Clayton** is now prepared to sell a full line of enamel recipes for bricks, suitable for all kinds of clays, including bricks made from shale rock and slate refuse. The above embrace about 12 colors and shades, including white, lilac, turquoise, yellow, buff, chocolate, and others.

The enamels are prepared for, and put on the "green" brick, so that the whole is done with one burning.

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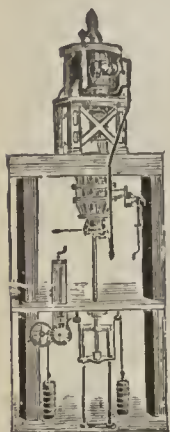
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### STEAM SEWER PIPE PRESSES

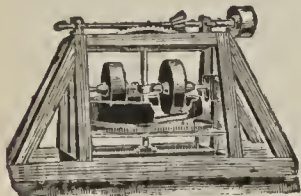
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Making From 2 to 30-Inch  
Pipe Inclusive.

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Building Block Dies.

Clay Grinding and Tempering  
Pans and Pug Mills.



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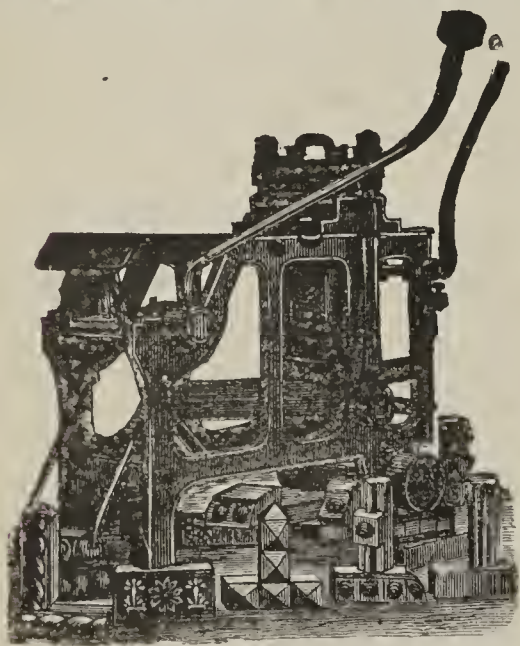
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Every Variety of Iron and Brass Castings  
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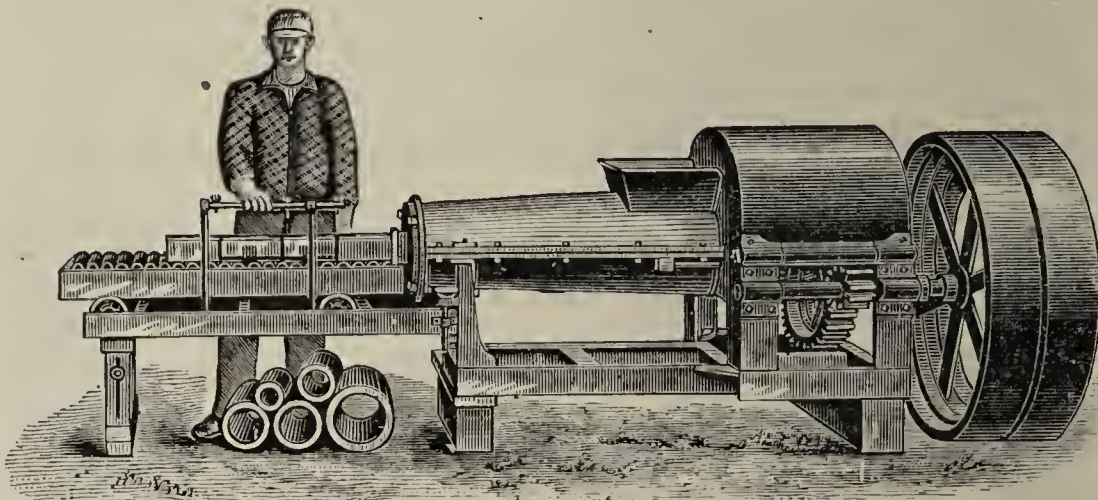
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P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hawks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.

We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

For Illustrated Circulars, Prices, Etc., address

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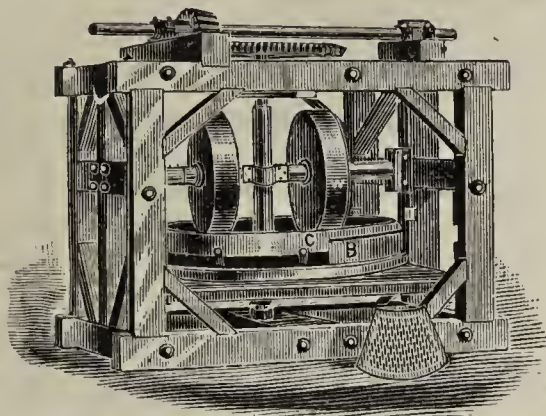
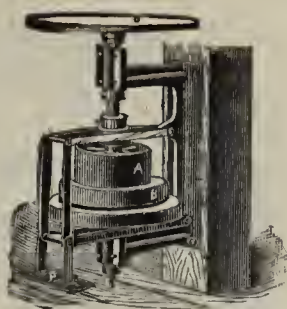
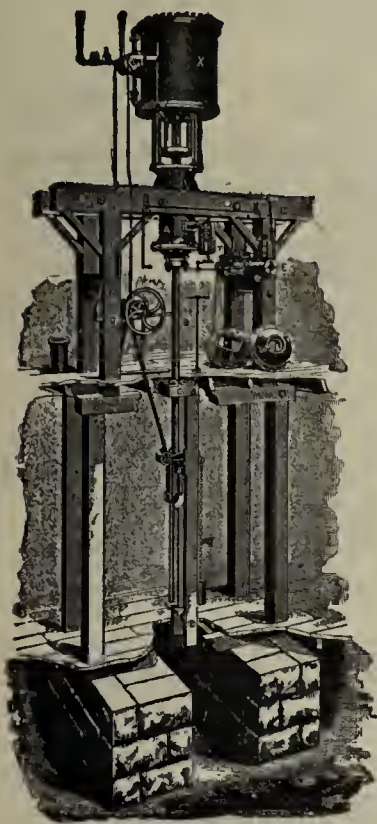


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Clayworking Machinery a specialty.

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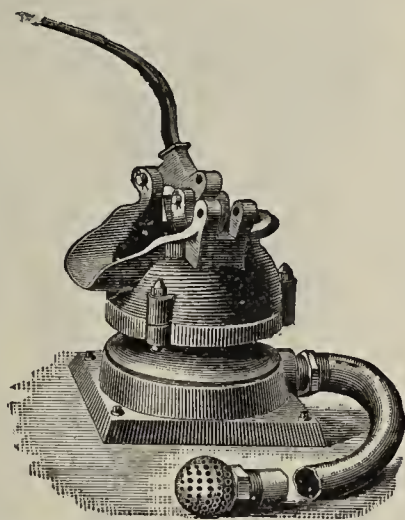
These Pumps are simple, durable and low-priced.

A large capacity and easy working pump for **Brick Yards, Water Works, Sewer Contractors, Foundation Builders, Miners, Quarries** or wherever it is desired to raise a *large quantity* of water by *Hand-power*. The pump has large valves (*accessible by hand*) and will pump water containing *sand, gravel, mud, sewage matter, etc.*, without *choking* or any *perceptible wear*.

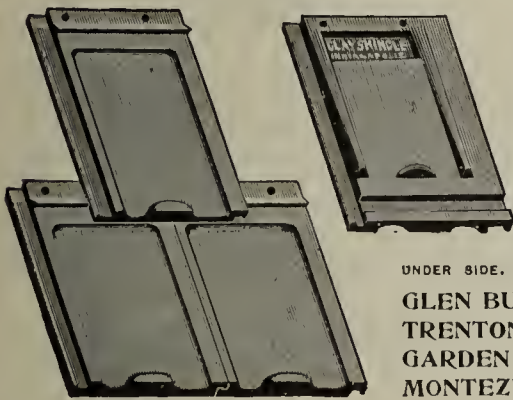
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UNDER SIDE.

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**Fire-Proof, Water-Proof, Frost-Proof, Everlasting.**

No cement. No paint. A non-conductor. Roofs now on show for themselves. The most beautiful and cheapest tile roofs in the country. Orders promptly filled. For prices, etc., address the nearest of the following factories.

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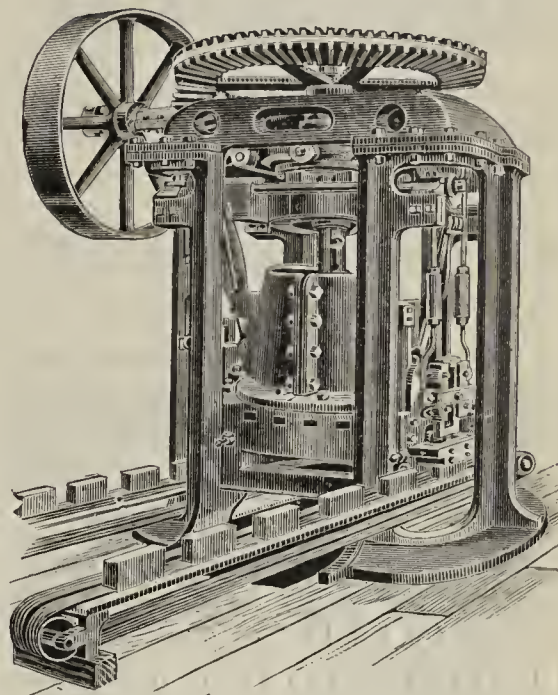
For the Right to Manufacture  
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The Advantages are Quality and Economy.

The brick are pressed into solid steel moulds, with one direct pressure, making brick absolutely free from lamination. Address,

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Besides making Vitrified Stone Sewer Pipe we  
Manufacture and keep in stock a full line of

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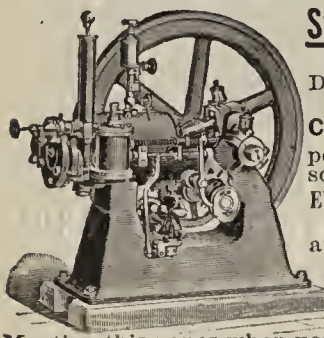


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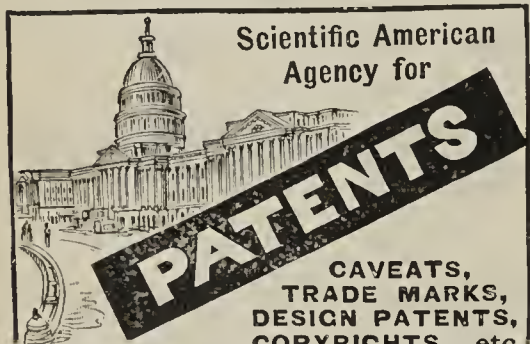
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IOWA PIPE AND TILE CO.,  
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Borden, Selleck & Co., Chicago. GENTLEMEN—We have used the Harrison Conveyor for the  
past two years. It takes about 90 tons of clay per day from our dry pan and distributes it  
through our cellar. Gives good satisfaction. Yours Truly, IOWA PIPE & TILE CO.

BORDEN, SELLECK & CO., *Mfrs. and Sole Agents,*

Send for illustrated catalogue.

48 & 50 Lake Street, CHICAGO

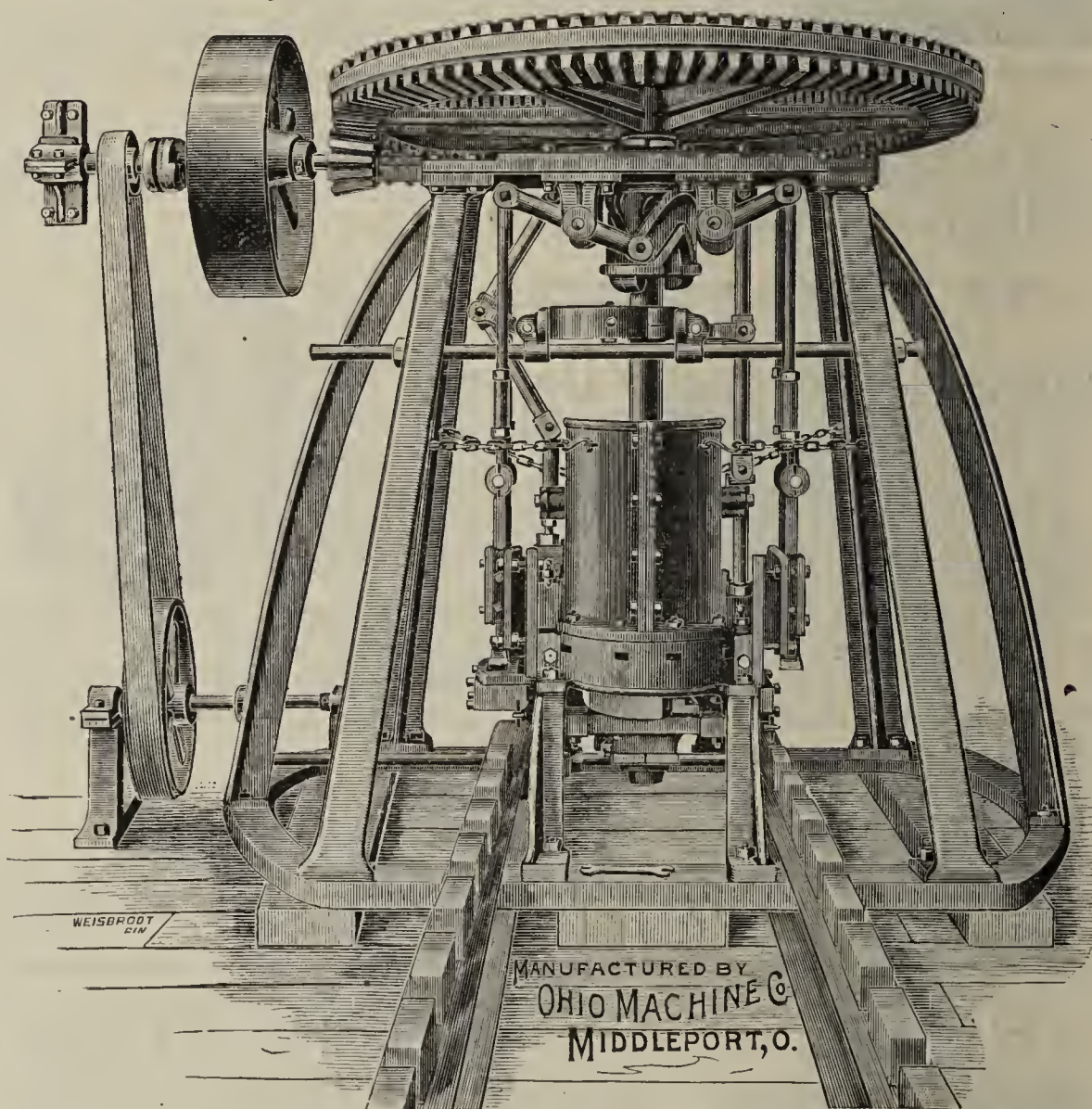
## THE "AJAX" BRICK MACHINE

MANUFACTURED BY

## OHIO MACHINE CO.,

MIDDLEPORT, OHIO.,

Under the very LATEST IMPROVED GRANT-MURRAY PATENT.



MANUFACTURED BY  
OHIO MACHINE CO.  
MIDDLEPORT, O.

This machine is constructed with the object of giving to purchasers the very best  
results obtainable for the money invested. It is at once Simple, Durable, Convenient,  
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ket, a brick that is very superior for Street Paving and building purposes. Their  
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of Ohio and West Virginia. This machine works the clay very stiff, pressing all the  
clay into each brick that it will possibly contain, thus imparting the quality requisite  
to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit  
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Brick Machine, pressing 4 brick each revolution  
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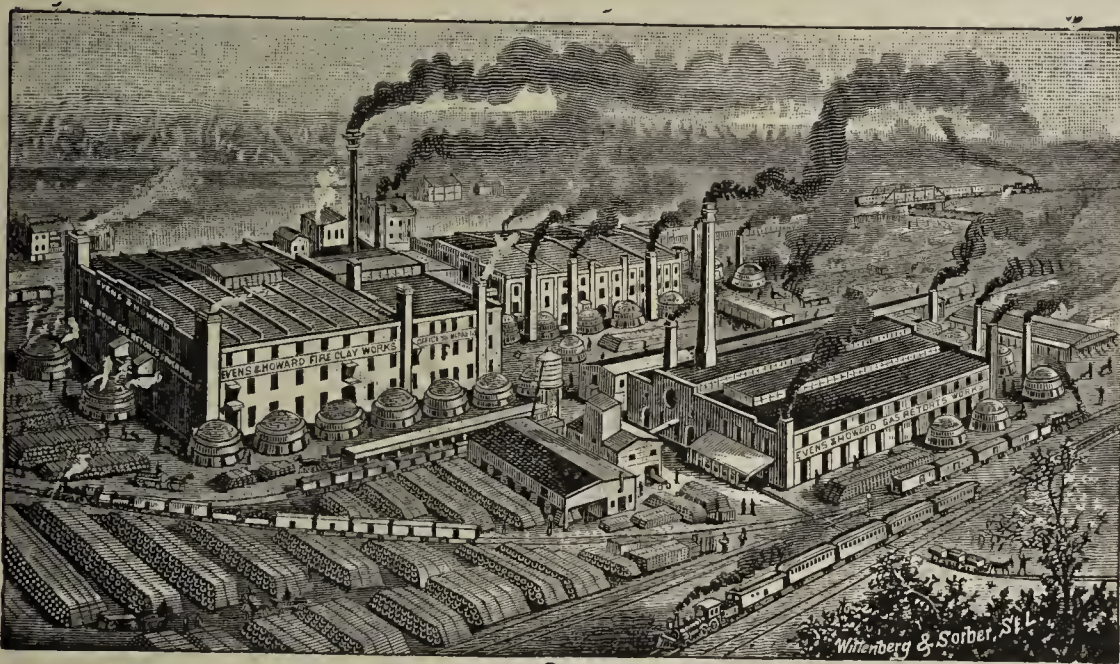
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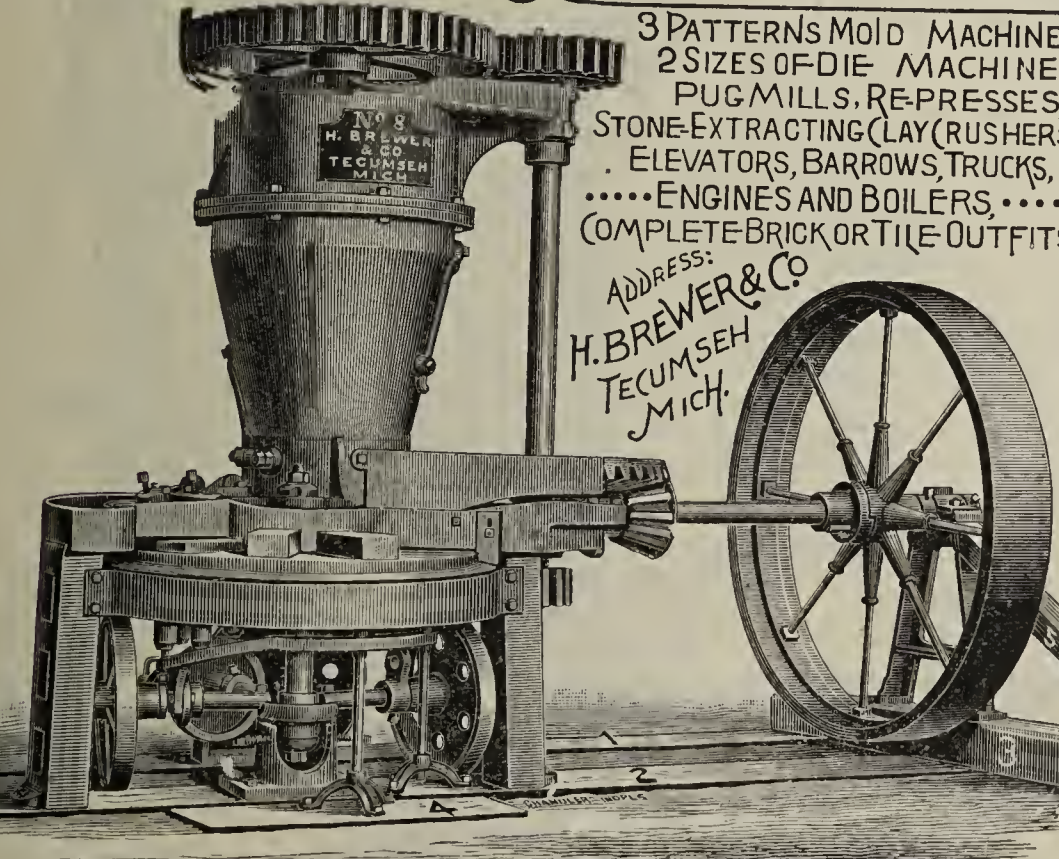
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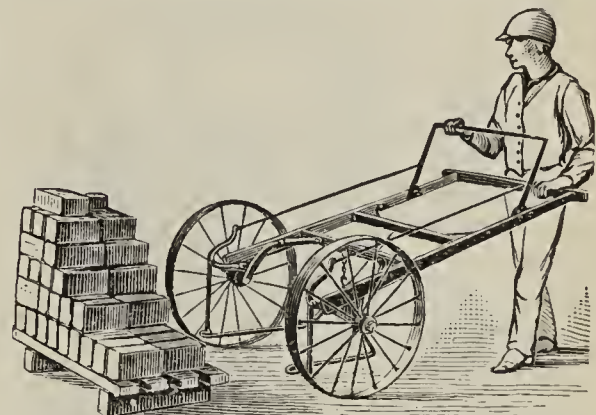


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2 SIZES OF DIE MACHINES,  
PUG MILLS, RE-PRESSES,  
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SPECIAL ATTENTION GIVEN TO  
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The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling and time in drying bricks. Can be used in any yard not too steep.

Extracts from Letters to J. C. Steele.

J. C. STEELE, ESQ.,                      May 6, 1892.  
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DEAR SIR—We have now been using your Hack-ing Trucks for the last month and we cannot speak too highly of them. They are perfect, and the greatest labor-saving machine ever put on a brick-yard. With one man, and one of your Trucks, we take from the machine and put on the yard 25,000 bricks already hacked and ready to cover in case of rain. This is a saving of three men over the old style of using wheelbarrows. One man will also keep two setters and two tossers going with one truck. But the main thing is that the bricks do not have to be handled so much and they retain their shape so much better. We will gladly answer any enquiries concerning your Trucks who may refer to us. Respectfully Yours,  
Florence, S. C.                      COFFIN & PERRY.

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DEAR SIR—I agree with your many subscribing testimonials as to the merits of your Improved Brick Trucks. They are indispensable helpers on a brickyard. Yours Truly,                      W. A. WATSON.  
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For further information address

**J. C. STEELE, Patentee,**  
**Statesville, N. C.**



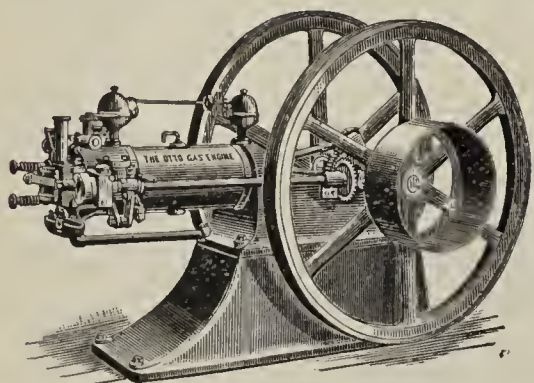
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The secret of burning oil successfully, lies in atomizing it and furnishing sufficient air at the right point to consume all the gases generated. The setting and equipping is therefore as important as the burner or the boiler.

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THE BEST MACHINE IN  
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The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

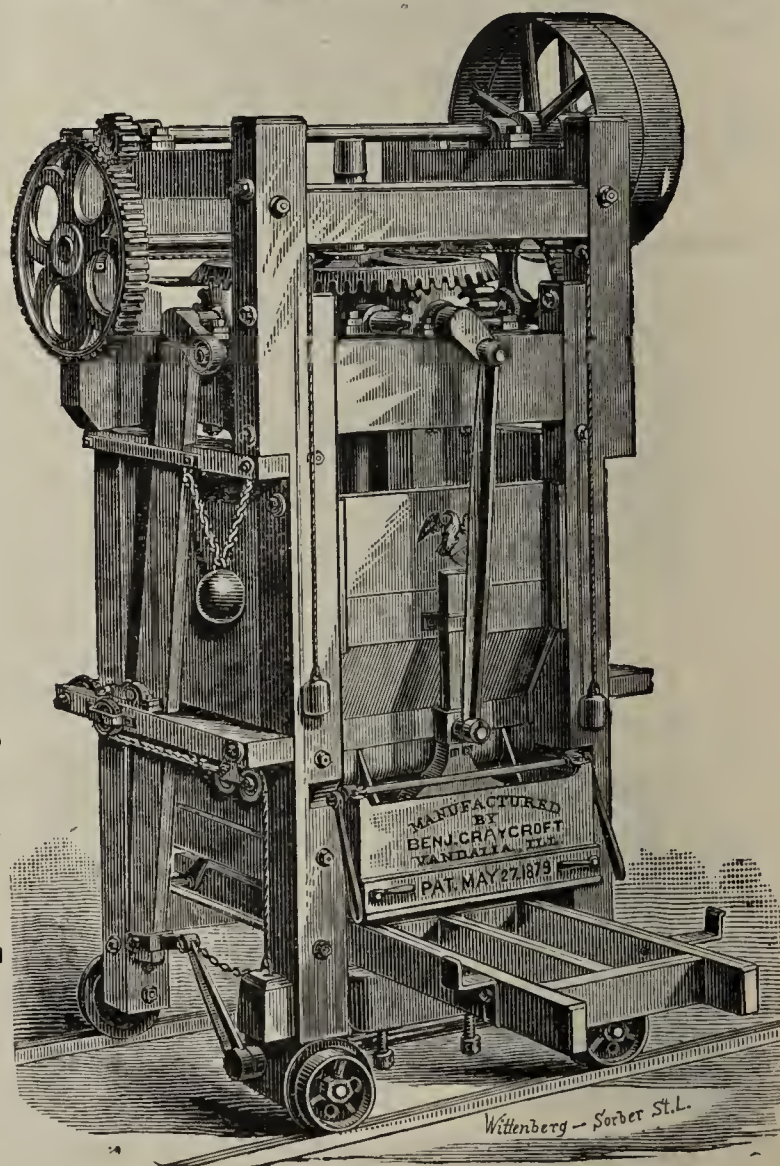
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Center Crank 15 to 40 Horse-power. Complete Steam Plants. Great economy in fuel consumption. All sizes kept in stock.

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High in Grade.

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A High Grade Bicycle made in Indianapolis, "THE CENTRAL."  
Price, \$135. Equal to any \$150 Machine in the Trade.

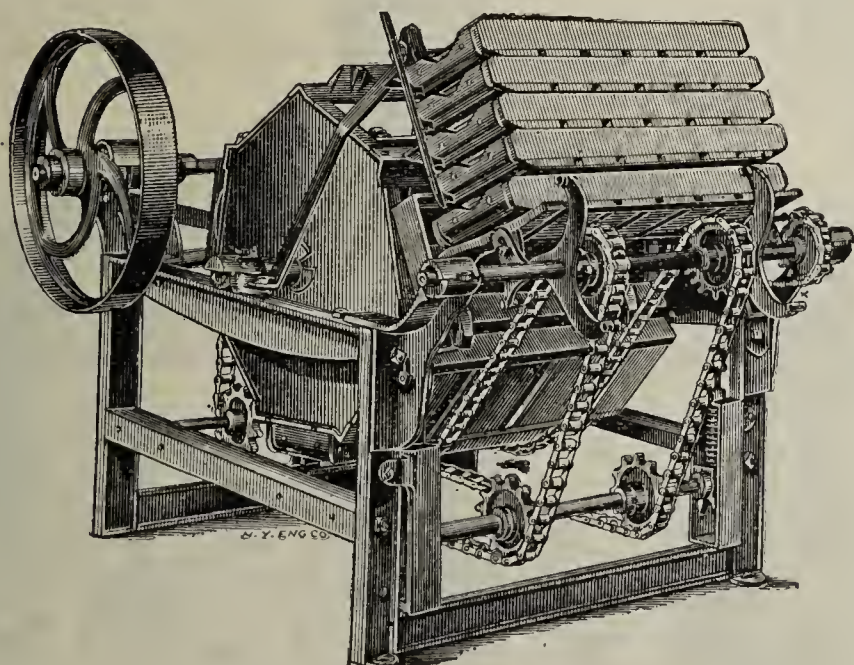
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### ⚡Sanding Machine.⚡

J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton, to Letters Patent for said machine.



The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing and being much more simple and durable.  
Several of the machines have been in use the past season, giving the best of satisfaction.  
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**WILLIAM CLAYTON,**

Potter's Chemist,

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**G**IVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

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In Effect April 15, 1893.  
Solid Train Between

**Sandusky and Peoria**

—AND—

INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

### DEPART.

|                        |             |
|------------------------|-------------|
| No. 10 Passenger.....  | 7:15 a. m.  |
| *No. 12 Passenger..... | 1:20 p. m.  |
| No. 14 Passenger.....  | 7:00 p. m.  |
| †No. 16 Express.....   | 11:10 p. m. |

### ARRIVE.

|                       |             |
|-----------------------|-------------|
| *No. 9 Passenger..... | 10:30 a. m. |
| No. 11 Passenger..... | 2:50 p. m.  |
| No. 13 Passenger..... | 6:20 p. m.  |
| †No. 17 Express.....  | 3:20 a. m.  |

Trains not marked run daily except Sunday, \*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west. Trains Nos. 16 and 17 have elegant free reclining chair cars to all passenger making direct connection at Peru with the Wabash fast trains for Fort Wayne, Toledo, Detroit and Chicago.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY,  
H. C. PARKER, General Pass. Agt.  
Traffic Manager, Indianapolis, Ind.



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**SLIP CLAY** { For Glazing of Pottery } **WORKS**

ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

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Direct Connections without Transfer  
 IN **CINCINNATI** FOR

Points in Kentucky, Tennessee, Alabama  
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Ask for tickets and see that they read via  
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 Cincinnati, Ohio.

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THE SHORT LINE TO  
**CHICAGO**

Milwaukee, St. Paul, Minneapolis,  
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AND ALL POINTS IN

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No. 26 S. Illinois St., Indianapolis, Ind  
 JAS BARKER, G. P. A., Chicago.

# THE YATES IMPROVED DOWN DRAFT KILN

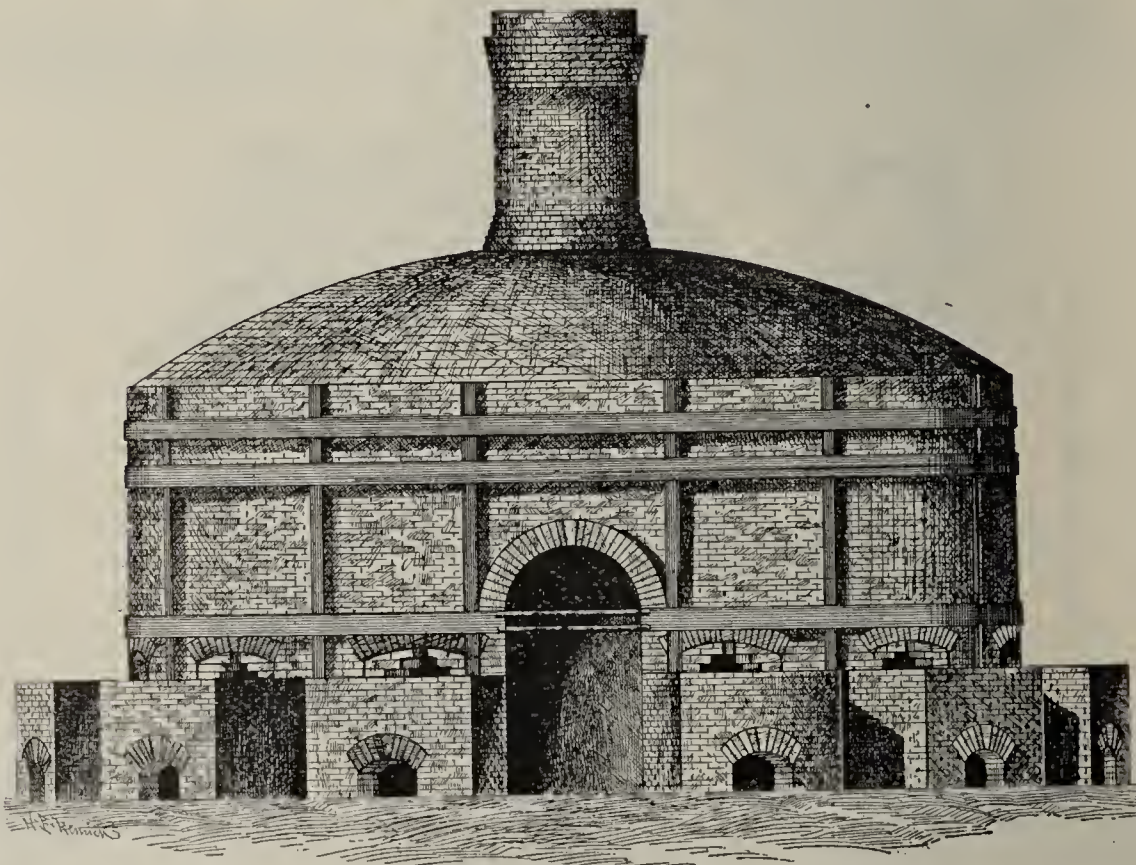
FOR BURNING BRICK OF ALL KINDS.



FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty.

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Write for full description. NORTH CAMBRIDGE, MASS.



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Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of **Pottery and Fire Bricks**, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

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Send ten cents in Postage Stamps and get by return mail a handsomely illustrated Christmas Book of Sketches and Poems by Howard Saxby.  
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Upon the lines of the Illinois Central Railroad Company and the Yazoo & Mississippi Valley Railroad Company, in the South, there are many

## LARGE DEPOSITS OF CLAY

Suitable for Fire Brick, Paving Brick, Drain Pipe, Tile, Terra Cotta and nearly every other manufacture of clay; some of these are being worked in a small way, but many of them have been untouched on account of lack of capital, knowledge and other reasons. It is desired to bring these fields to the attention of manufacturers and capitalists, and to that effect a pamphlet of 150 pages, entitled "Where to Locate New Factories," has been issued and will be sent free on application to the undersigned. Information will also be given upon application as to where the

## BEST SITES

are located, and as to

## INDUCEMENTS OFFERED

to those in the above lines of industry who propose seeking a location. For further information, and for the pamphlet mentioned, address GEO. C. POWER, Industrial Commissioner I. C. R. R., 58 Michigan Ave., Chicago, Ill.

## PLANT'S PATENT DOWN DRAFT KILN.

Yard Rights For Sale.

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Can be seen in operation at TIFFANY PRESSED BRICK CO.'S WORKS, Momence, Ill.

Down and Up and Down Draft kilns can be remodelled.

For further particulars. Address

Tiffany Pressed Brick Co.,

403 Chamber of Commerce Building, CHICAGO.

...Or, S. J. PLANT, Superintendent, MOMENCE, ILL.

## WHEELING MOLD AND FOUNDRY CO.,

Dies of All Kinds  
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Models for all kinds of Inventions  
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**Brick Molds, Machinery Castings**  
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# BRICK CARS IN STOCK

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EVERYTHING THOROUGHLY GUARANTEED.

CLEVELAND WHEELBARROW & MFG. CO.,

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# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

MANUFACTURED BY

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

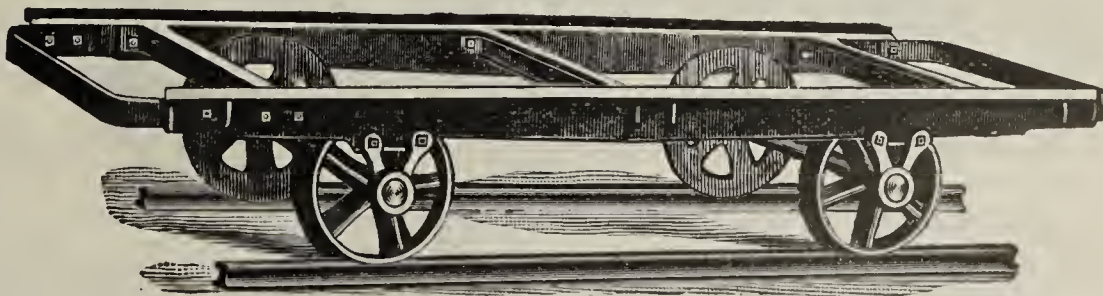
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Also  
Turn Tables,  
Transfers,  
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Iron Pipe.



# CARS

Send For Price List.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



# THE ARNOLD CLAY STEAMER.

==PREPARE YOUR CLAY PROPERLY.==

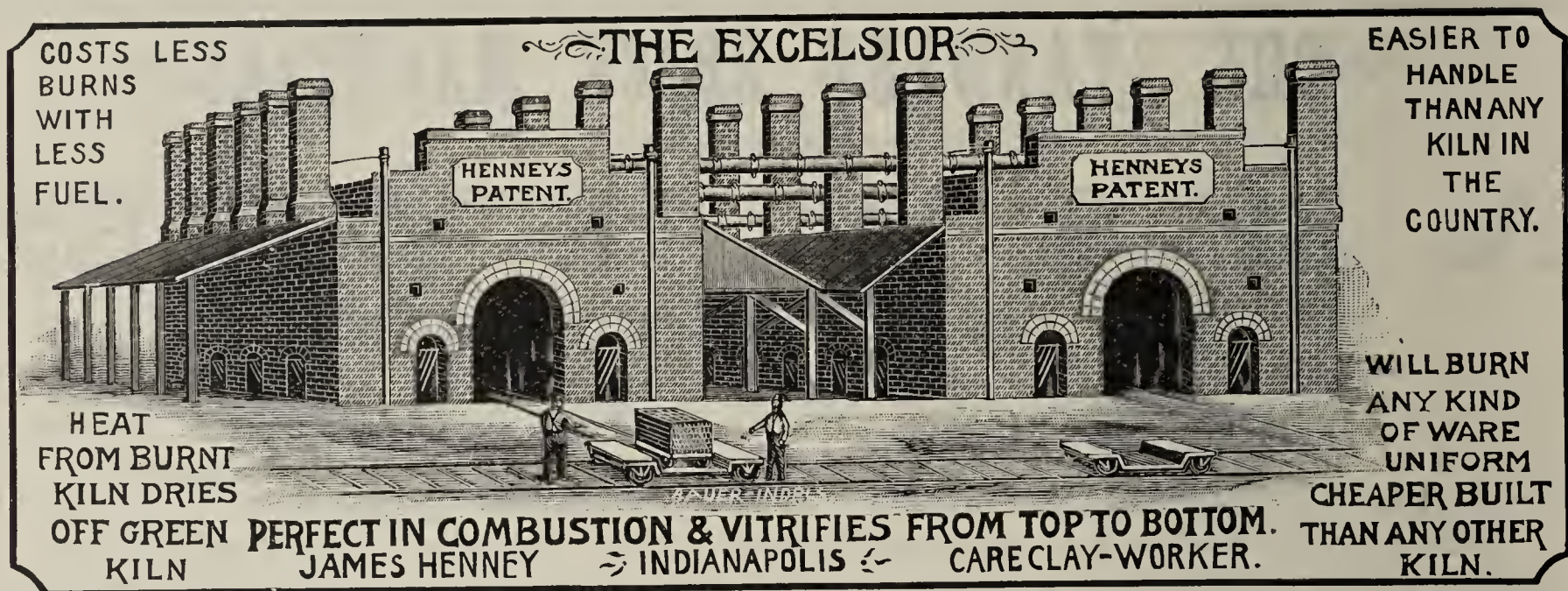
Do You use a Dry or Semi-Dry Press Brick Machine?

Are Your Results Entirely Satisfactory?

**The Arnold Clay Steamer** prepares the ground clay to any degree of moisture required, furnishes a regular, automatic feed to the machine, makes brick dense and compact, insures a perfect bond and smooth, unchecked surface, saves one-third in grinding, and results from kiln show the minimum per cent. in breakage.

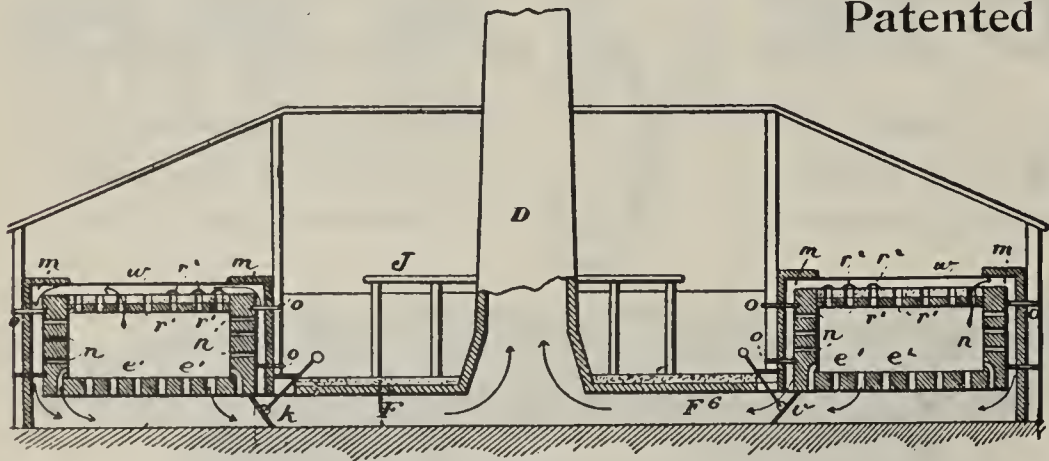
THE ARNOLD CLAY STEAMER is in successful use in connection with the dry press machine.  
For particulars and terms address

*P. ARNOLD, Canal Dover, Ohio.*



# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

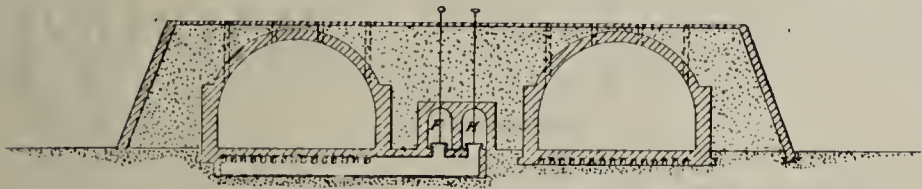
I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

**CARL F. KAUL, Madison, Neb.**

Mention the Clay-Worker.]



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



Office of SAN JOSE BRICK CO.

SAN JOSE, Cal., Feb. 11, 1893.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR: In reply to yours of the 13th inst, will say that the Continuous Kiln you erected for us last winter is giving us great satisfaction, having turned out all good brick on the first round, something we did not look for. We are now shutting down our B-ke kiln and contemplate applying your improvements on it. Please forward estimate cost of same if it can be done. We will give you statement in regard to fuel consumption of new kiln later.

Yours very truly,

D. CORKERY, Manager.

## SIMPLICITY, DURABILITY and the highest EFFICIENCY

Are the Characteristics of this Kiln.

It has taken the lead and will remain there. Burns all kinds of brick more uniform and economical than any other kiln. I mean what I say and am prepared to erect kilns under the highest guarantee, covering the entire cost of kiln. Its superior work is due to the peculiar features which are the result of a careful and systematic consideration of the continuous system of burning.

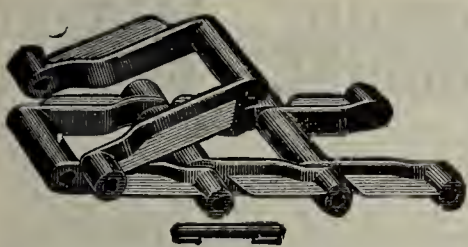
Competitors are warned from using my inventions as I will protect my claims at all hazards.

Applications for unpatented portions of my improvements now pending.

All first-class plants will soon be compelled to adopt the continuous method of burning, so it is no use spending good money for poor kilns, but get the best at once. It does not require a millionaire to own one of my kilns as my large experience in building these kilns has enabled me to reduce the cost of same down to an exceedingly low figure.

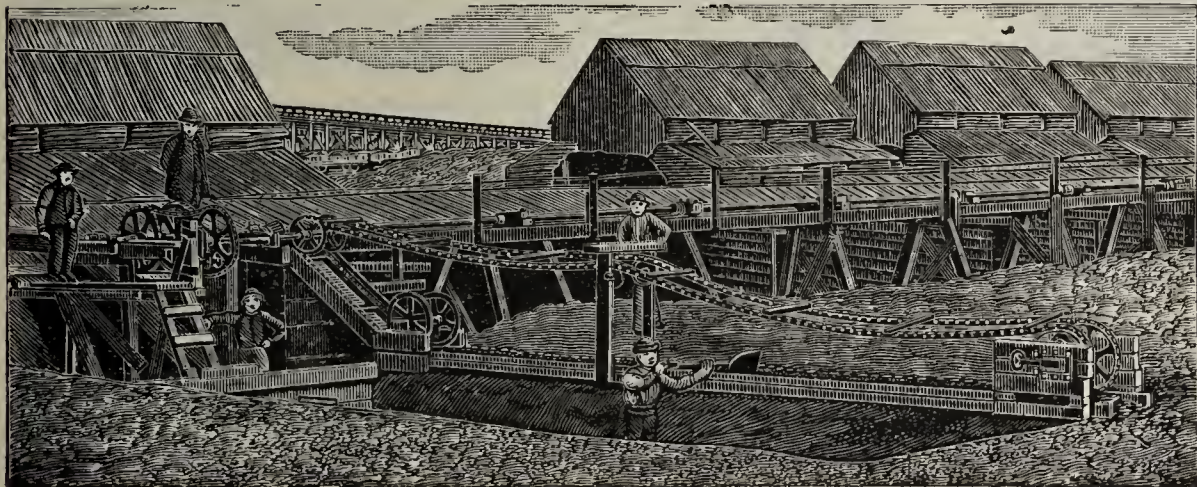
Write for description and estimate, cost of kilns for your capacity. Address communications to

P. L. YOUNGREN, Oakland, Cal.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

## F. H. C. MEY CHAIN BELTING ENGINEERING WORKS,

APPROVED APPLIANCES FOR

### Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

### Make Many More Thousands

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



## A LONG FELT WANT SUPPLIED.

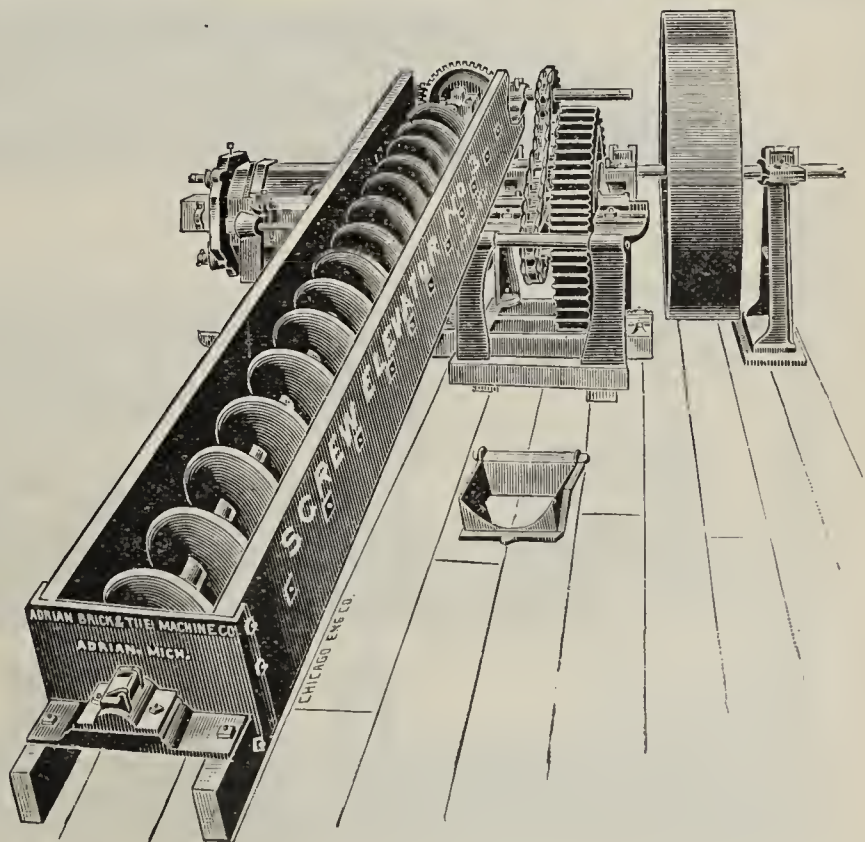
### A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

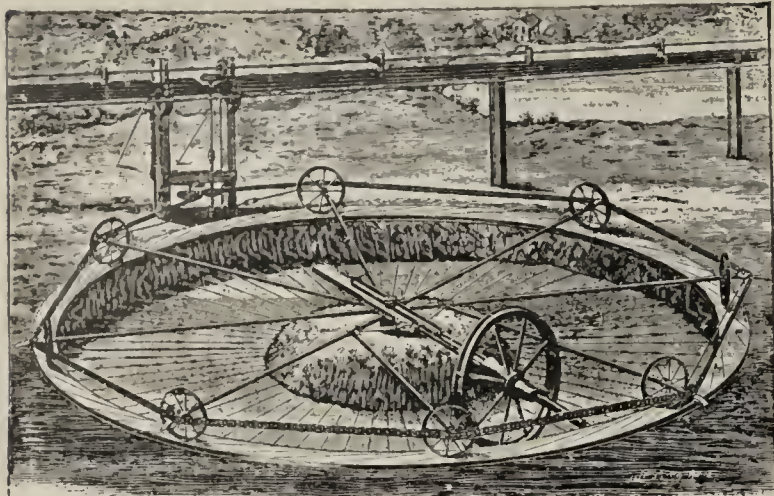
For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

ADRIAN, - - MICHIGAN.







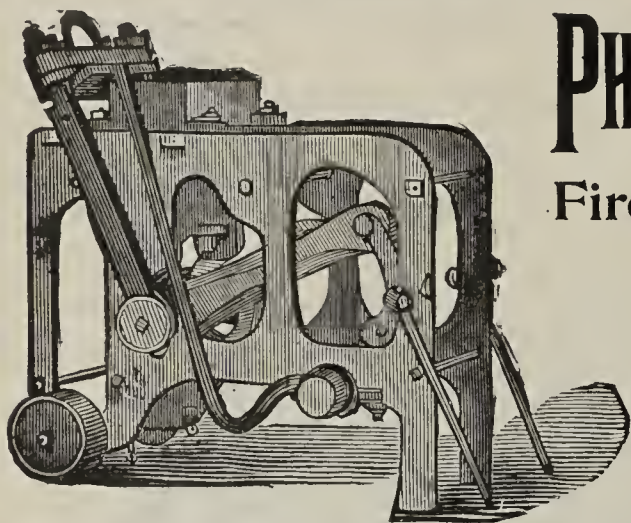
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

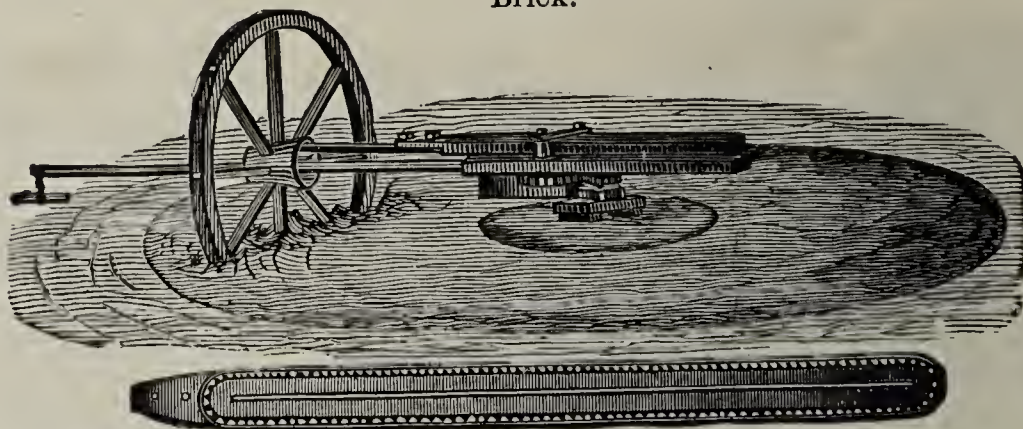
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

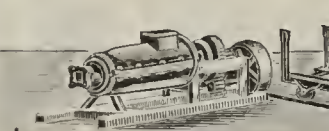
....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.

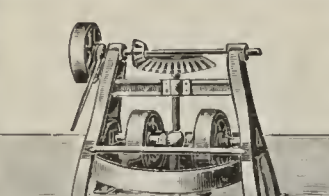


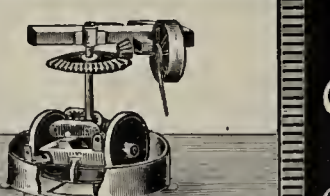
These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

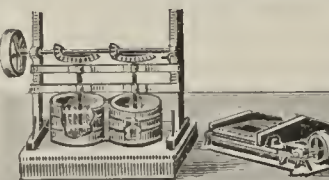
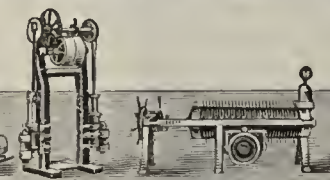
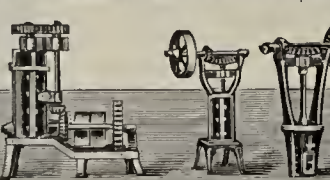
THE BONNOT COMPANY  
CANTON, OHIO.










BRICK & POTTERY PLANTS EQUIPPED COMPLETE READY FOR OPERATION UNDER ONE CONTRACT

H.E. VOTAW CANTON





J. A. SMITH, NEW CUMBERLAND, W. VA.,

MINER AND SHIPPER OF

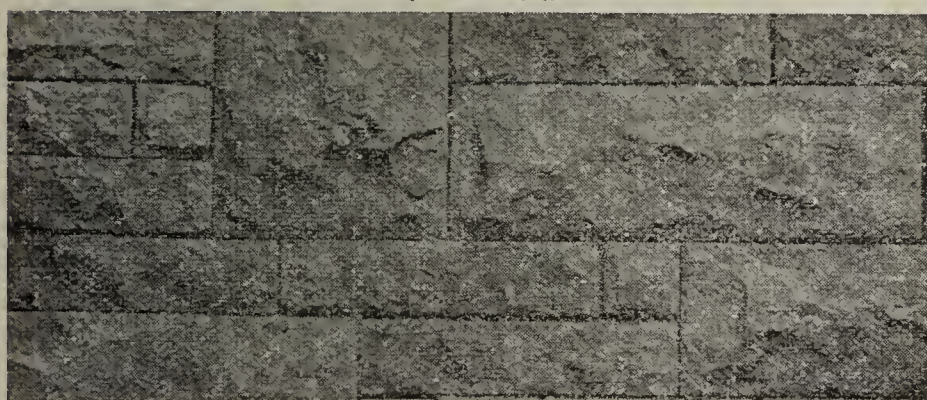
**WEST VIRGINIA CLAYS.**

In bulk or barrel, ground or unground, flake or dust. Correspondence solicited with Manufacturers desiring color and form in high grade building bricks.

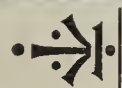
**The BOSTON BRICK ASHLAR.**

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.



TOOLED FACE.

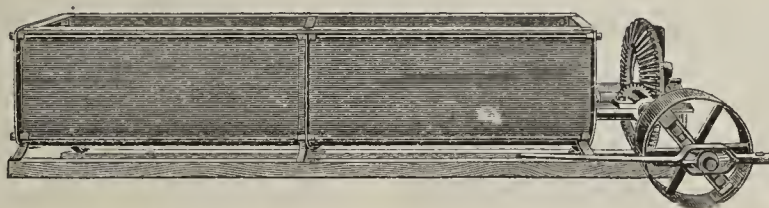


FISKE, HOMES &amp; CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

} LICENCEES.

## ❖ PUG ❖ MILLS ❖



**A** GOOD PUG MILL is as necessary on the Brickyard as a good Brick Machine. It improves the quality of brick made, at the same time reduces the cost.

We have a complete line of Pug Mills, wood or iron frames for soft clay, four patterns of extra heavy double geared mills for stiff clay.

We manufacture a full line of Yard Supplies, Winding Drums, Clay Cars, Elevators, Moulds, Trucks and Barrows.

It will pay you to write for prices.

**C. & A. POTTS & CO.,****INDIANAPOLIS, IND.**

[Mention the Clay-Worker]



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

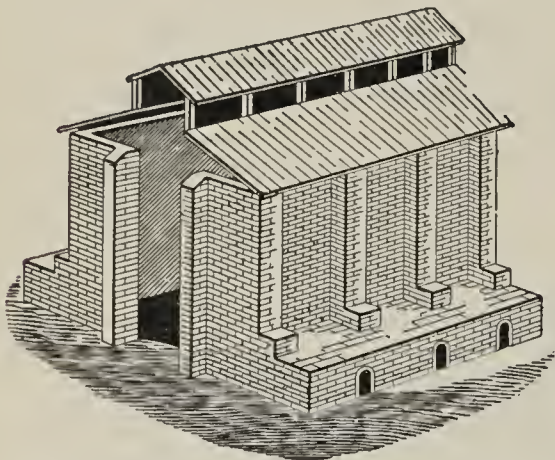
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

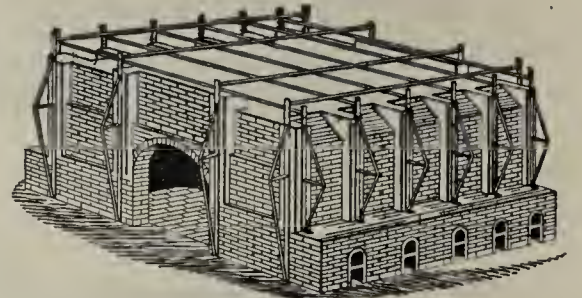
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands. Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

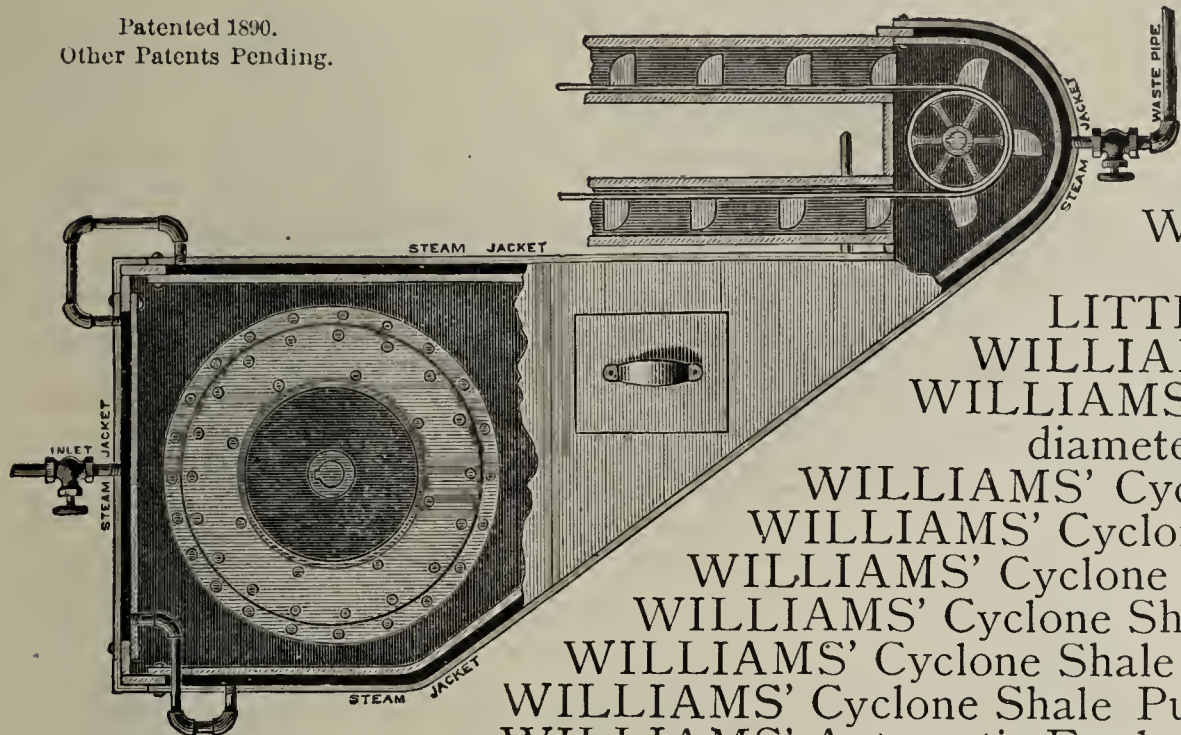


KANSAS CITY, MO.



# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

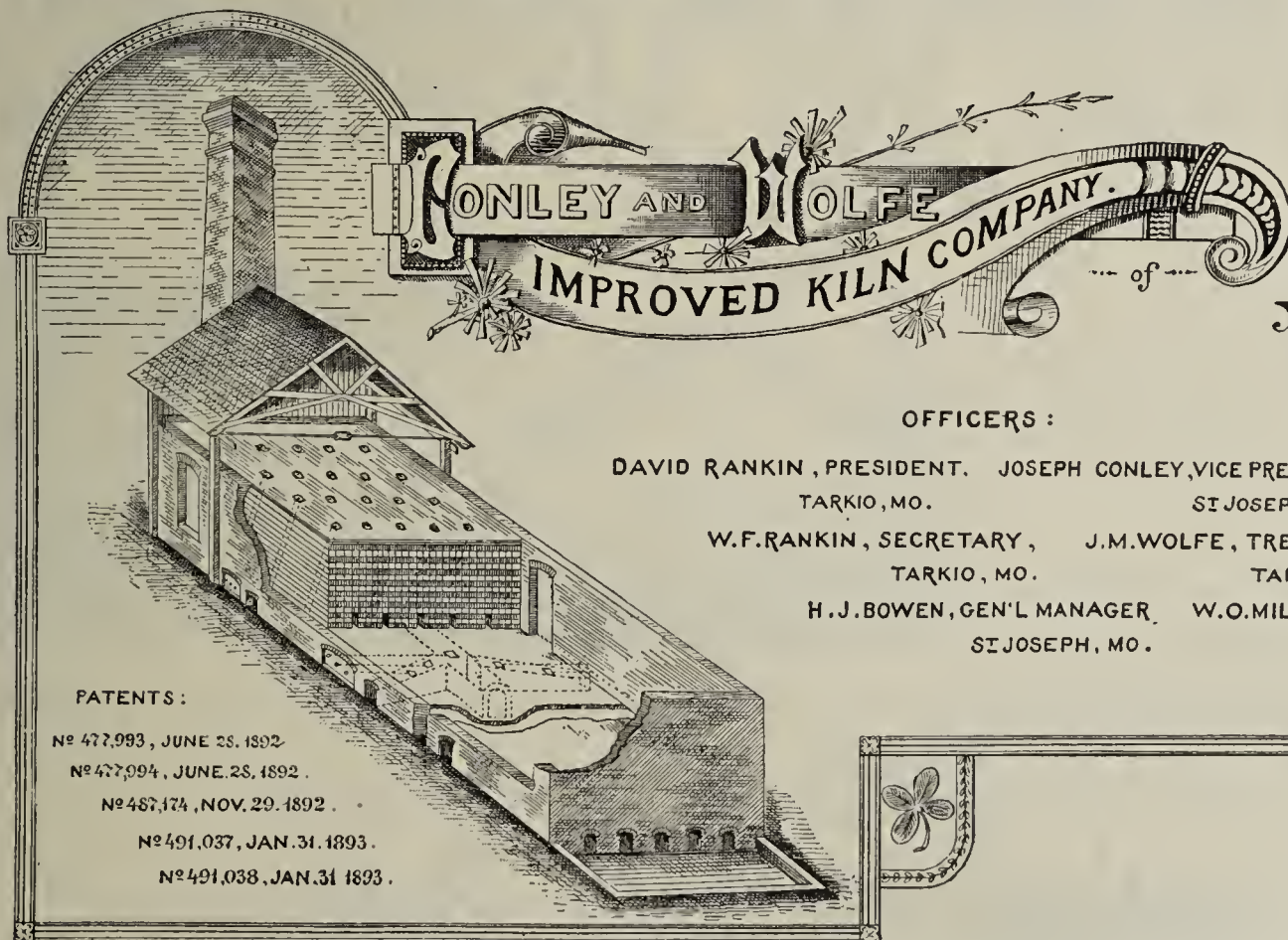
WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**



#### PATENTS:

No 477,993, JUNE 25, 1892.

No 477,994, JUNE 25, 1892.

No 487,174, NOV. 29, 1892.

No 491,037, JAN. 31, 1893.

No 491,038, JAN. 31, 1893.

#### OFFICERS:

DAVID RANKIN, PRESIDENT. JOSEPH CONLEY, VICE PRESIDENT.  
TARKIO, MO. ST. JOSEPH, MO.

W.F. RANKIN, SECRETARY, J.M. WOLFE, TREASURER.  
TARKIO, MO. TARKIO, MO.

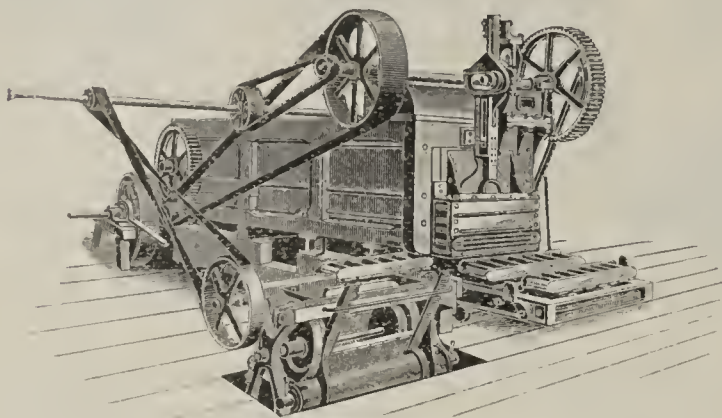
H.J. BOWEN, GEN'L MANAGER, W.O. MILLER, ASS'T M'GR.  
ST. JOSEPH, MO. ST. JOSEPH, MO.

TARKIO,  
Mo.

THIS kiln is cheap to construct, simple in operation and permanent in character. It has no crown to fall in, or braces to keep in repair. The dampers in the bottom give you complete control of the draft. You can burn your brick evenly and thoroughly. It heats the brick gradually and cools them the same way, producing a tough and thoroughly ANNEALED brick. It requires less than 200 lbs. slack per M. to make the very best vitrified shale paving brick. One man can fire the largest sized kiln. The slack is converted into gas and ALL the heat energy of the coal is utilized. It is a smoke consumer and a profit producer. Please write our General Manager at once for full information.



## THE POTTS HORIZONTAL STOCK BRICK MACHINE



WILL work any clay direct from the bank without the use of an extra Pug Mill. It has one-half more tempering capacity than any Vertical Machine and extra Pug Mill made.

It has one-half less working parts, all of which are out from under the machine where they can be kept clean.

It will work the clay stiff and fill a six-brick mould perfectly.

**THE BRICK ALWAYS HAVE CLEAN, SHARP CORNERS  
AND SMOOTH SURFACES.....**

The capacity is only limited to facilities for getting clay to it and taking care of the brick.

Having a direct Vertical Press,

**INSURES THE BRICK MADE BEING**

**SQUARE AND STRAIGHT.**

## AFTER TWO YEARS' USE

*Builders Exchange of Indianapolis*

### OFFICERS

GEORGE W. NEVILL, President  
M. M. LUTHER, Vice-President  
CHARLES H. BROWN, Secretary  
A. M. BROWN, Treasurer

NO 31 SOUTH PENNSYLVANIA STREET.

Scottish Rite Building

Indianapolis, Ind. Feb 16<sup>th</sup> 1893

Miss B. A. Potts & Co.

Indianapolis Ind.  
Gentlemen, The two Horizontal Brick machines we have of yours have proven highly satisfactory to us - we firmly believe there is no other Brick machine made that could handle our clay in a more satisfactory manner.

Very Truly Yours

Asst. Secy  
Shenandoah Brick Works  
Shenandoah Ind.

For further information write to **C. & A. Potts & Co., Indianapolis, Ind.** They manufacture the most complete line of Clayworking Machinery in the United States.

## If You Want Brick Machinery You Should Investigate the "CREAGER."

## ... WHY? ...

### BECAUSE.....

It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

## Jonathan Creager's Sons,

127 W. SECOND STREET,

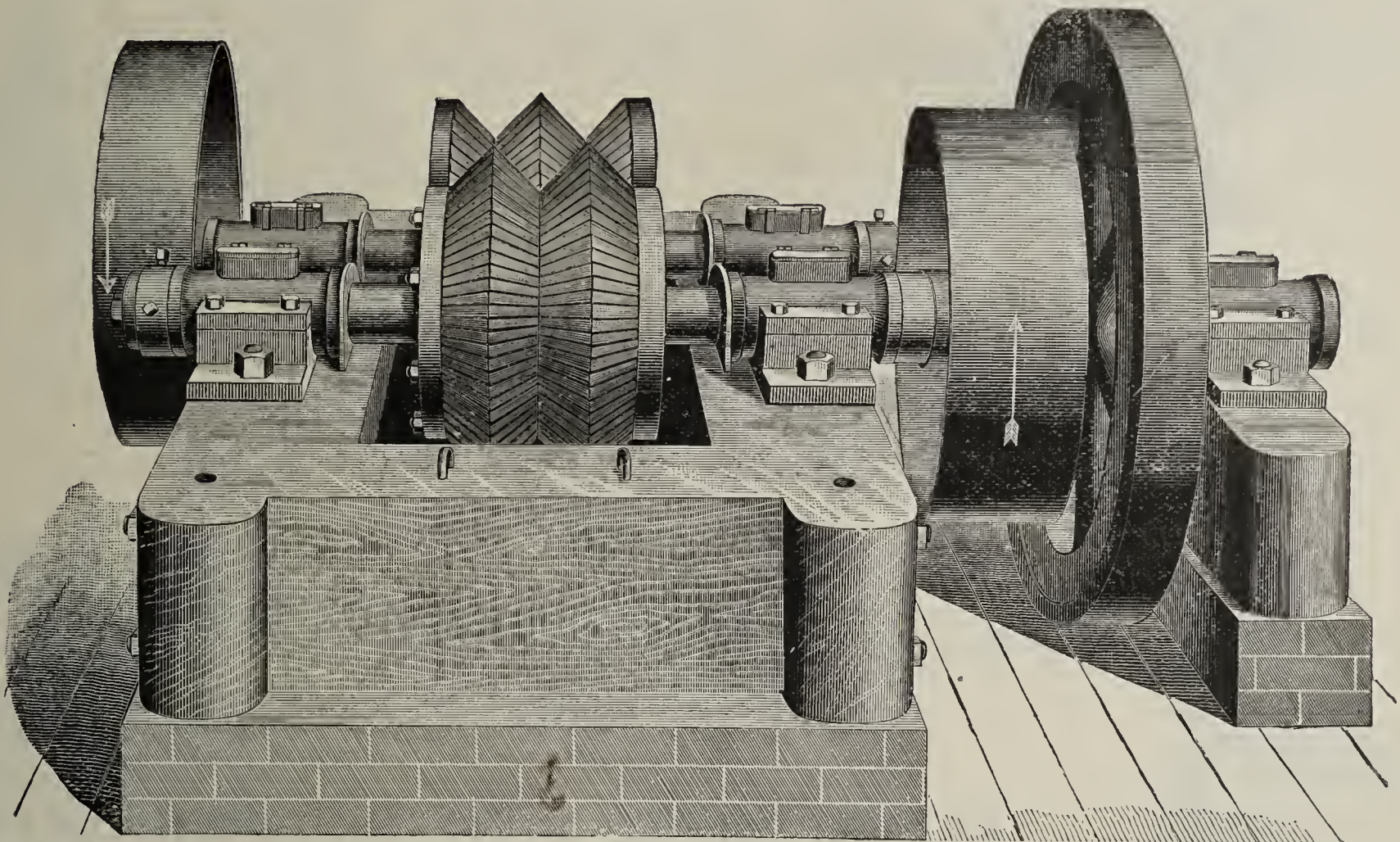
Cincinnati, Ohio.

P. S. If you do not ask we cannot tell you of several very important improvements.



# NEWELL IMPROVED CLAY PULVERIZER

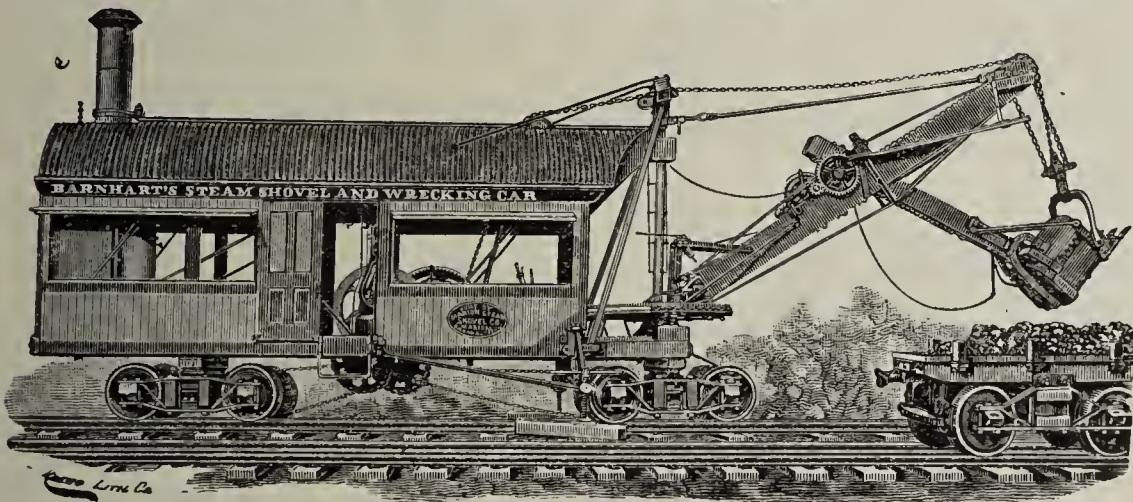
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.

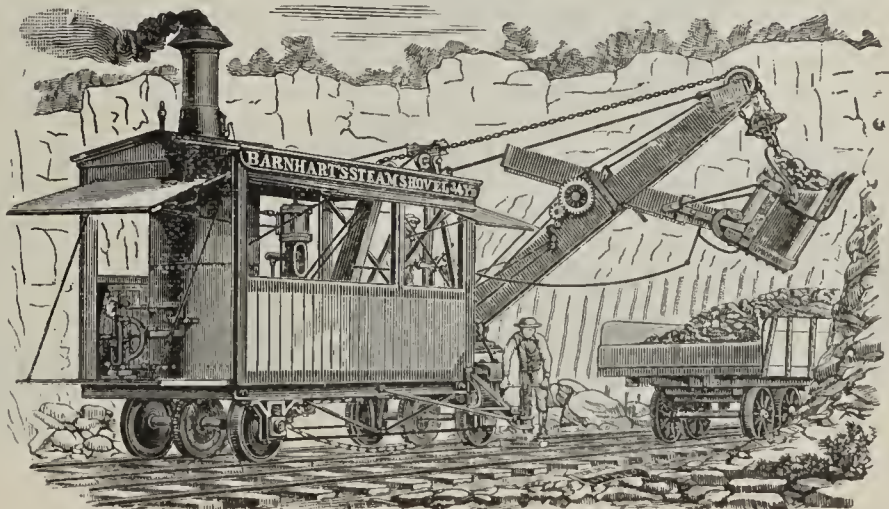


STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
MARION. . . . OHIO.

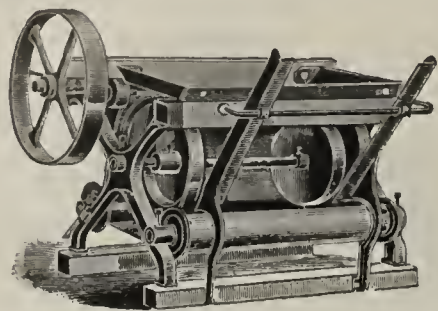
Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C—¾ YD



## The Potts Mould Sander



Sands the moulds better than can be done by hand.

It does not waste or spill the sand.

It has no light, complicated parts to wear or break.

There is no place for the moulds to catch and cause delays.

*IT IS SIMPLE IN CONSTRUCTION,  
STRONG AND DURABLE.*

WE GUARANTEE THESE MACHINES TO DO ALL THAT IS CLAIMED FOR THEM, AND SHIP THEM ON TRIAL.

**WRITE FOR PRICES.**

[Mention the Clay-Worker.]

**C. & A. POTTS & CO., Indianapolis, Ind.**

W. J. EGGE & CO.,  
BRICK MANUFACTURERS,  
OFFICE, 317 NORTH NINTH ST.,  
YARD, COR. TENTH AND ALLEN STS.

*Allentown, Pa. January 12, 1892*

Messrs C. & A. Potts & Co.:

Gentlemen- The Mould Sander we got from you, and used last season, gives entire satisfaction. We could not do without it, for before we had the Sander, we paid two dollars a day and often found it difficult even at those wages to keep a hand at it during the season. Now, with the sander, we pay a boy seventy-five cents a day.

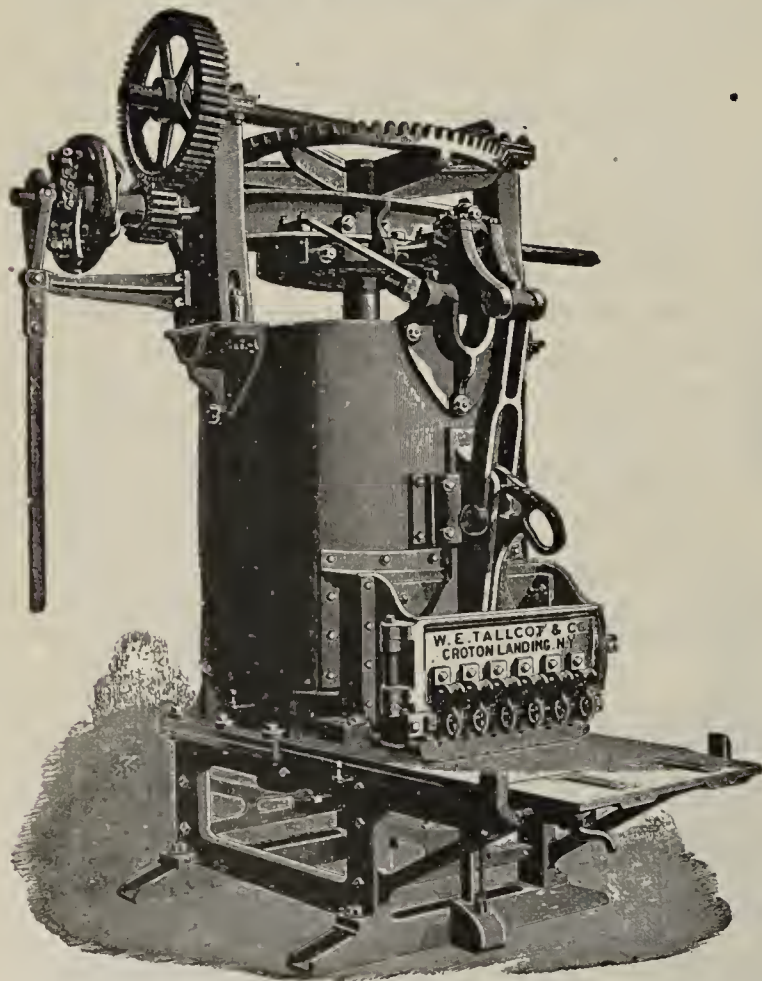
Yours,

*W. J. Egge & Co.*

IT ALWAYS PAYS TO BUY THE BEST.....

What Machine that costs as little money can you put on your yard that will save \$1.75 per day?

## The "I. X. L." Brick Machine. A Modern Type of Machine.



Extra Strong,  
Handy to Operate,  
Large Tempering and  
Pressing Capacity.

Made in two sizes:

The "Standard" for ordinary brick.

The "Special" for large brick.

Especially Adapted For

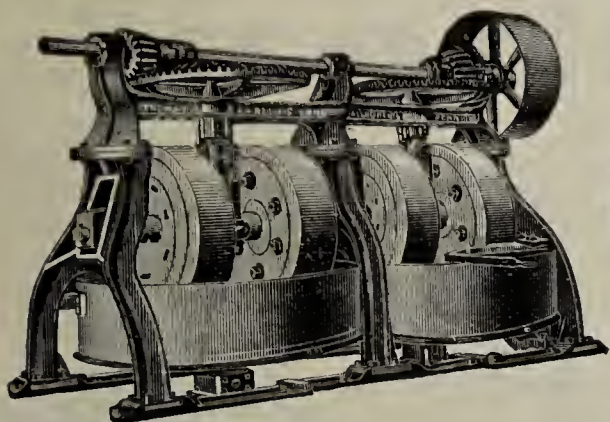
**PALLET BRICK WORK.**

Write for Illustrated Catalogue, stating size of brick to be made and if wanted for pallet work.

**W. E. Tallcot & Co.,**

**CROTON-ON-HUDSON, - NEW YORK.**





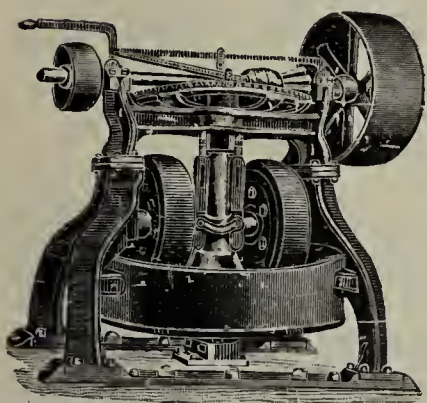
OUR SPECIALTY.

# GRINDING AND MIXING PANS

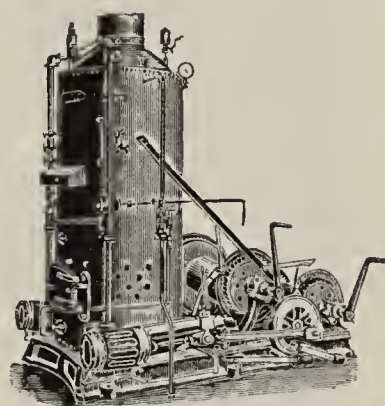
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot guage Dump Cars.

MANUFACTURERS OF  
 IMPROVED

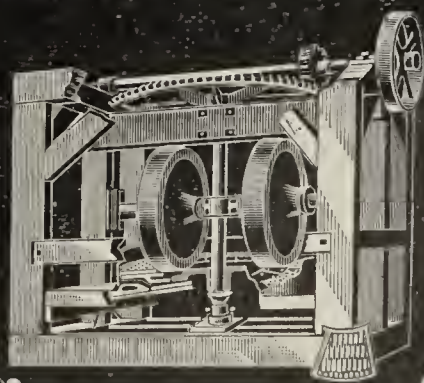
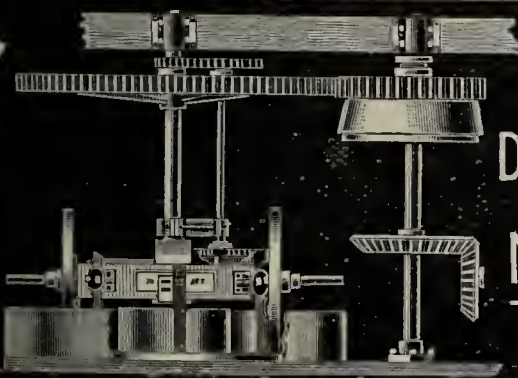
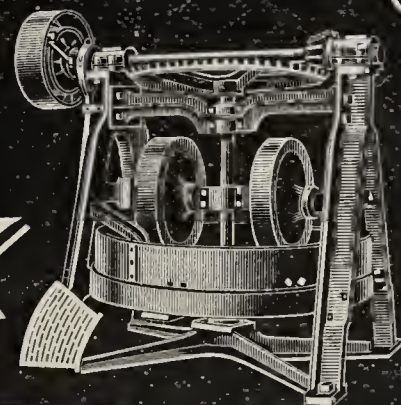
# CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

## TAPLIN RICE & CO.

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

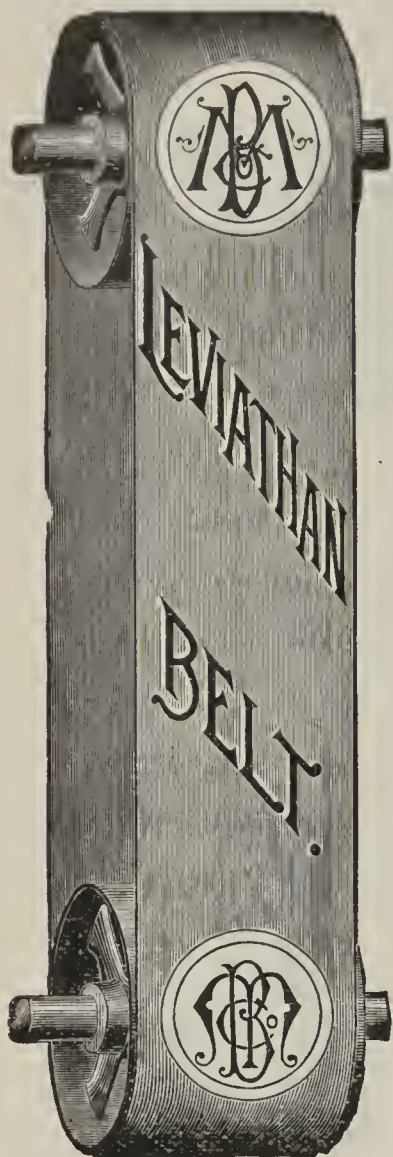
## AKRON, OHIO, U.S.A.



PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A





## "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for

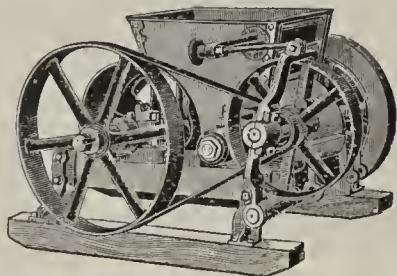
Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



## The Potts Disintegrator

Made in Twelve Sizes  
Having Capacity of 30,000  
to 125,000 Per Day.



MADE WITH CHILLED ROLLS.

## WE CLAIM

Our No. 2 Disintegrator will do one-third more work, with one-half less power than can be done by any 18 inch mill made, that it is better built, is stronger and more durable than any machine made.

REMEMBER there are only two bolts to each bar to loosen; they are not exposed in the surface of the roll, where they will soon be worn off.

Every machine guaranteed and shipped on trial.

Write for Prices.

E. MEECH,  
MANUFACTURER OF  
BRICK AND TILE,  
ROLFE, IOWA.

Rolfe, Iowa, Jan. 5, 1892.

C. & A. Potts & Co.,  
Indianapolis, Ind.:

Dear Sir--In reply to your letter of the 29th inst, I am very glad to tell you in regard to our Disintegrator you shipped us, it is just the machine I was needing. It is a dandy, it will do the work just as you represented it to us. I was stuck until I got it. I think it is a splendid machine for any brick or tile maker.

Yours truly,

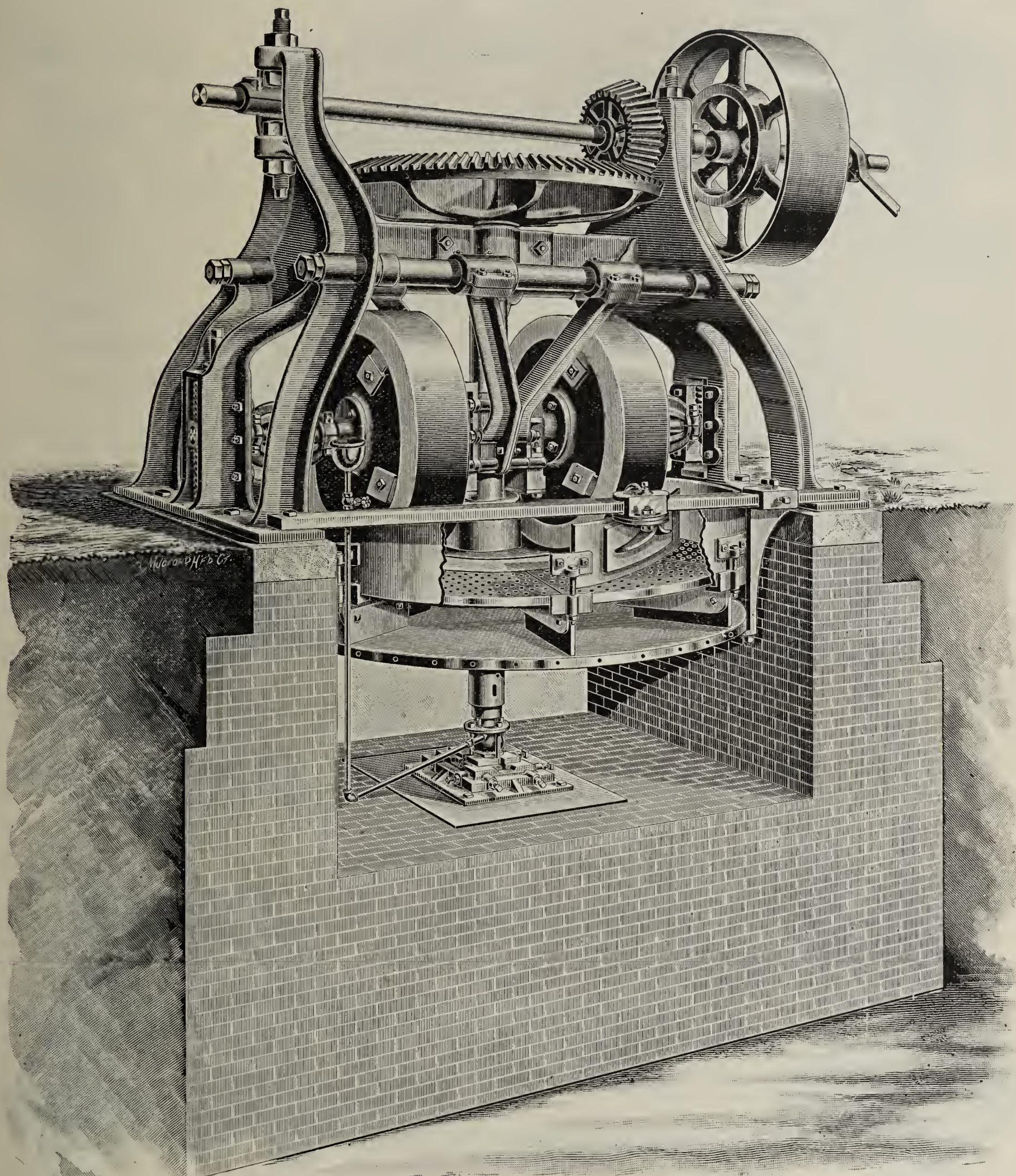
*E. Meach*  
Rolfe, Iowa

C. & A. POTTS & CO., Indianapolis, Ind.



THE ONLY THOR-  
OUGHLY RELIABLE

# GRINDING PAN

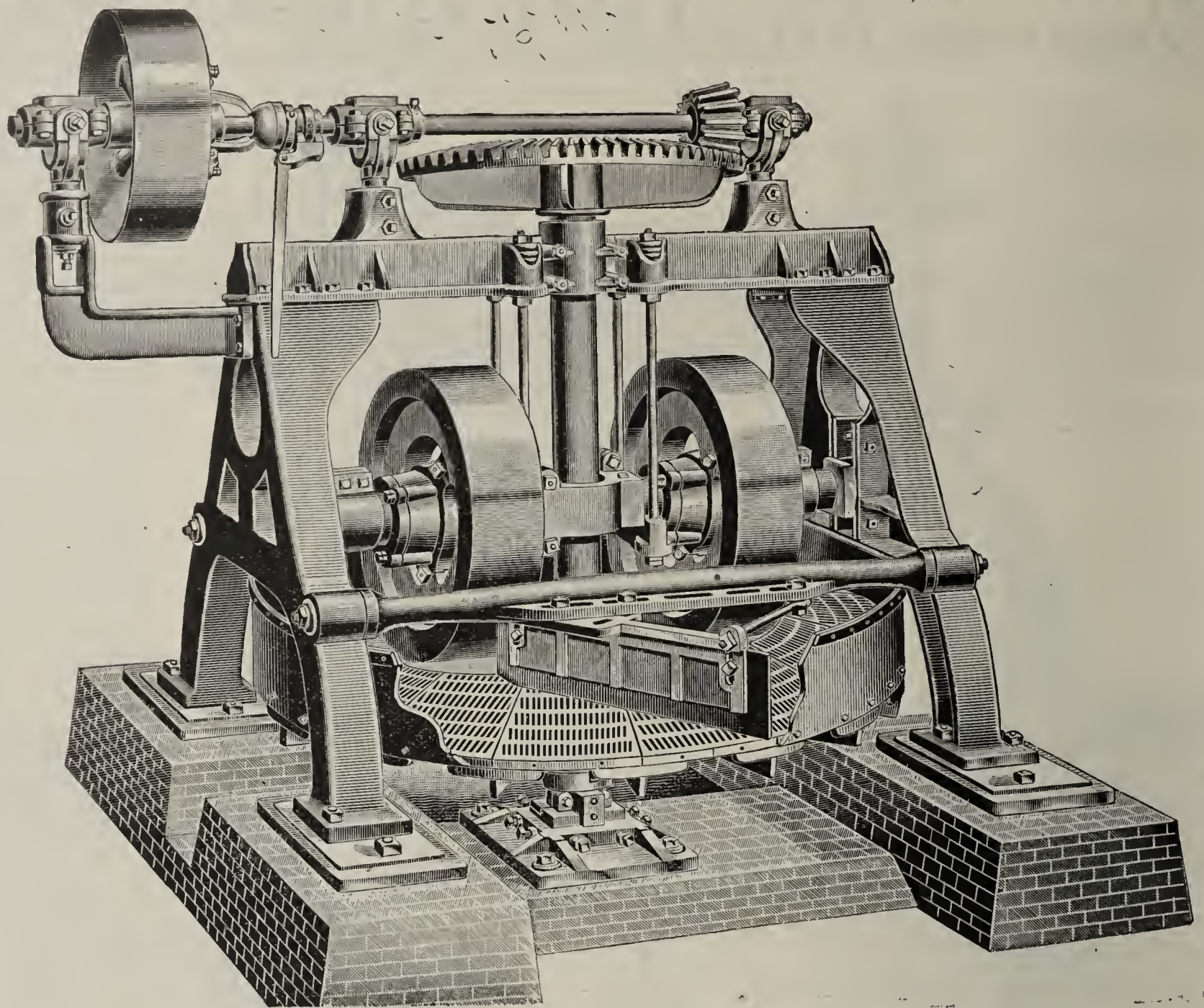


MANUFACTURED BY

Send for  
Descriptive  
Circular.

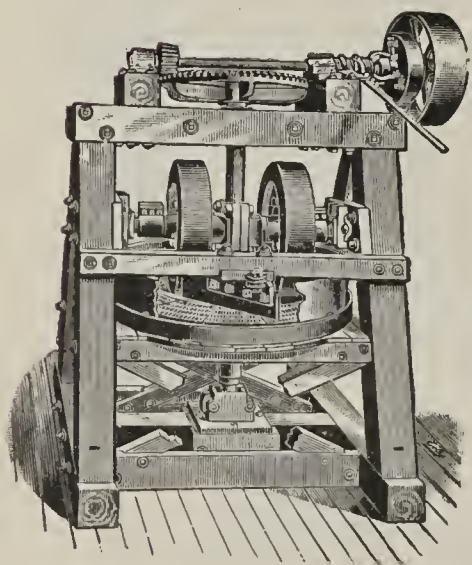
STEVENSON & CO., Wellsville, Ohio.





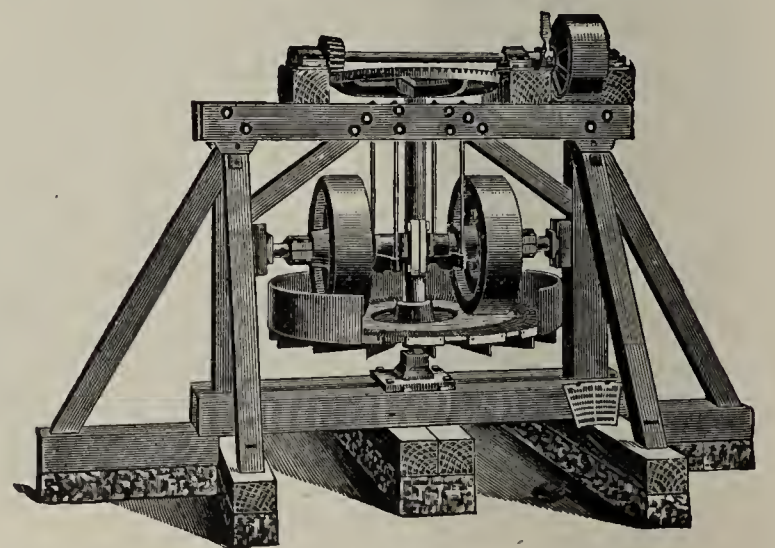
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,  
WOOD FRAMES.

All Sizes and Price  
to suit  
Any Size Plant.



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

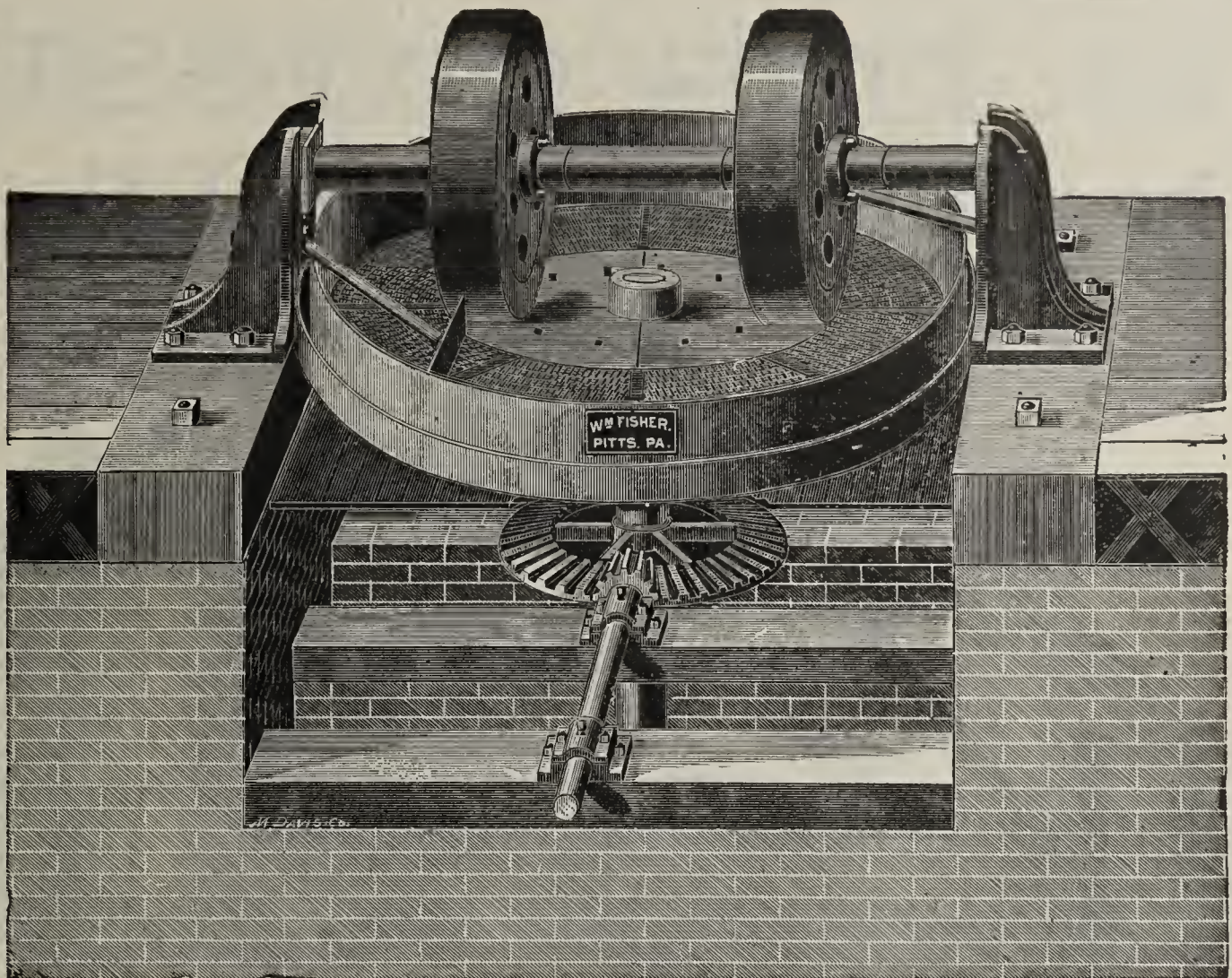
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

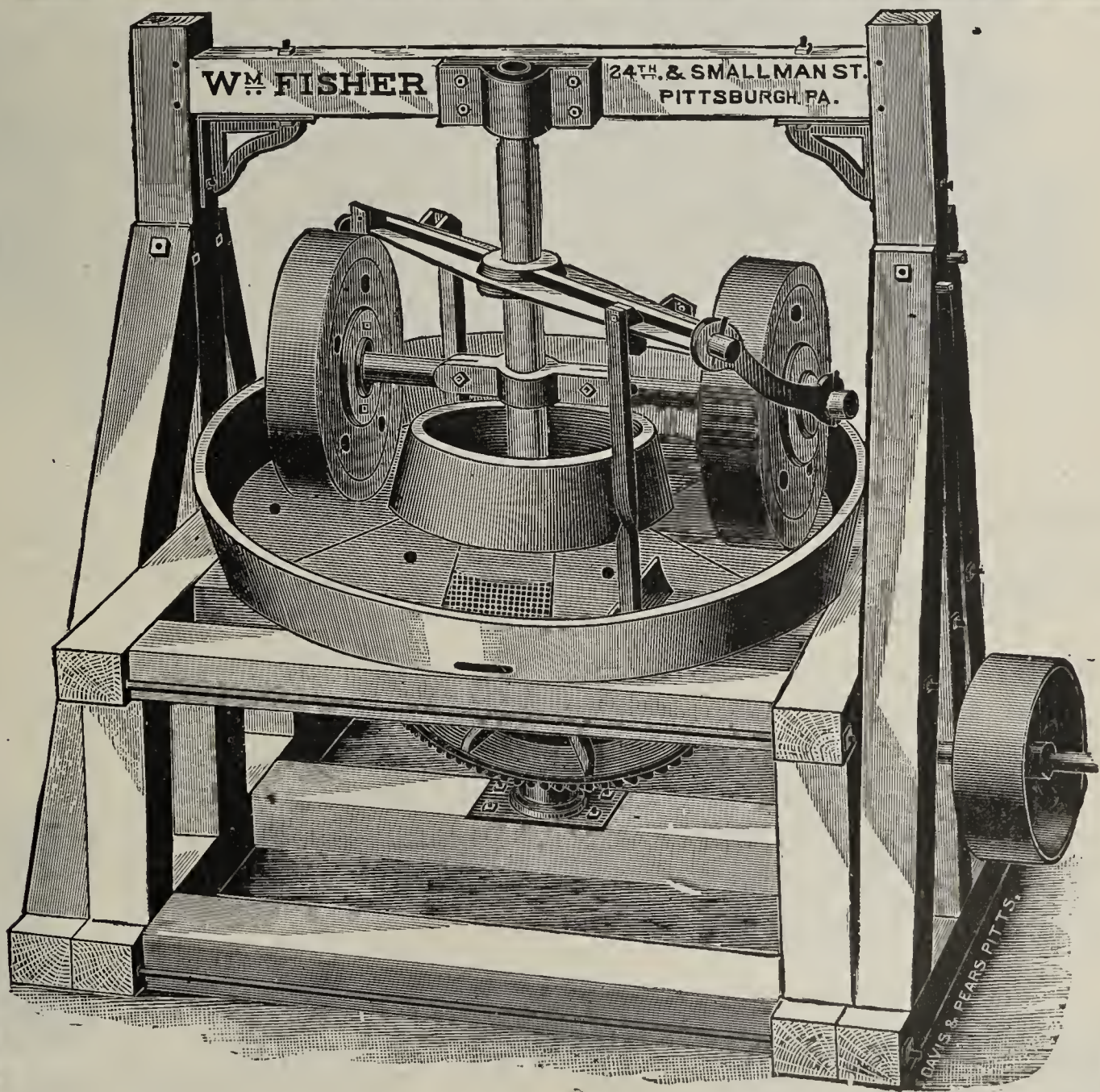
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.

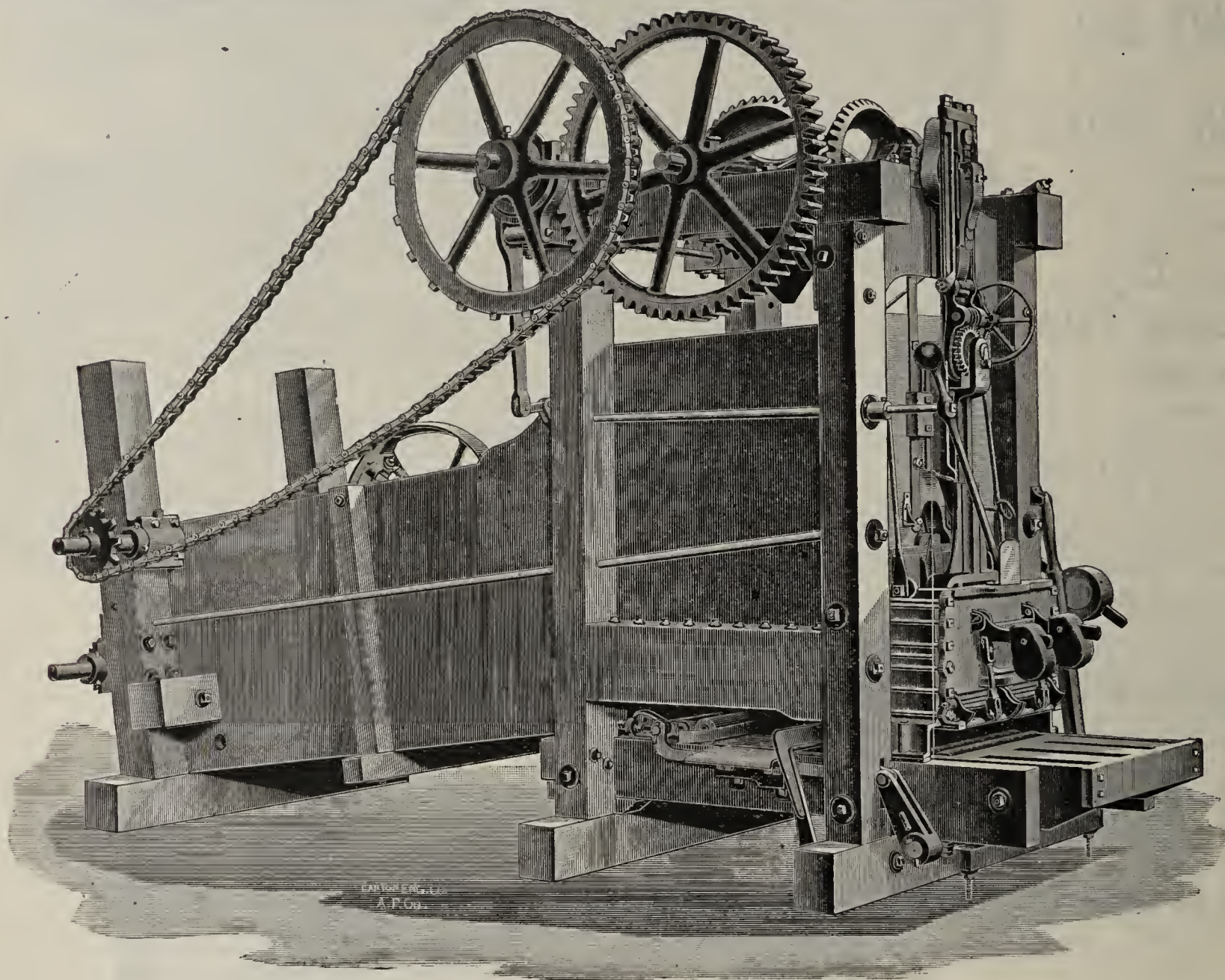


When writing for prices, state kind of material and capacity required.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



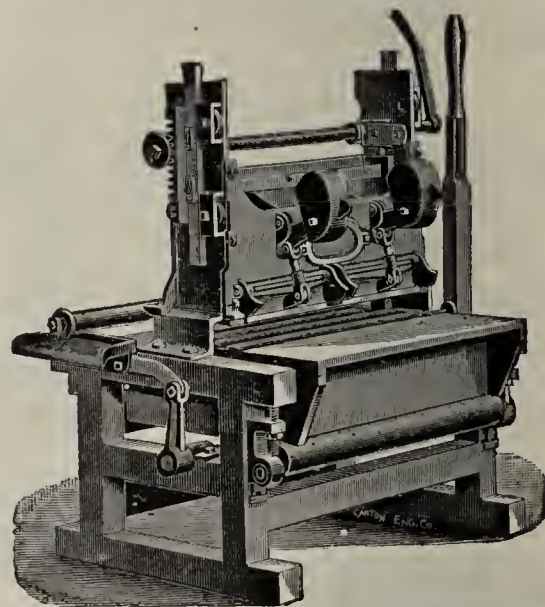
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



Gave full satisfaction  
and 40,000 per day the

# SECOND YEAR.



WEIGHT

15,500

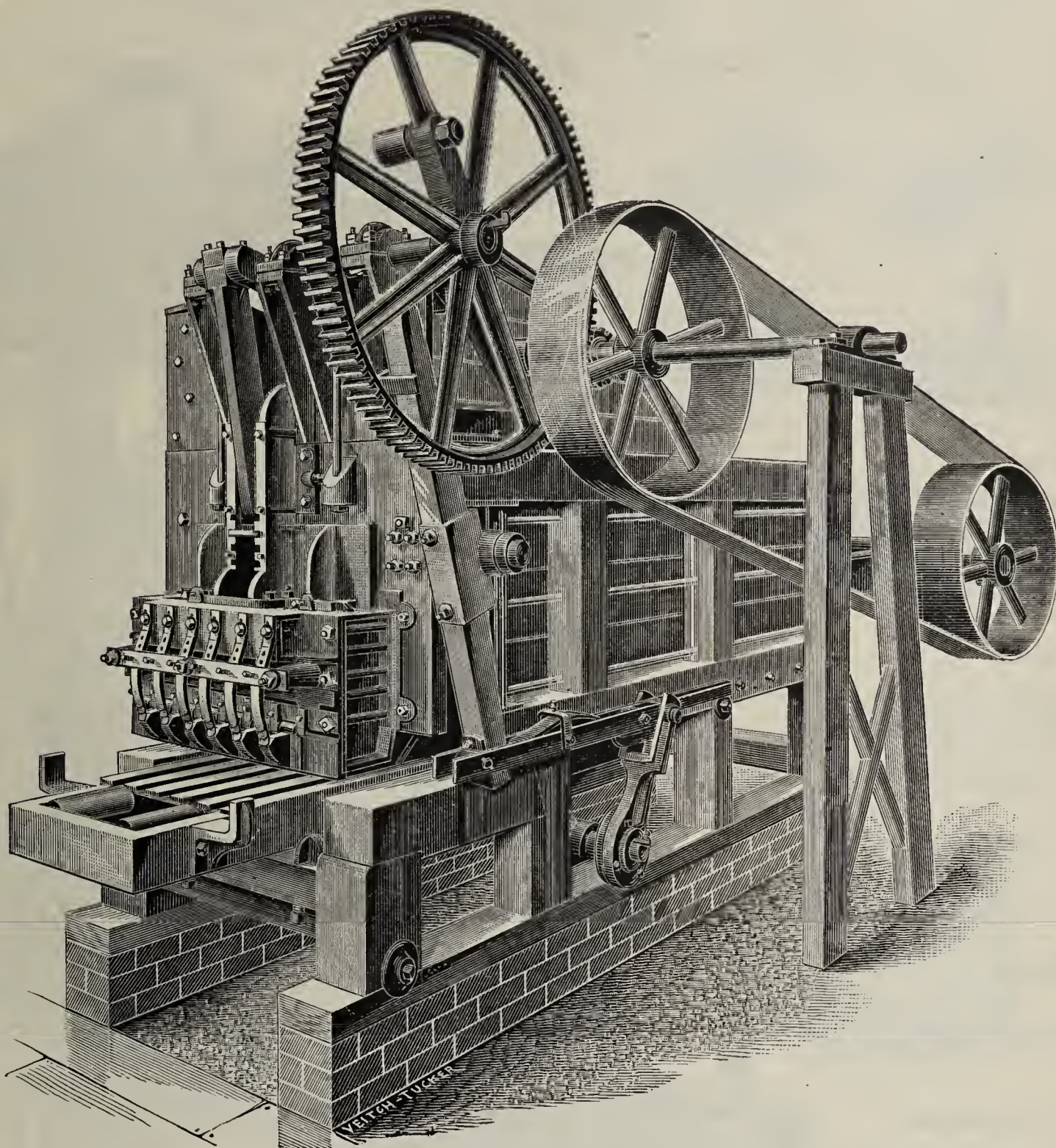
POUNDS.

WILL

OUTWEAR

ANY

OTHER.



**Press Lined With Steel All Round**

MIDDLETOWN, CONN., Dec. 20, 1892.

THE McLAGON FOUNDRY CO.:

GENTLEMEN—In reply to your inquiry as to the working of the "New Haven" Brick Machine the past season, will say that it has operated to our full satisfaction, making 40,000 good brick each day. Although our clay is very strong and tough, the machine tempers the clay perfectly without the aid of either the disintegrator or pug mill.

Yours truly,

TUTTLE BROS.

~~~~~ BUILT BY ~~~~~

**The McLAGON FOUNDRY CO., New Haven, Conn.**

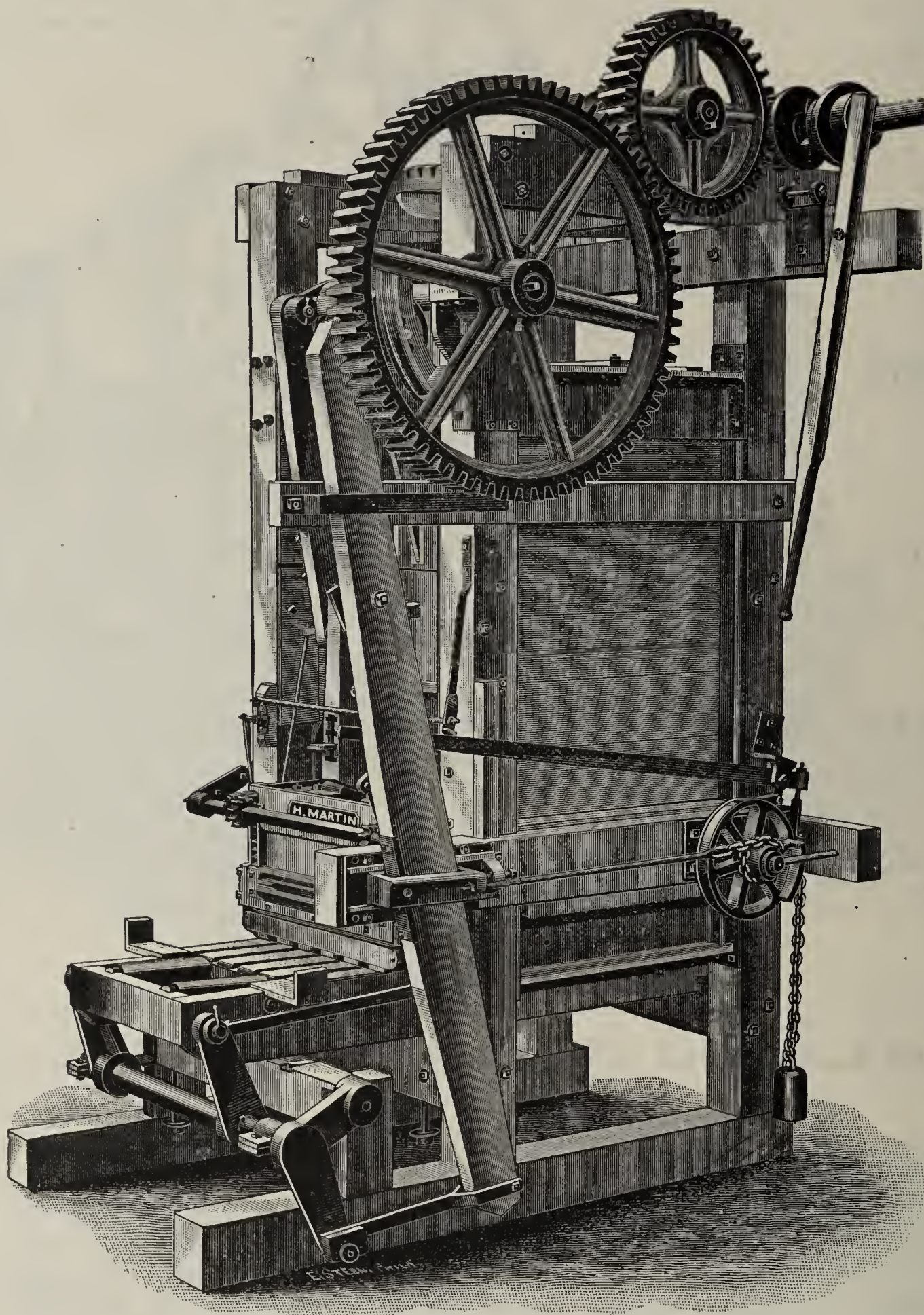


# "MARTIN" BRICK MACHINERY.

DIFFERENT STYLES. DIFFERENT SIZES.....  
BUILT FOR STRENGTH AND DURABILITY.



Plans  
and  
Specifica-  
tions  
of  
Complete  
Plants  
Furnished  
Upon  
Application.



Clay  
Tested  
and  
Reports  
Furnished.  
Machines  
in  
Practical  
Operation  
at  
Our  
Works.



The Henry Martin Brick Machine Manufacturing Co. are so well commended to the  
brick interests of the United States that they are well and favorably known.....

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

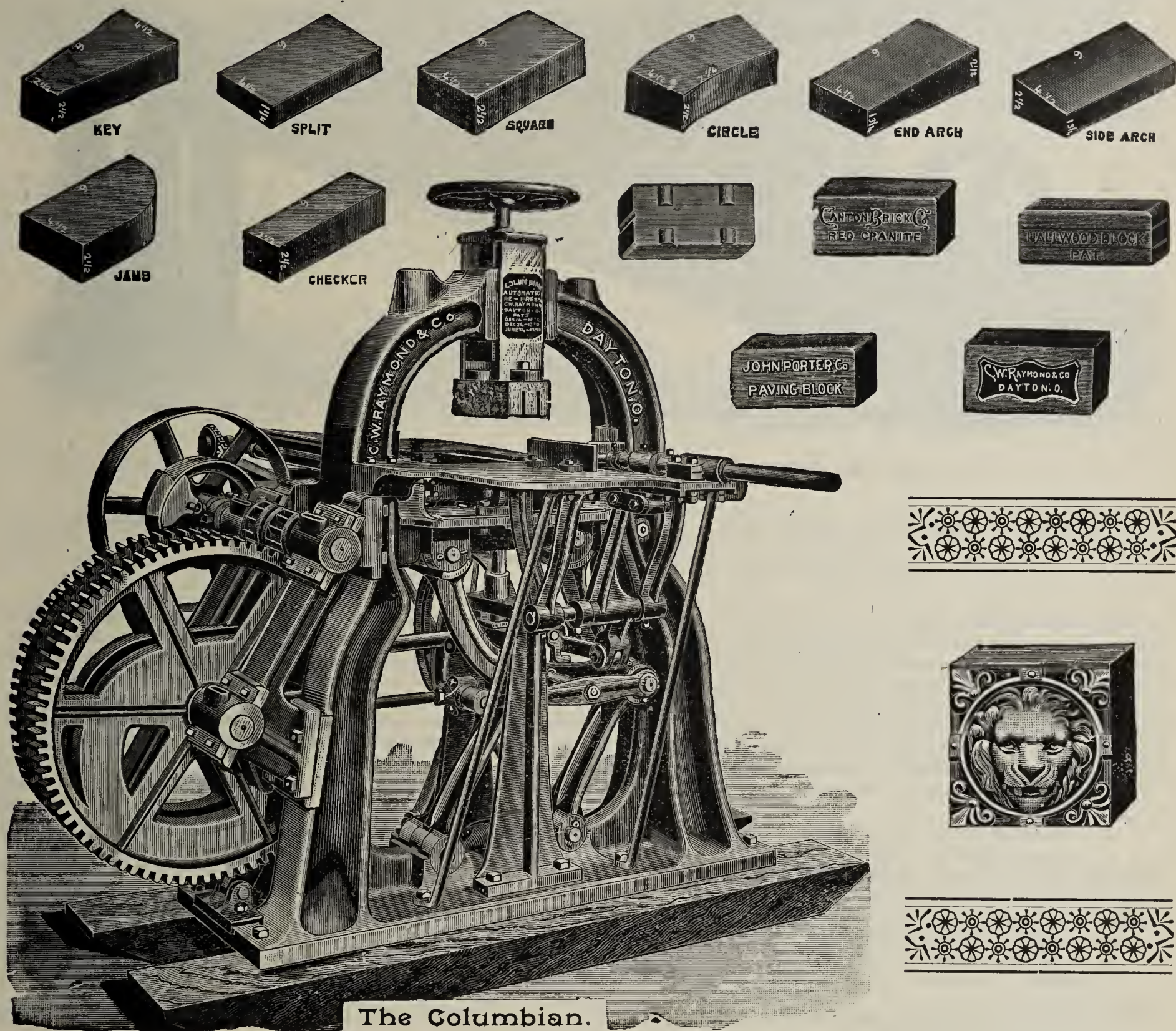
SEND FOR CATALOGUE.  
SOLE MANUFACTURERS OF "MARTIN" PATENTS.

LANCASTER, PA., U. S. A.



# The COLUMBIAN.

❖❖ The One Press Will Press Them All. ❖❖



The Columbian.

**'That Tired Feeling'** which a brickmaker experiences when he has invested \$600 in an experimental re-press and \$2,580.32 in repairs can be entirely obviated by purchasing

**A COLUMBIAN,**

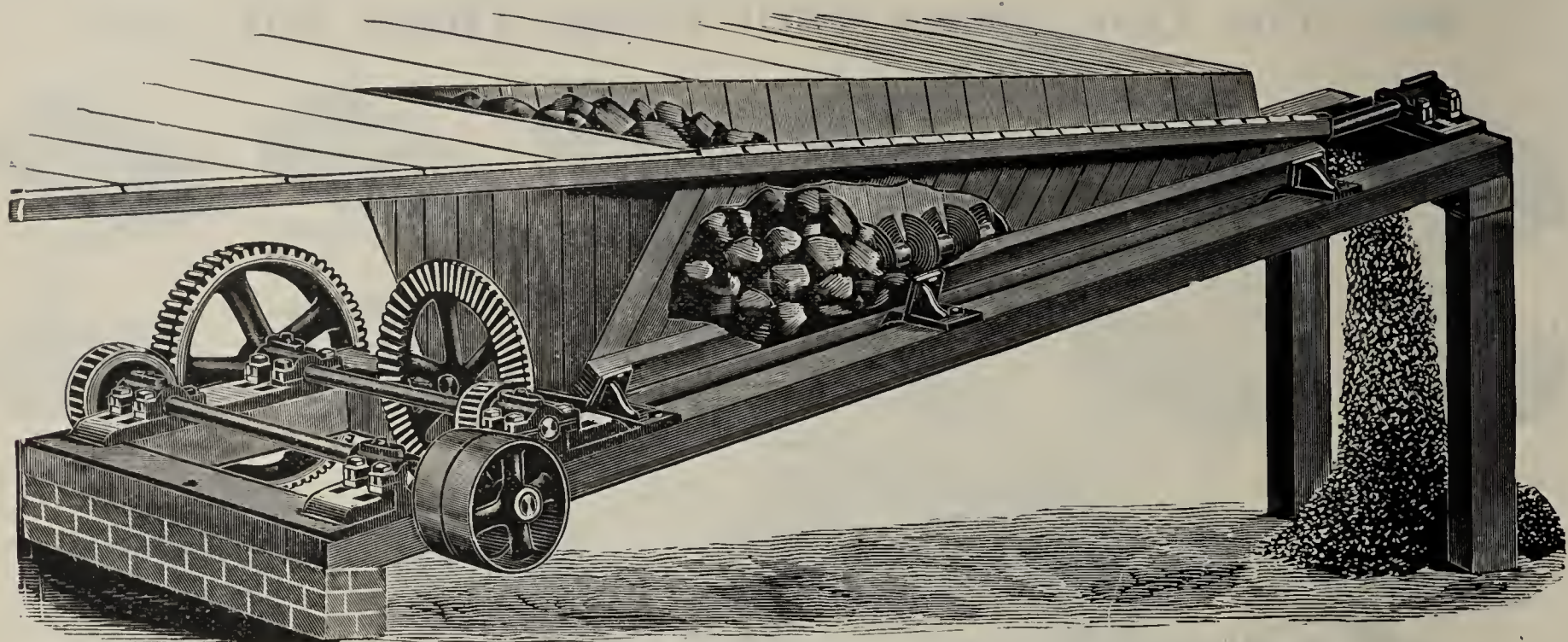
The only press that made a record of its own, hence, the only one that offers a secure investment for a practical brickmaker.

**Manufactured by C. W. Raymond & Co.,**  
Dayton, Ohio.

[Mention the Clay-Worker.]



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

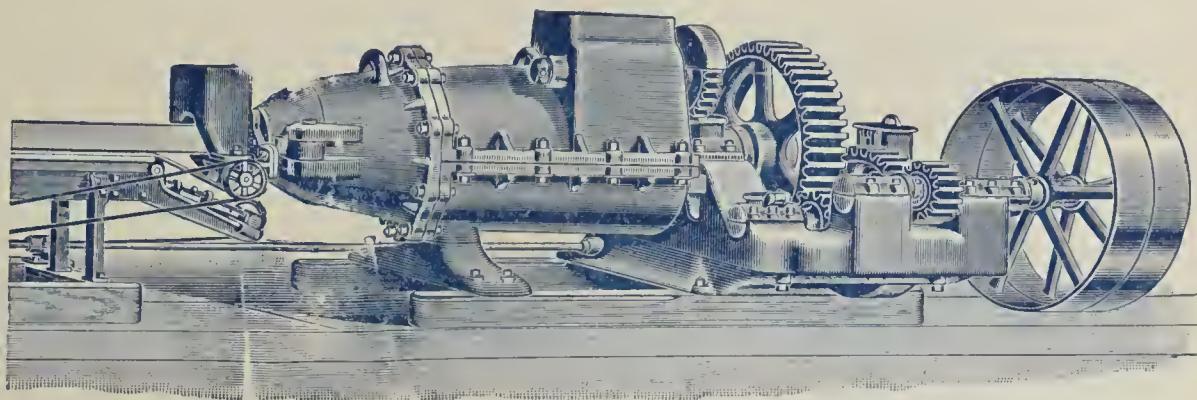
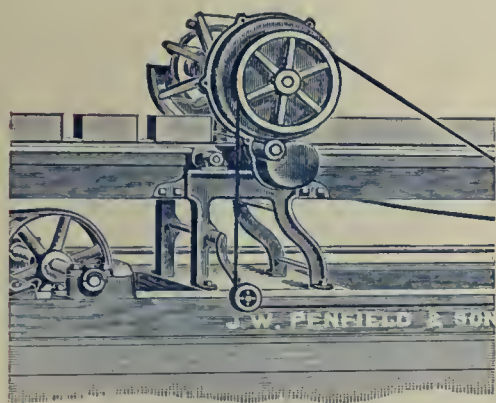
Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.





PENFIELD NO. 15 AUGER BRICK MACHINE, AUTOMATIC CUTTER, ETC.

## Circumstances Alter Cases.

The good physician don't prescribe the same remedy for all complaints. If he did, death would soon cancel his list of patients. On the contrary, he makes a careful examination of each case and can then judge what remedies will prove effective and beneficial.

That's just the way we sell brick machinery. There's as much difference in clays as in patients; hence, we make different machines to correspond. We will carefully examine and test your clay, diagnose the case and prescribe the machine you need. Our facilities enable us to fill the prescription in the most approved manner, and we go farther than the average physician can for we guarantee results. If your machine don't work as represented, you don't pay for it.

We can furnish any style of brick machine you want; if you have clay at all suitable for brickmaking, we have machinery that will work it successfully. Our facilities enable us to make the best; our variety of patterns makes us unprejudiced; we can give you the most satisfactory service.

Send for Catalogues and particulars. We can help you make good brick.

# J. W. PENFIELD & SON,

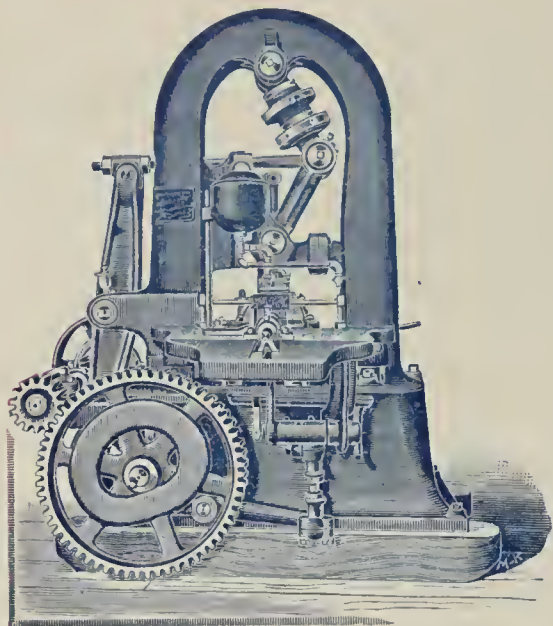
Brick and Sewer Pipe Machinery Manufacturers,

— WILLOUGHBY, OHIO, U. S. A.

J.W. PENFIELD & SON  
CLAY-WORKING  
MACHINERY

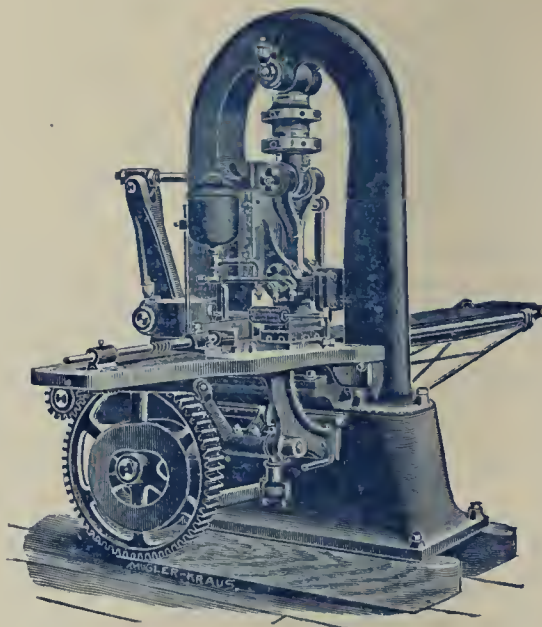
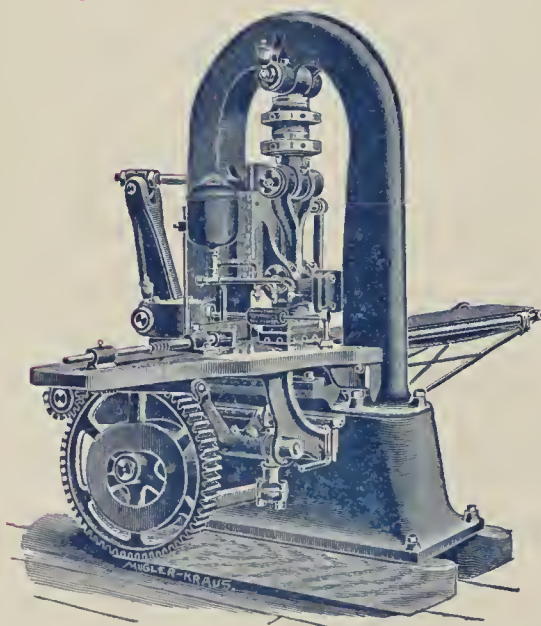


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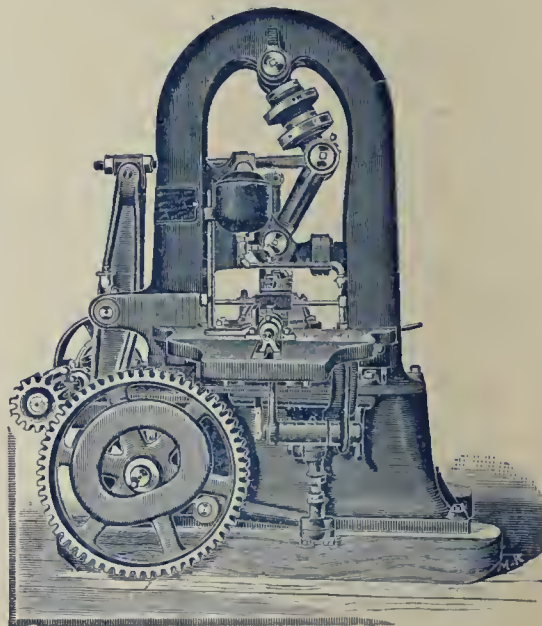
[illegible]

Every time you press a brick by hand, you waste money ; your money would go twice as far by using a Power Press. It will do all a hand press can, and do it easier, quicker and cheaper.

But don't buy a poor power press—it won't pay you. There are different grades of power presses as of everything else. The Penfield is the simplest, least complicated and strongest; will last longest and cost least for repairs; is up-to-date; fully guaranteed. A postal card will bring full particulars. Address J. W. PENFIELD & SON, Willoughby, Ohio.

[illegible]

— PENFIELD — POWER — PRESS —  
 — PENFIELD — POWER — PRESS —  
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# BRICK PALETTES.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

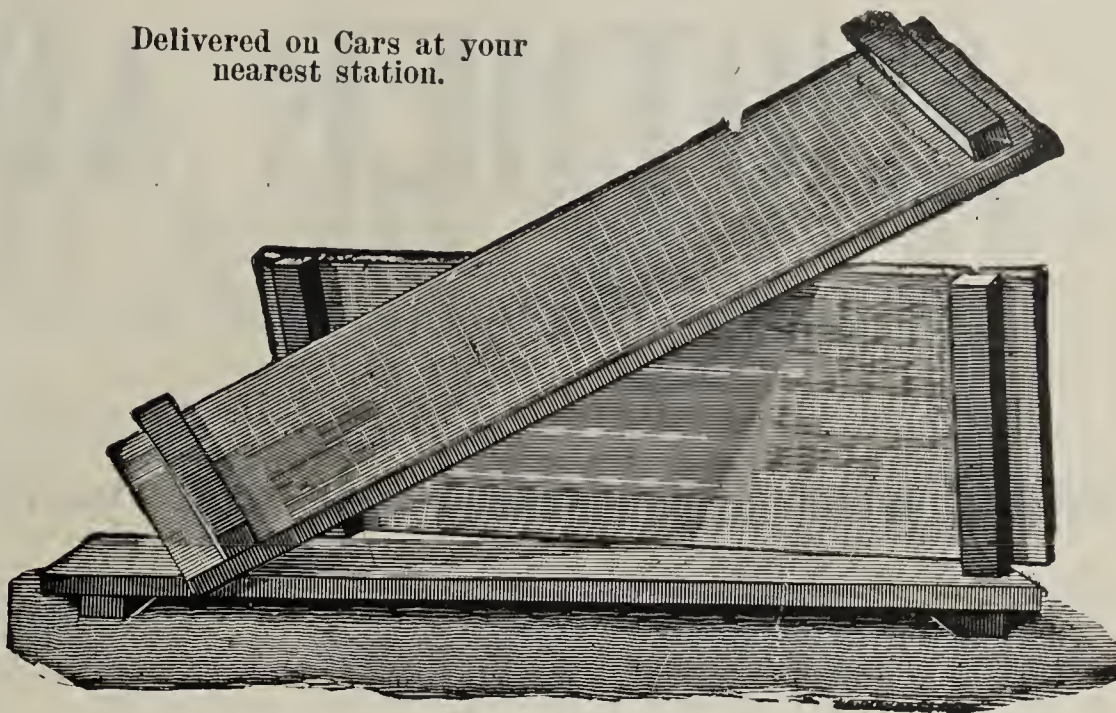
PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

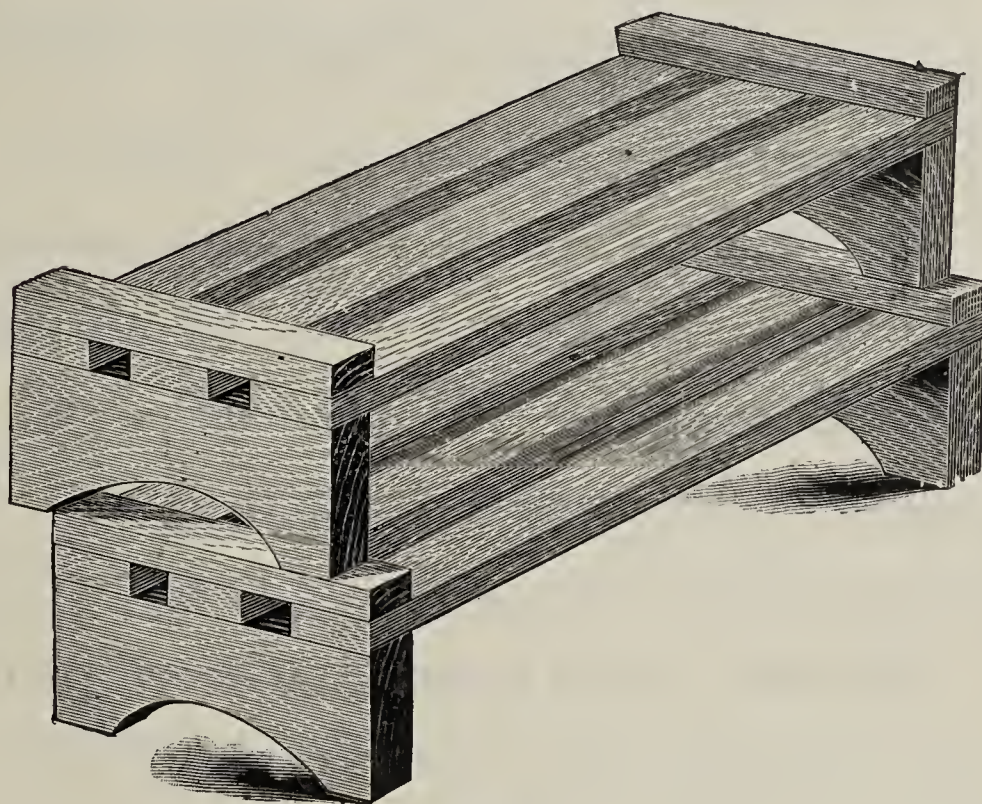
W. B. MERSHON & CO.,

East Saginaw, Mich.

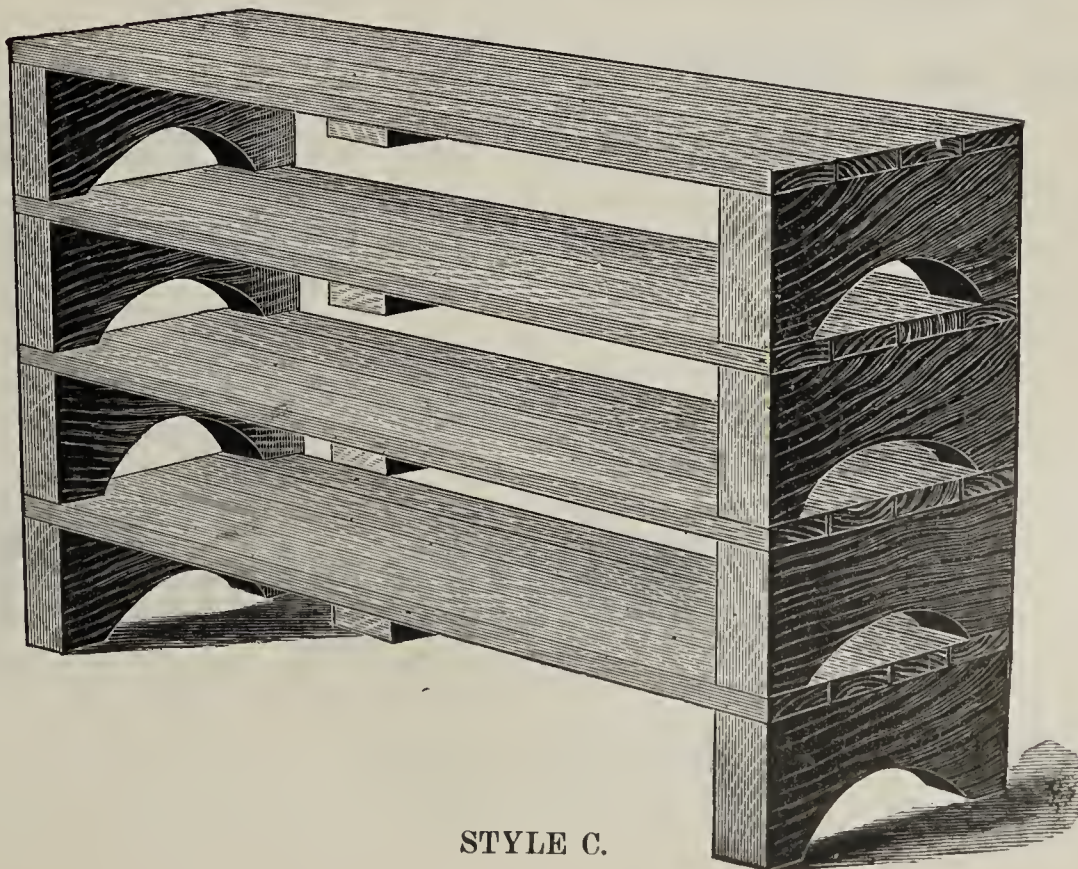
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.



STYLE C.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.

[Mention the Clay-Worker.]



## OUR SLOGAN

## "GO AND SEE IT!"

All Brick Machine Manufacturers seem to think they have the best machine.

They all say so anyway.

We think so too.

There are now nearly 50 "Monarchs" in operation.

Ask us where the nearest one is,

Then go and judge for yourself.

## ISN'T THAT COMMON SENSE?

THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO.

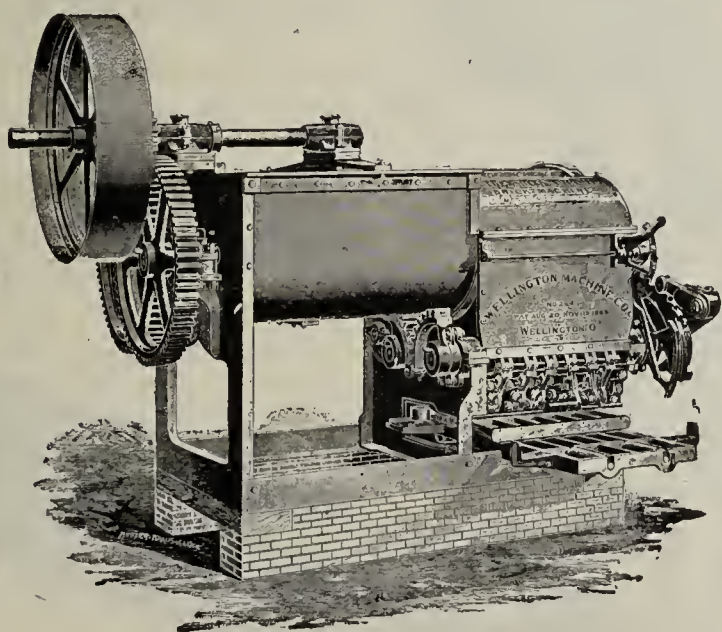
PAINESVILLE, O., Nov. 1, 1892.

GENTLEMEN:—The "Monarch" Machine we bought of you this summer has made a much better brick than we ever made before. We send you some samples, and you will find them as good as many repressed brick. It runs with a good deal less power than our Quaker and Pug Mill used to take, and it also tempers the clay more thoroughly than the other outfit did.

There is no trouble about the pressure, for it moulds the brick as stiff as possible, and then we had two notches out of seven in reserve. We greatly like the fact that the press is entirely in the mud, for there is no leakage or wear possible in that part of the machine.

After giving it a thorough trial, we have accepted it and can recommend it as the best we ever saw or know anything about.

THOMPSON BROS.

A Brickyard Conversation  
Where a Monarch is used

OWNER TO VISITOR:—"There it is! You did well to come and SEE it, for that is the only way its advantages are fully appreciated. When first I read the description of it, I had a kind of a hazy, dreamy impression that it contained some vital improvements, but like yourself I did not realize the immense money value to the user until I actually saw it in operation."

The Wellington Machine Co.,

Wellington, Ohio.

"The procession is passing by." Get in it.

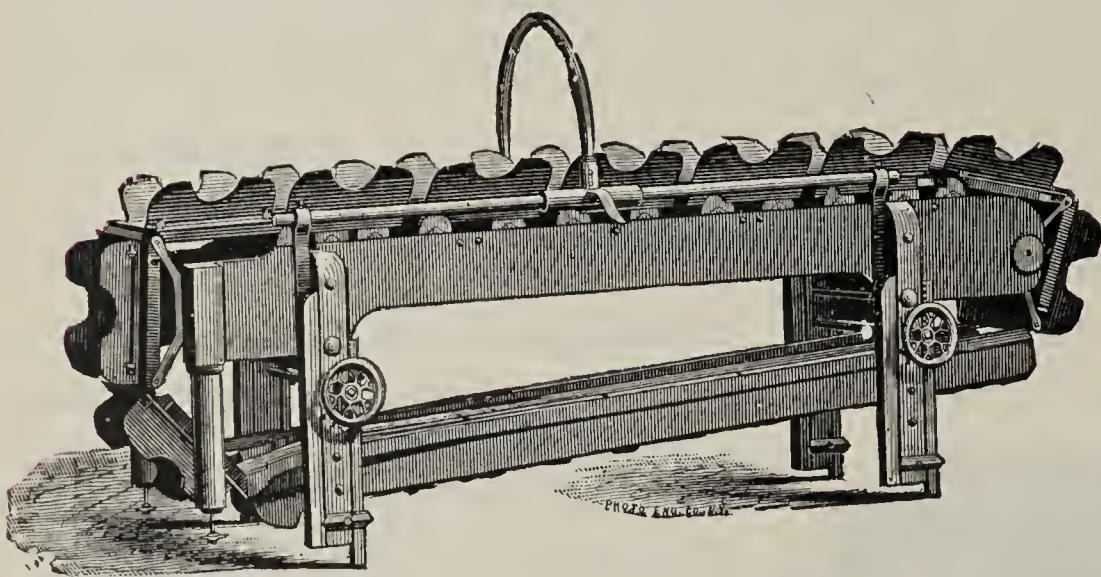
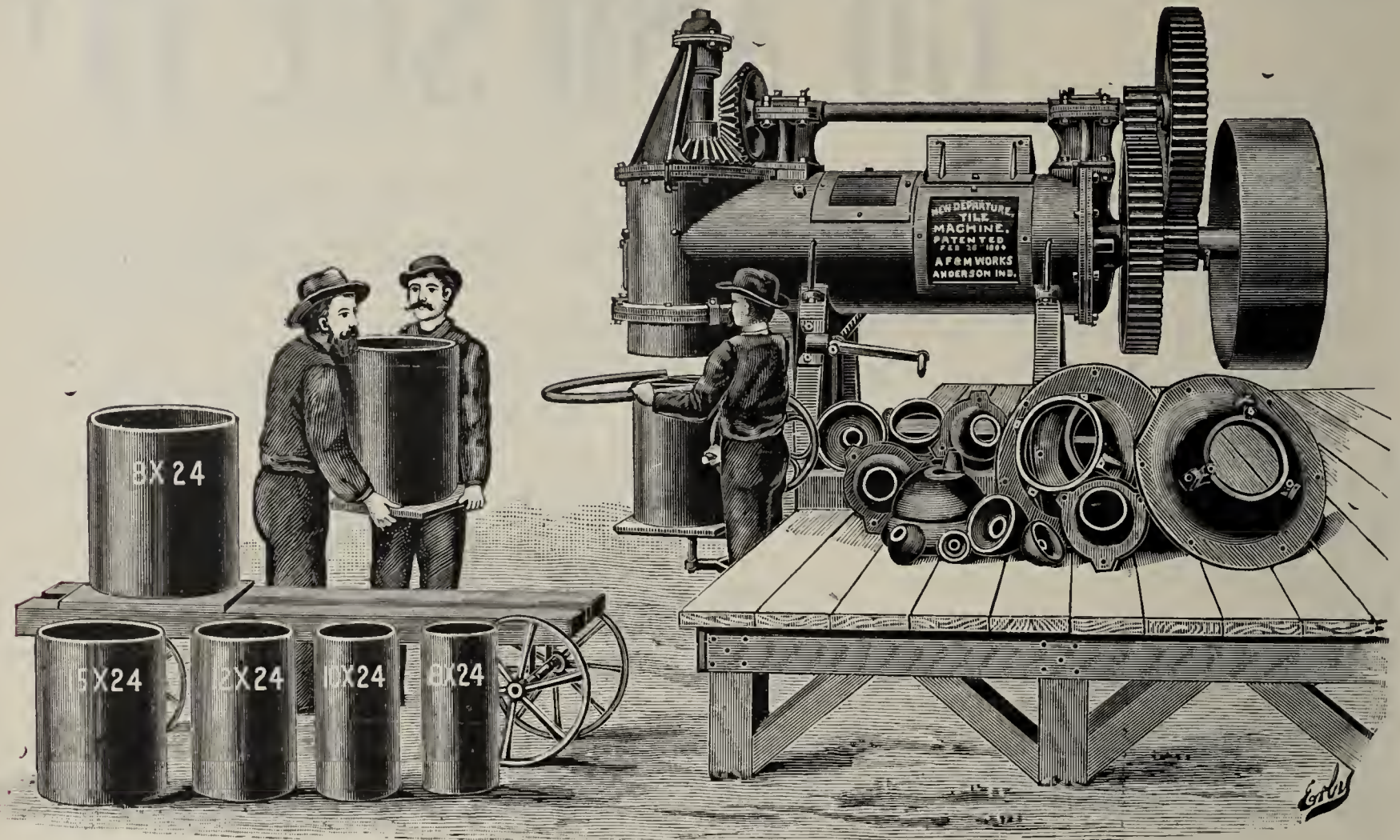
Watch this page next month.....  
.....Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N.Y. January, from Utica, N.Y. February, from Pittsburg, Pa. March from Toledo, O. April from Akron, O. May from Mansfield, O.



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

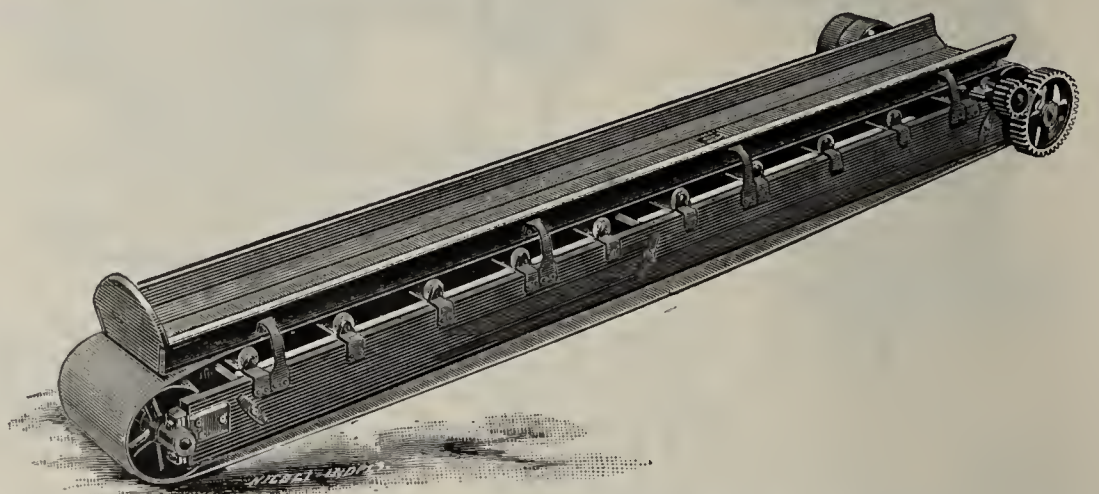
[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

**Down Delivery for Large Tile.**

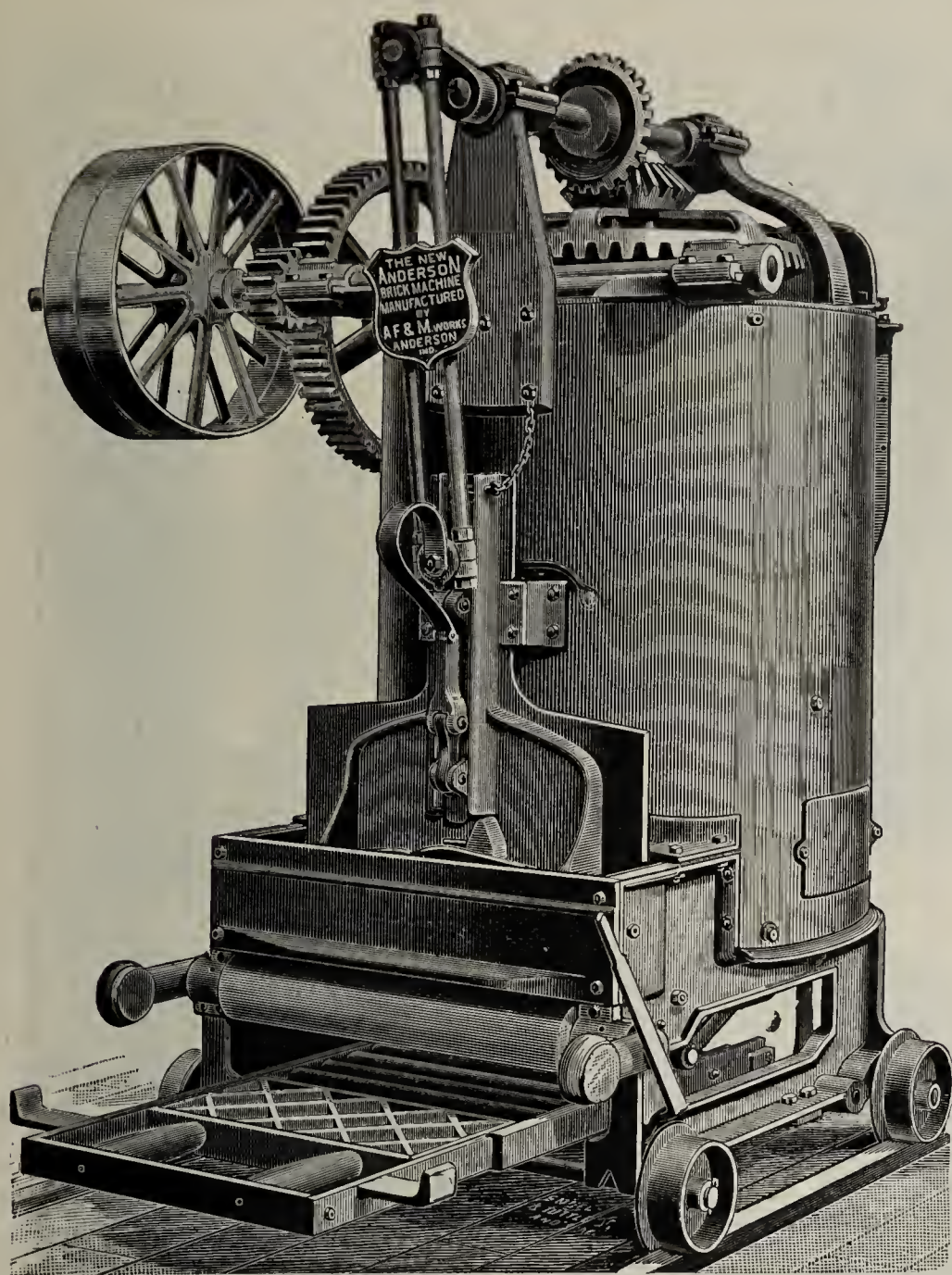
**Side Delivery for Small Tile.**

We are the exclusive manufacturers of the **POTTS' PATENT** **PRECEDING TILE TABLE.**



**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**



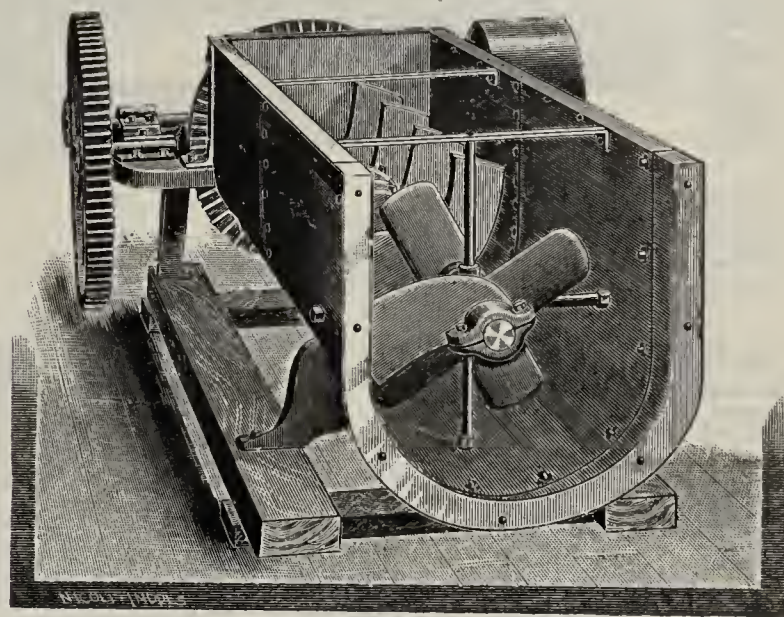


## THE New Anderson Brick Machine

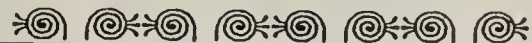
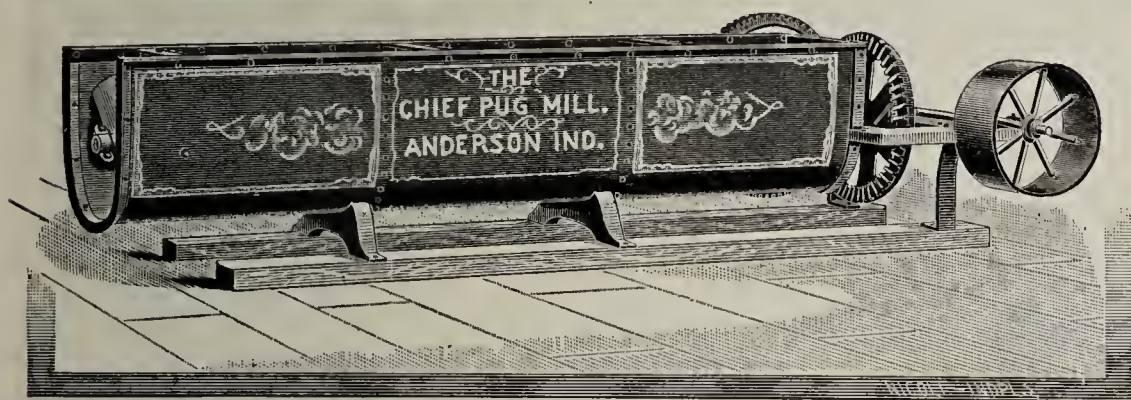
MANUFACTURED BY

THE Anderson Foundry & Machine Works  
ANDERSON, IND.

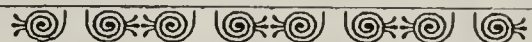
THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



End View of Pug Mill.



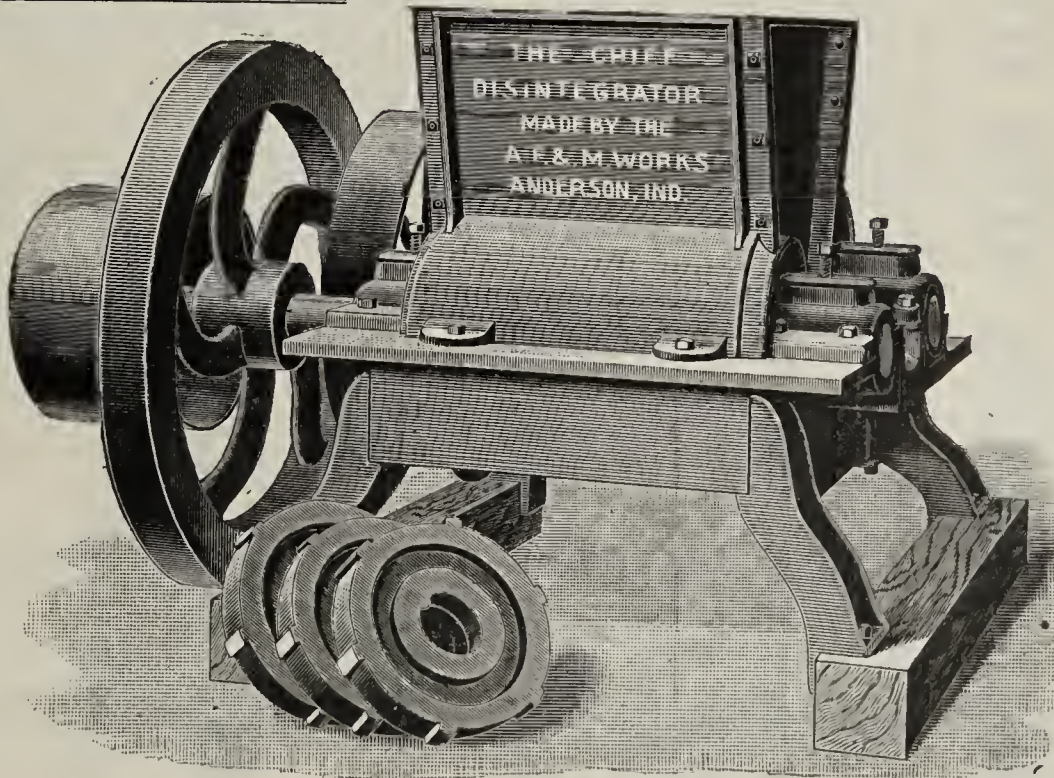
We also manufacture the  
**NEW IMPROVED CHIEF BRICK MACHINE.**



## The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 1/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

**PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.**



[Mention the Clay-Worker.]

Correspondence Solicited.



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

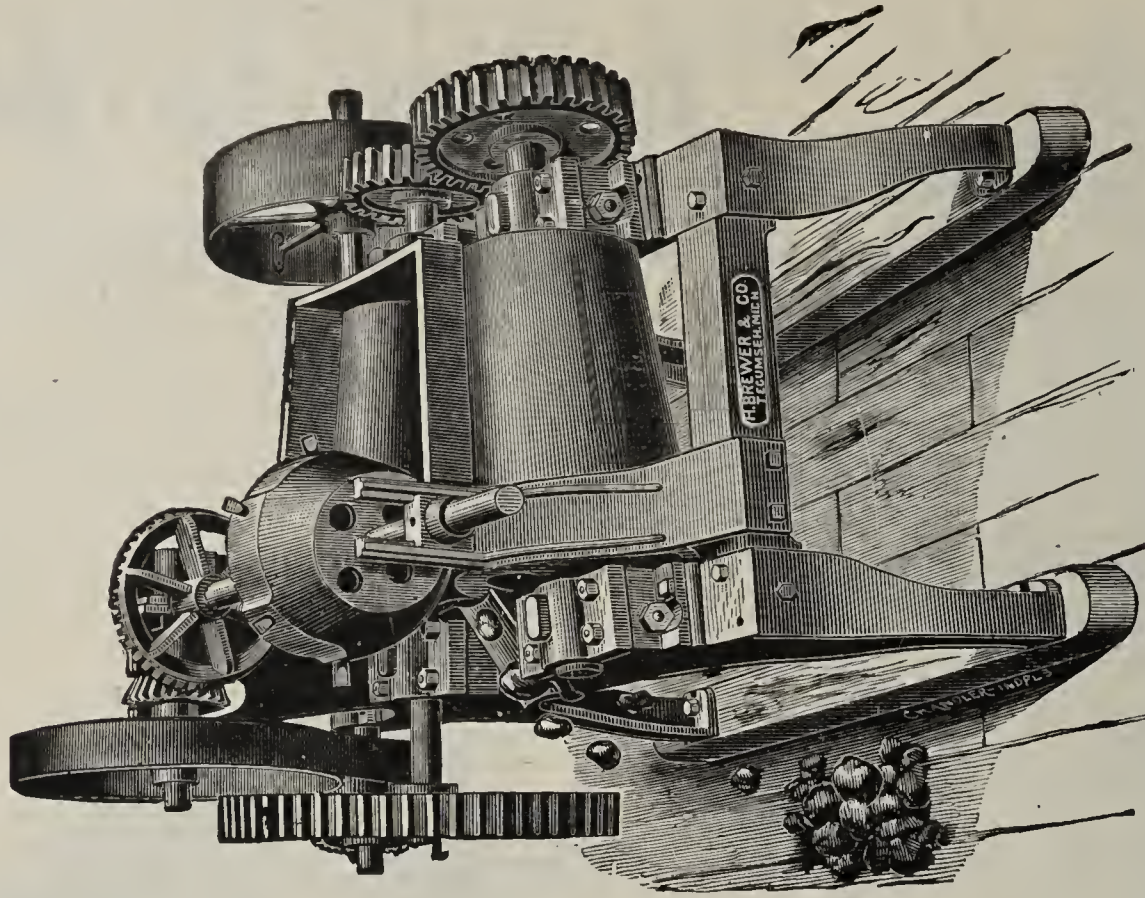
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

### H. BREWER & CO.,

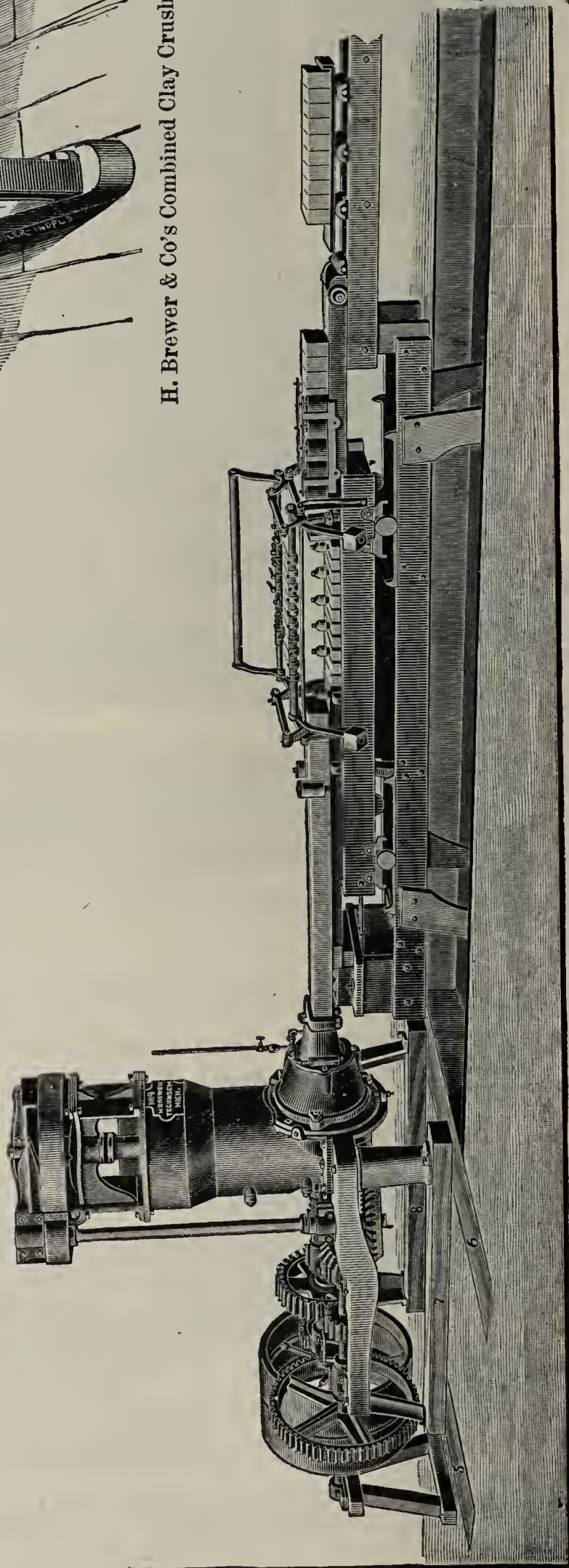
### Tecumseh, Mich.

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.

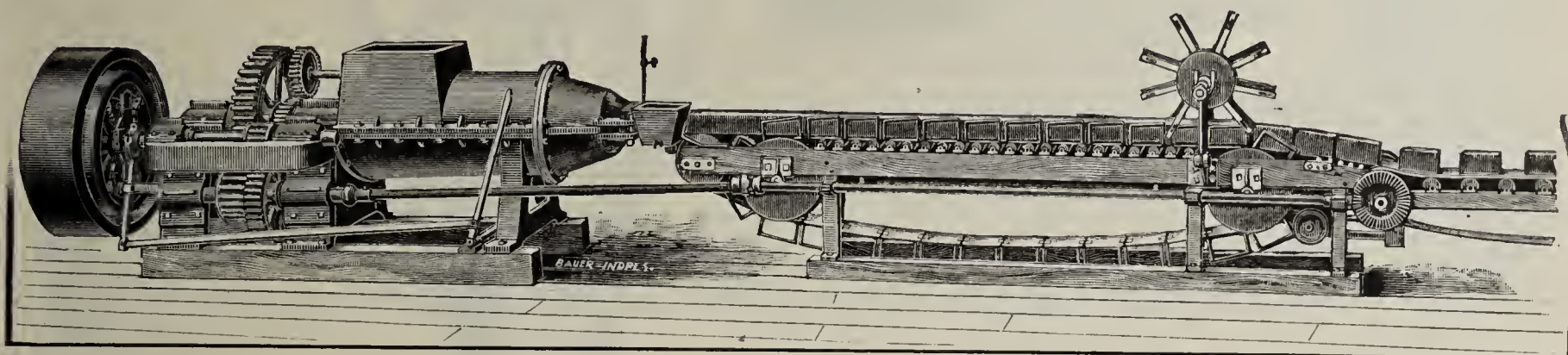




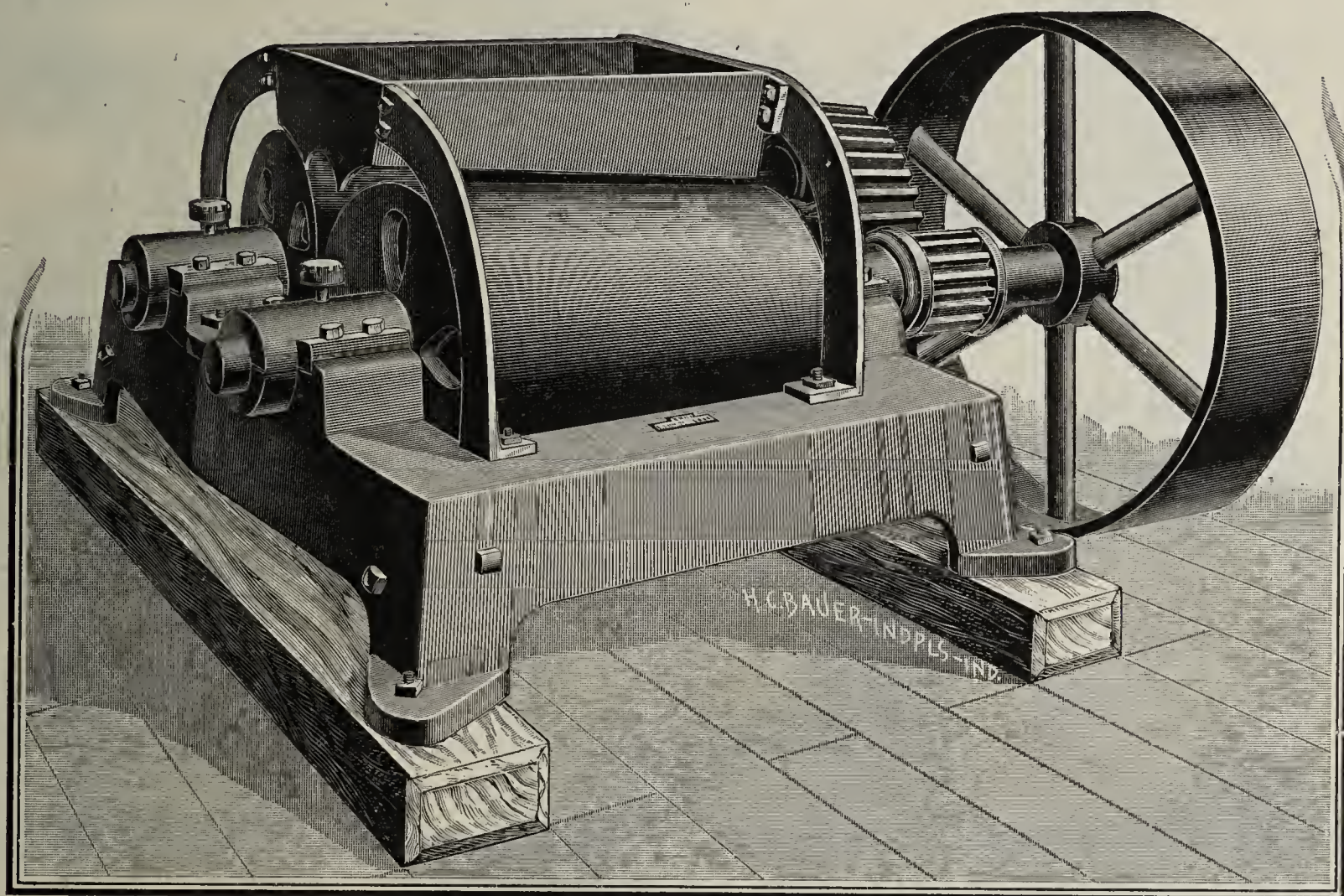
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

[Mention the Clay-Worker.]

**Decatur, Ill., U. S. A.**

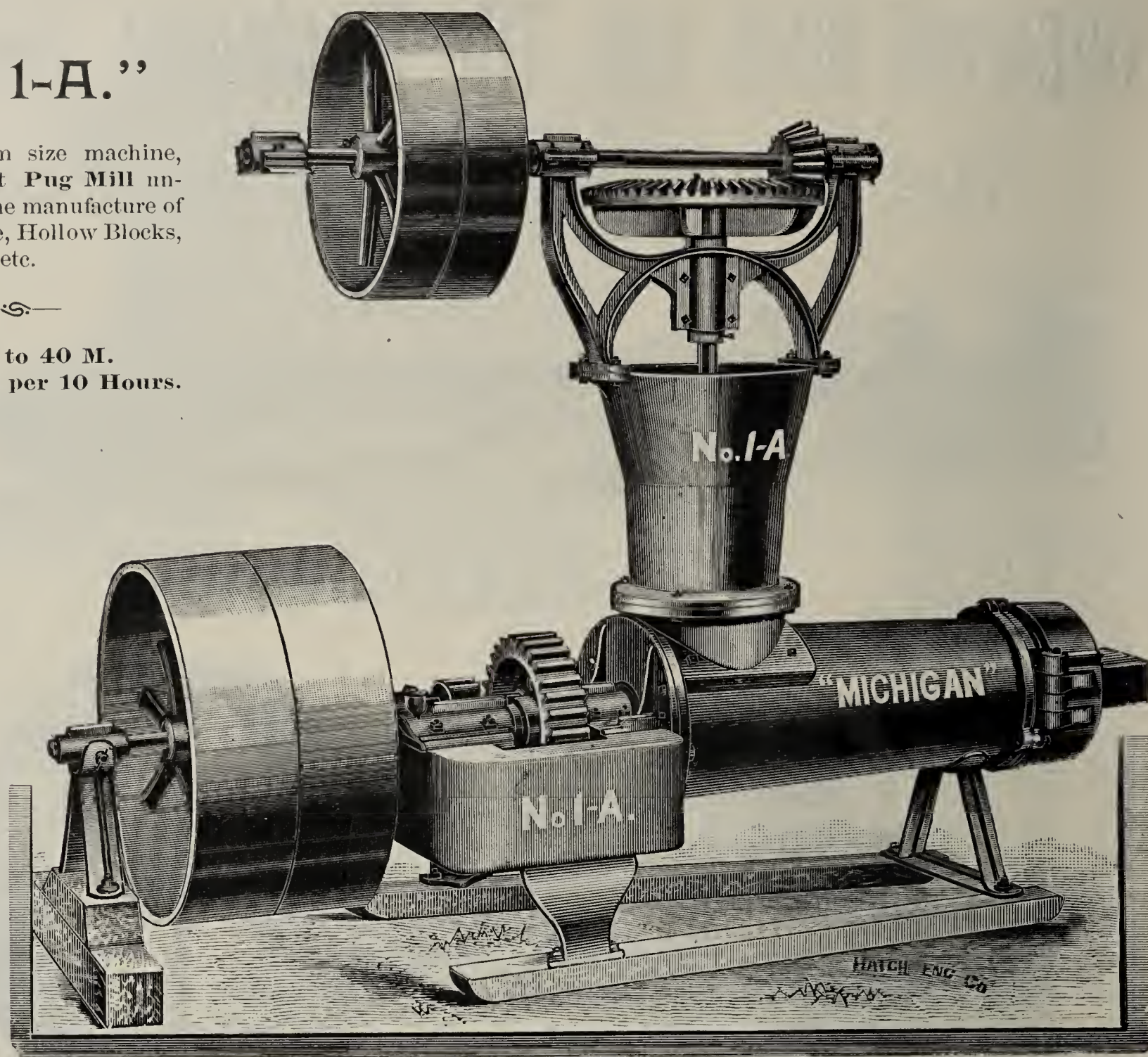


## "No. 1-A."

Our medium size machine,  
with Upright Pug Mill un-  
excelled for the manufacture of  
Brick and Tile, Hollow Blocks,  
Fire Roofing, etc.

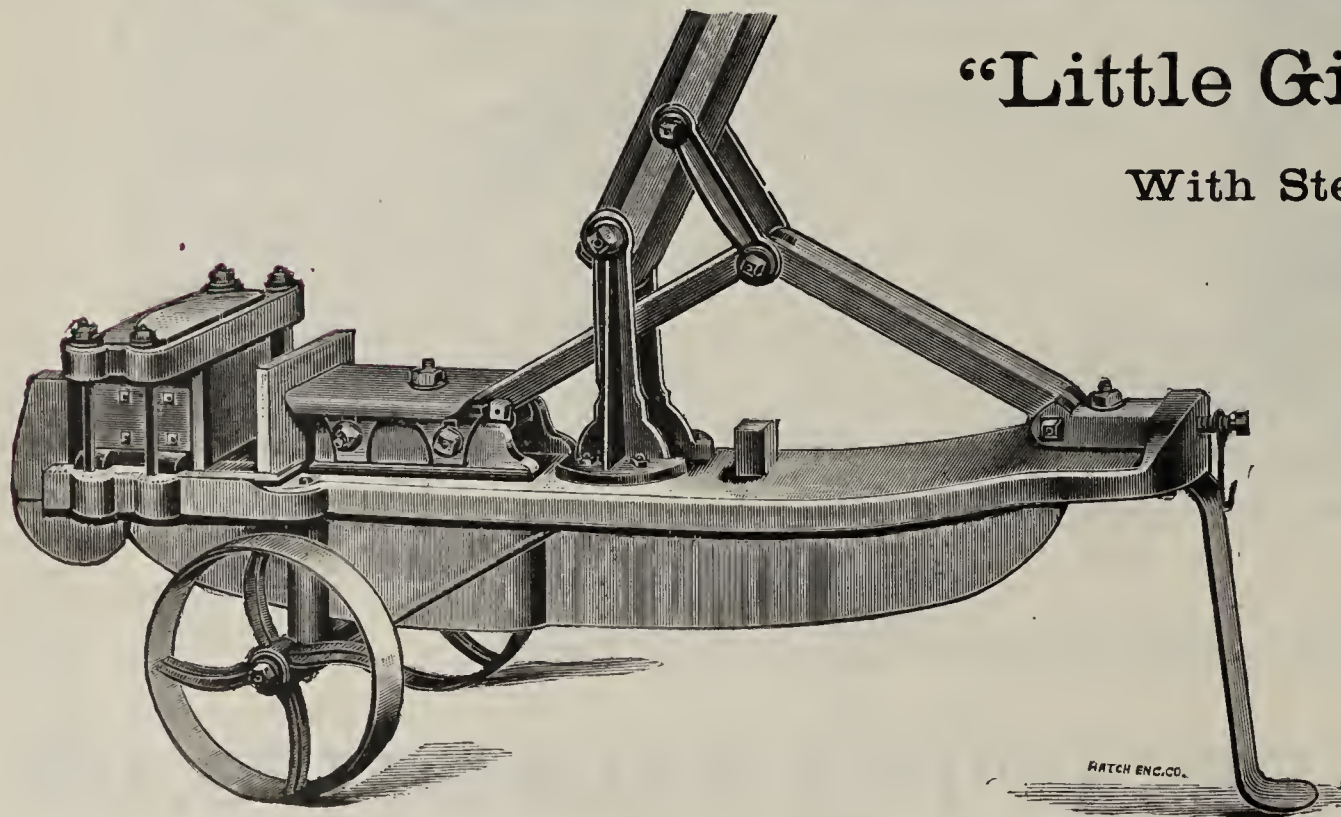


Capacity 25 to 40 M.  
Brick per 10 Hours.



## "Little Giant" Re-press

With Steel Lined Die.



The strongest, most accurate  
working and largest capacity  
hand Re-press on the market.  
Over 1,500 in use. Price rea-  
sonable.



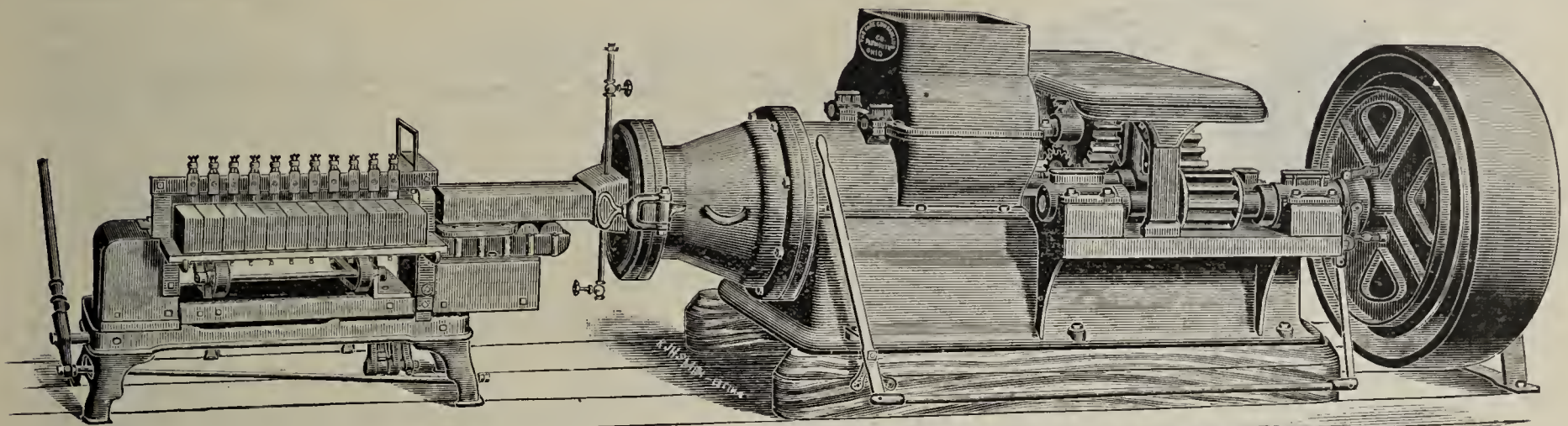
Write for anything you may  
want in the line of Claywork-  
ing Machinery, and do not for-  
get to tell us to send our 1893  
Catalogue.

**MICHIGAN BRICK & TILE MACHINE CO., Morenci, Mich.**

Manufacturers of a Full Line of Clayworking Machinery.



# SAVE YOUR MONEY BY BUYING ❖ THE BEST.

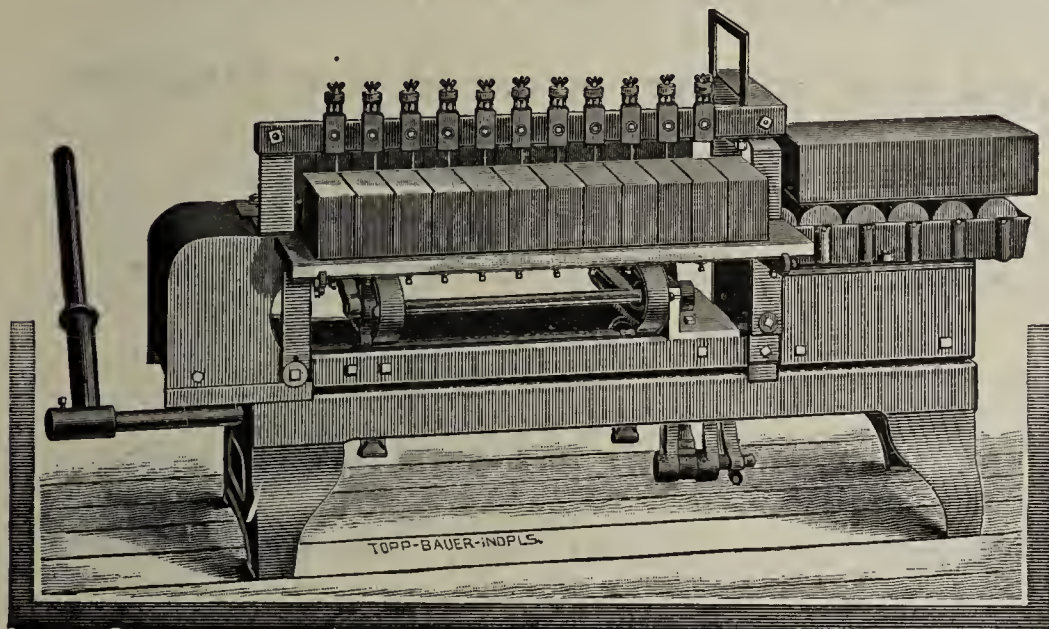


## THE "PLYMOUTH"

Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and pugging device.

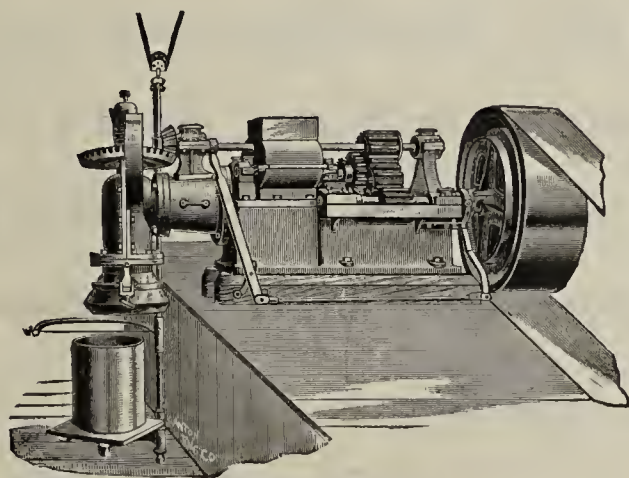


We build our Machines  
for

STRENGTH

... and ...

DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

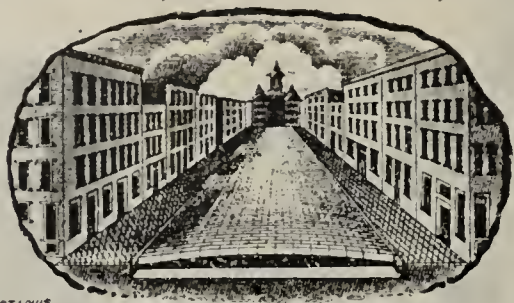
It will Tell You  
All About It.

# The Fate-Gunsaulus Co.,

PLYMOUTH, OHIO.

[Mention the Clay-Worker.]



*W. A. Doyle, President.**M. D. Hutton, Secy. & Treas.**Fort Smith Paving Brick and Fire Clay Co.*

WOODWARD &amp; TIERNAN PATG. CO. ST. LOUIS.

*Factory: Beckel, Birnie & Gray Streets.**Fort Smith, Ark. April 24th. 1893. 189*

The Frey-Sheckler Co.,

Bucyrus, O.

Gentlemen:-

We have been using two of your "Eagle" represses for something over thirty days, and wish to express our entire satisfaction with them.

Before placing our order we examined carefully the merits of the various steam presses on the market, and liking the general construction of yours best, bought from you with the proviso that the presses should fulfill all of your representations. We are pleased to say that they have done so.

The machines are simply and durably built and have run with uniform ease and smoothness, putting a very heavy pressure on the brick.

They have been making from 20 to 22 strokes per minute, each machine repressing from 2400 to 2880 brick per hour. We can sincerely recommend them to the trade.

Very truly yours,

FORT SMITH PAVING BRICK &amp; FIRE CLAY CO.,

BY

*M. D. Hutton*

SECY &amp; TREAS.

**The Frey-Sheckler Co.,**HENRY STUCKEY, Chicago Agent,  
Gault House, or 117 Builders' Exchange.Manufacturers of Clay-  
working Machinery,**Bucyrus, Ohio, U. S. A.**



E. RODGERS, { PRESIDENT,  
TREASURER,  
GEN. MANAGER

H. T. BURNAP, SECRETARY.

C. H. CHAMBLIN, SUPERINTENDENT.

DIRECTORS.

WM. ELIOT SMITH,  
EDWARD RODGERS,  
BALSER SCHEISS,  
RICHARD GARSTANG,  
HENRY T. BURNAP.

THE ALTON PAVING, BUILDING  
—AND—  
FIRE BRICK COMPANY.

OFFICE:  
120 West Second Street,  
ALTON, ILL.

WORKS AT  
NORTH ALTON, ILL.

Alton, Ill., May 16<sup>th</sup> 1893

Frey, Sheckler, Co.  
Bucyrus Ohio

Gentlemen

In regard to the 9' Dry  
Pans purchased from your Co. would say that  
they are giving us perfect satisfaction.  
We are surprised at how much wet clay  
we can get through one of them: and if  
hard dry shale there seems to be no limit  
to the amount they can handle. I am  
satisfied we can put through one of your  
9' pans with  $\frac{1}{16}$ " even sufficient dry  
shale from bank to make seventy  
five thousand bricks: and for strength  
durability and workmanship we know  
of none better

Yours

Edward Rogers

HENRY STUCKEY, Chicago Agent,  
Gault House, or 117 Builders' Exchange.

THE FREY-SHECKLER CO.,

Manufacturers of Clayworking Machinery,  
BUCYRUS, OHIO, U. S. A.

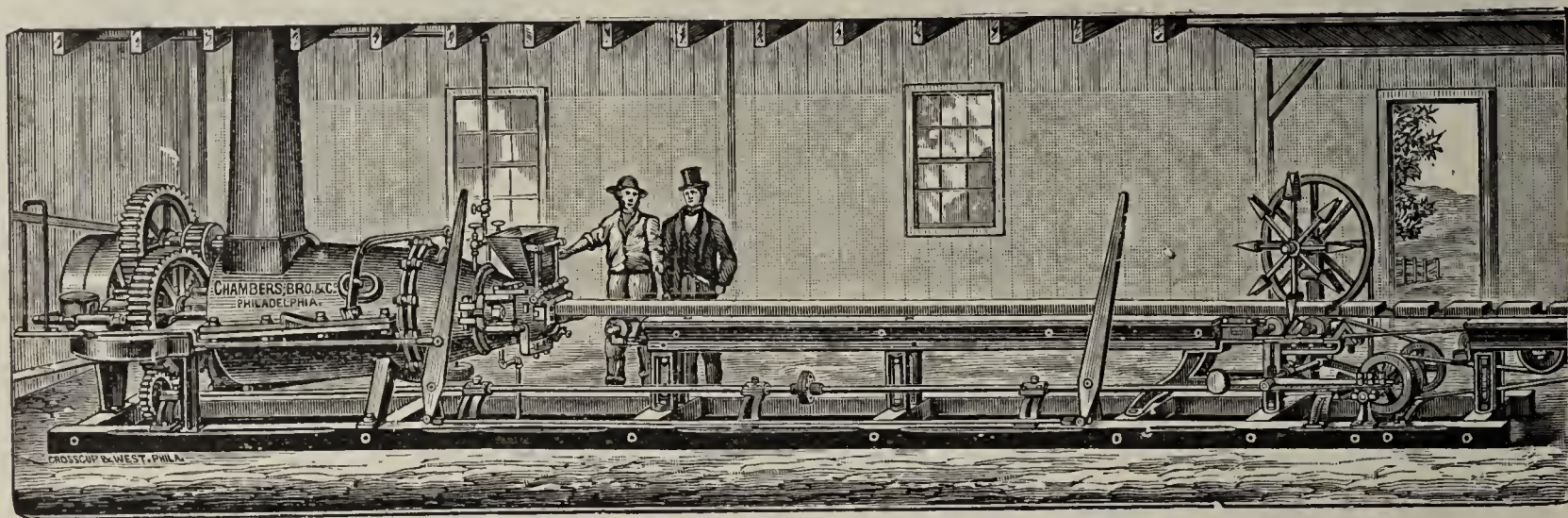


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



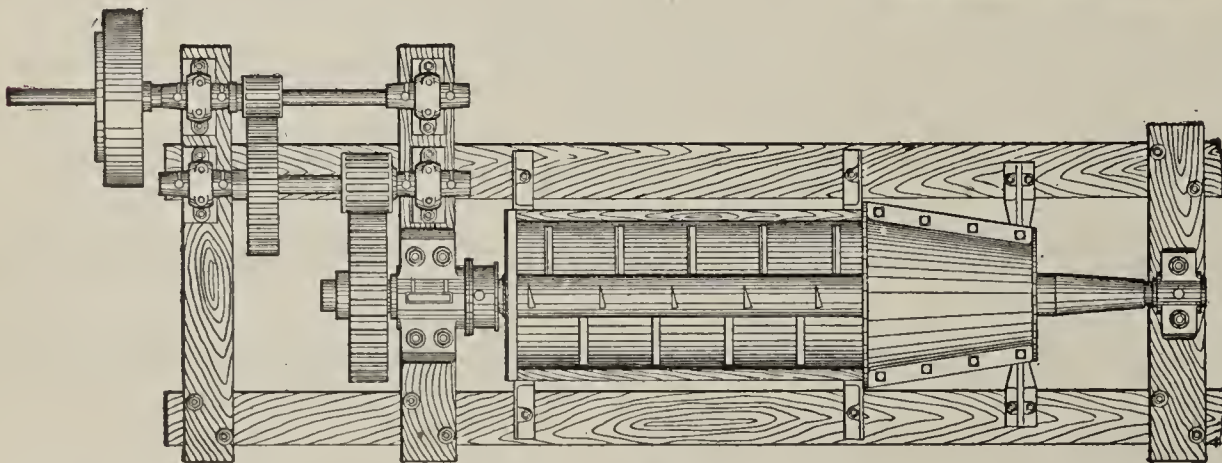
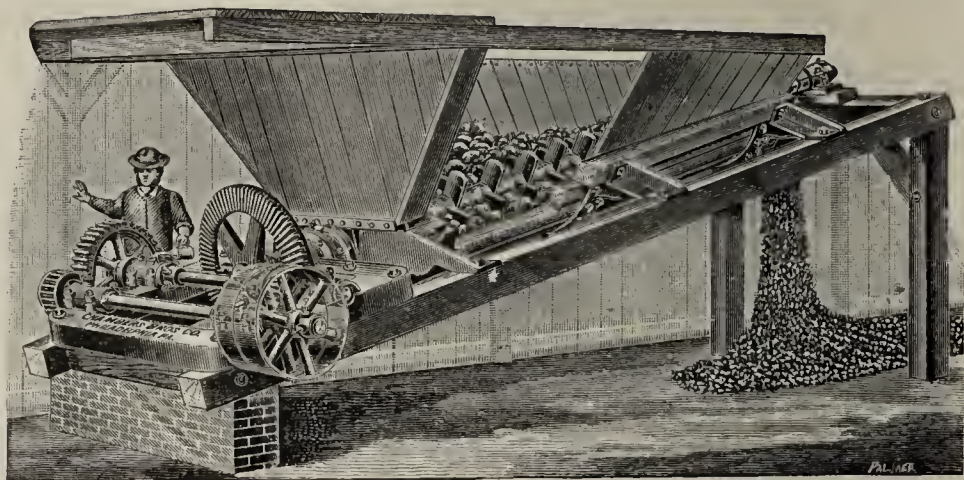
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

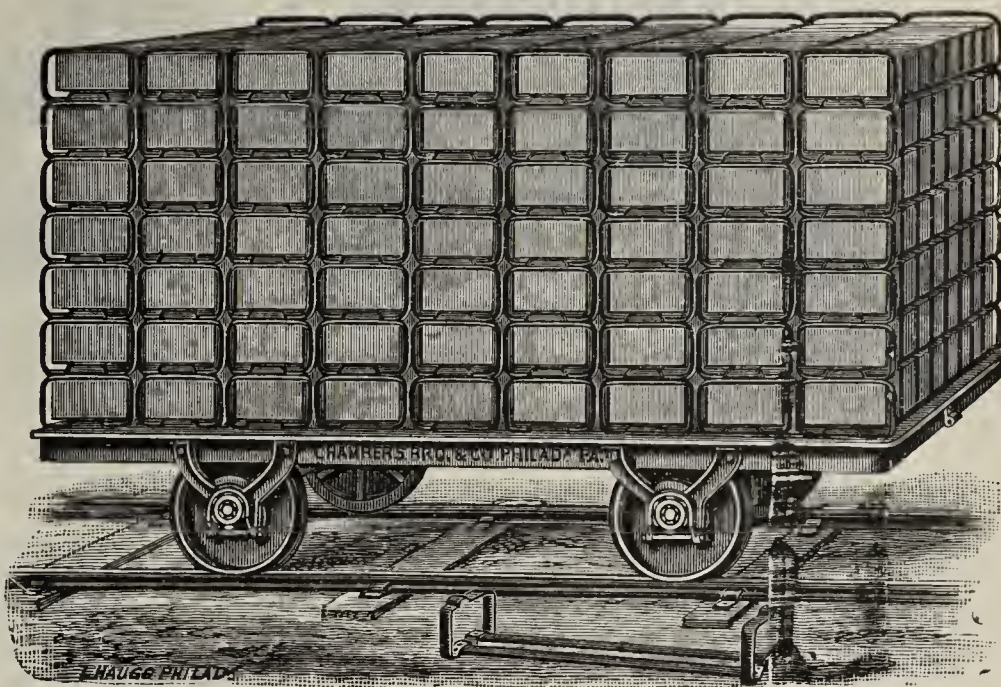
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

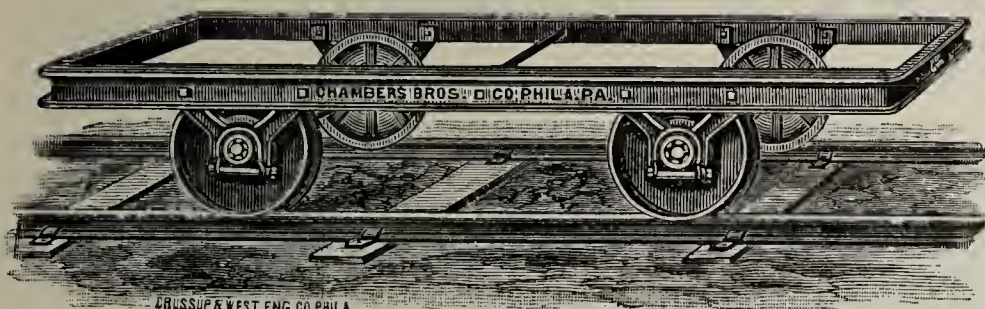
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

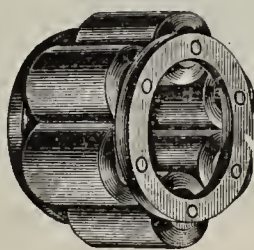


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

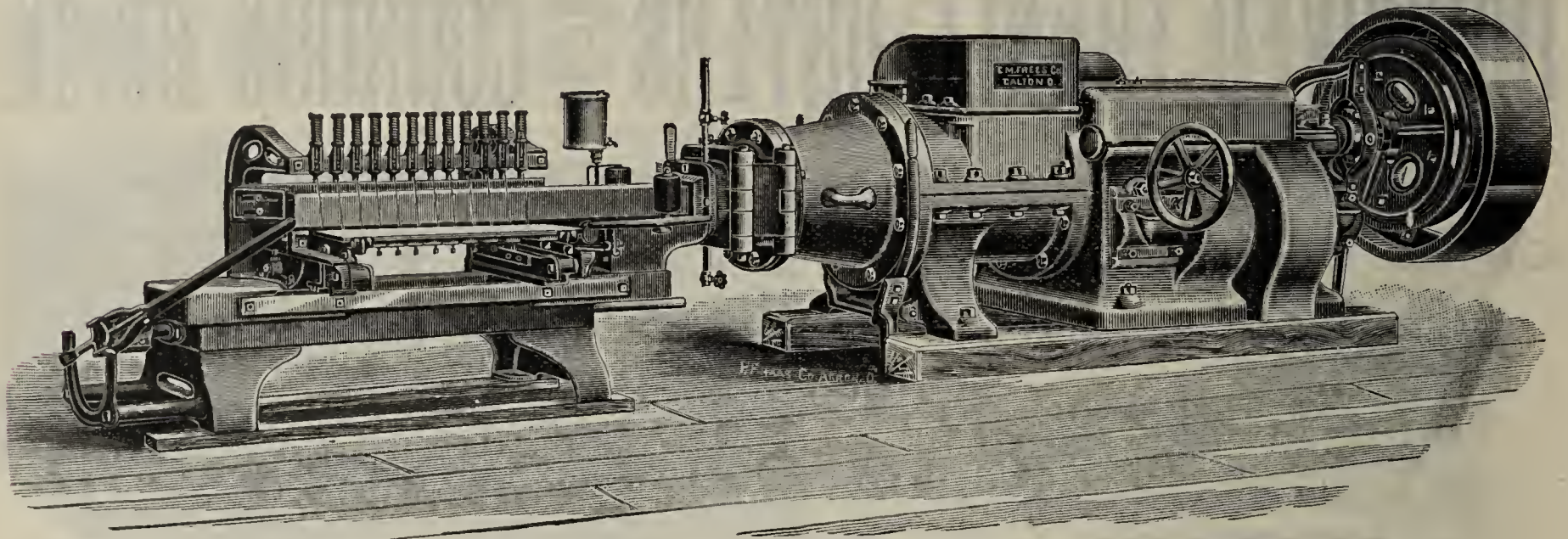
See ad. on front cover page.

Mention the Clay Worker



# IMPROVED BRICK MACHINERY.

WE recognize the fact that the trade grows more exacting, and the demand is for better brick and better machinery. Our business is to supply the latest and most improved machinery which will produce the **best** quality of brick at the **lowest** cost.

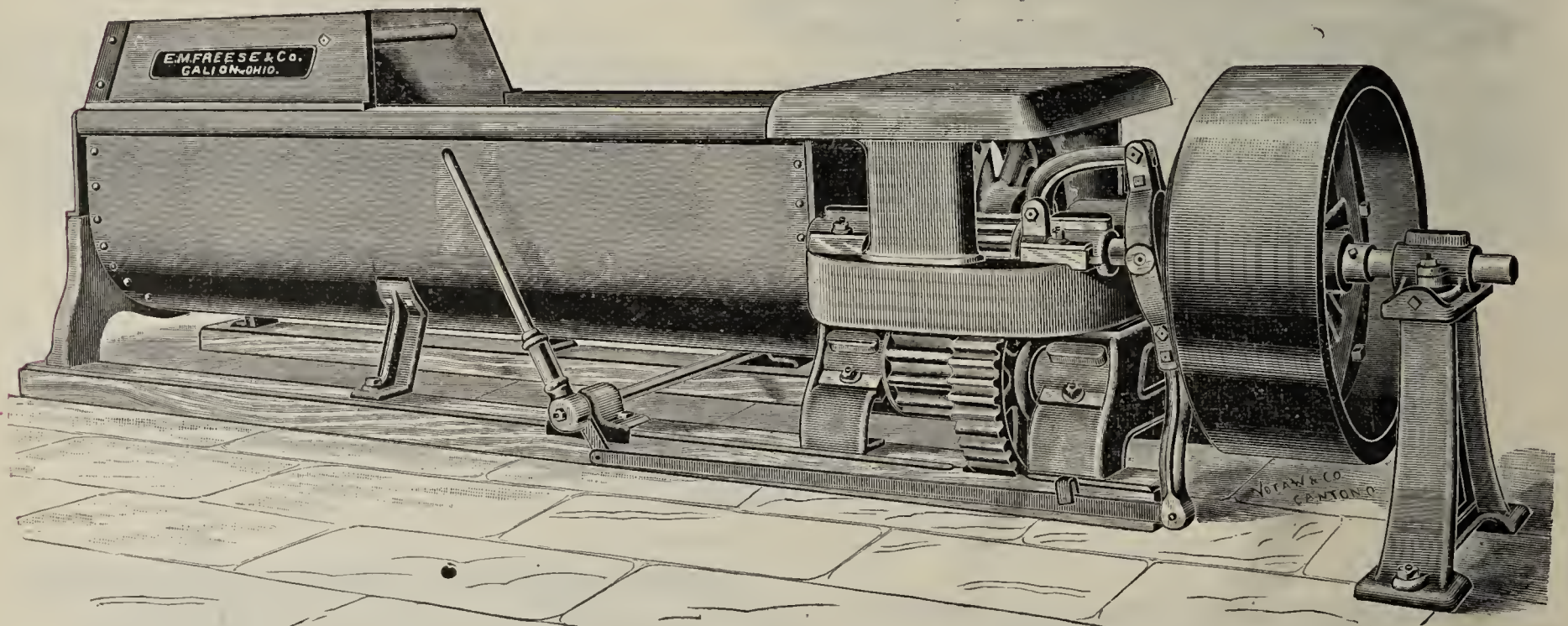


"MAMMOTH JUNIOR" OHIO BRICK MACHINE.

This machine is compact, simple, self-contained, dust proof, has rotary force feed, improved thrust Bearing, safety front, friction clutch pulley, and lubricating brick die.

All of the few parts this machine has are very heavy, and none of them will cause you trouble. Write for particulars.

## • ANOTHER • PUG • MILL. •



Our Pug Mills are made of all sizes and capacities. They have new and valuable features. They give universal satisfaction. Why not get a Pug Mill that will PUG your clay, not one that simply conveys the clay from one end to the other. WHY?

IT WILL PAY YOU TO LOOK US UP.

ADDRESS **E. M. FREESE & CO.,**  
GALION, OHIO.



# ·✠· AND STILL THEY COME! ·✠·

HORNELLSVILLE, N. Y., May 27, 1892.

MESSRS. E. M. FREESE & Co., Galion, Ohio.

*Gentlemen:*—Yours of the 25th inst., is at hand, and in reply would say, that we are manufacturing paving brick from shale rock on the machine we purchased of you in March last. The machine is strong and well suited for making this class of brick, doing the work easily. We require a very stiff column of clay, and we are pleased to say that this machine produces the kind of brick we want.

Very truly,  
HORNELLSVILLE BRICK, TILE & T. C. CO.



CALIFORNIA, WASHINGTON Co., PA. }  
May 30, 1892. }

E. M. FREESE & Co., Galion, Ohio.

*Sirs:*—The machine is doing first-class work—the best I ever saw. I am not prepared to say just what the capacity of the machine is. I have made at the rate of 4,500 per hour, and know that it is not near what it will do.

Yours respectfully,

F. H. MARTIN.



FAIRMOUNT, W. VA., October 25, 1892.

E. M. FREESE & Co., Galion, Ohio.

*Gentlemen:*—Your favor of October 22nd received. We are glad to furnish you our testimonial with reference to our experience with the Ohio Brick Machine. We commenced to make brick about the first of last April. The machine works like a charm. The machine is very strong and durable, and works beautifully and makes a perfect brick.

Truly yours,

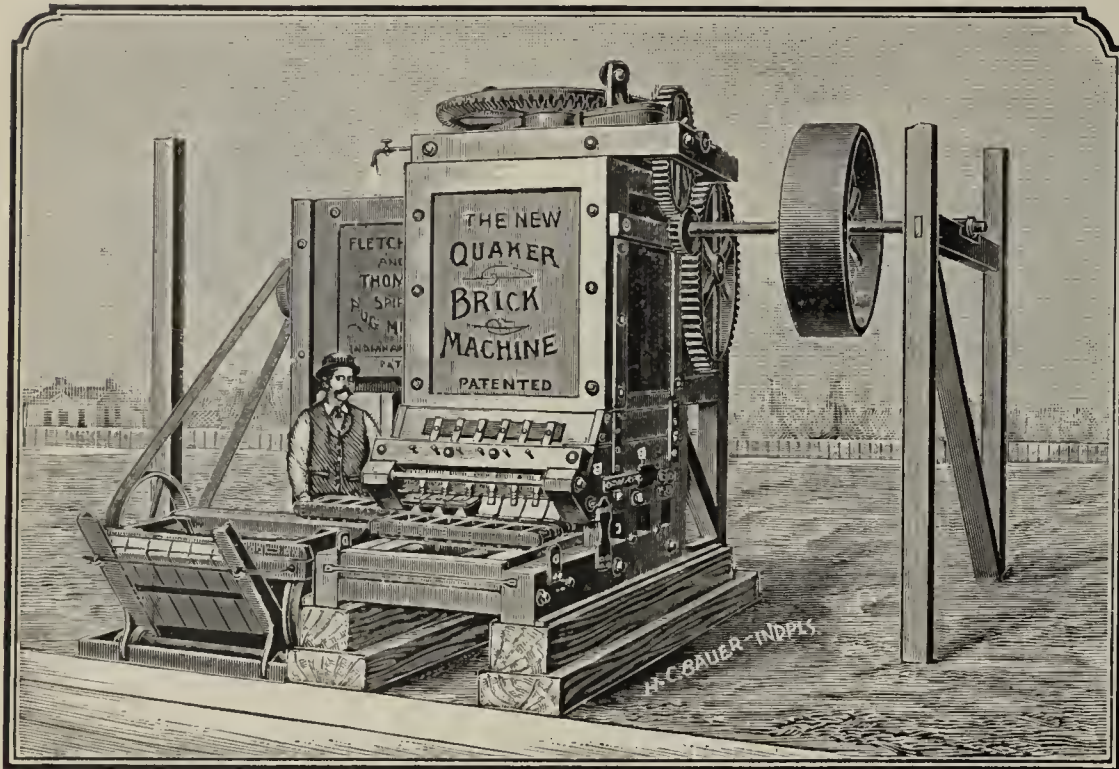
J. H. & M. N. BARNES.



FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

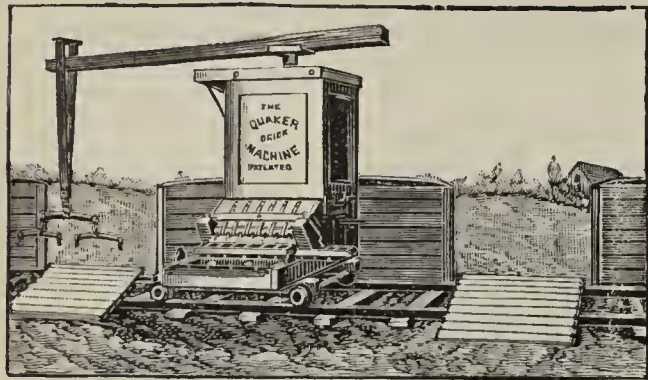


Machine Molds.



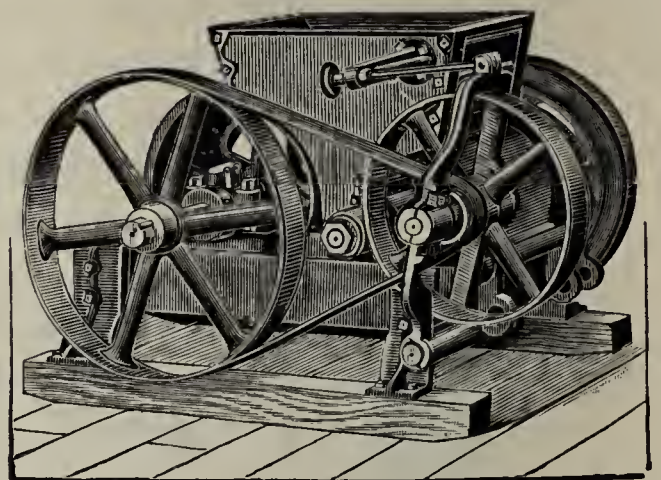
Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



**THE NEW QUAKER** HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.

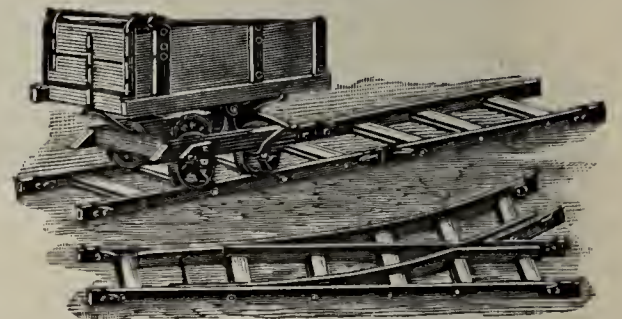
**DISINTEGRATORS.**

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

**FLETCHER & THOMAS, Indianapolis, Ind.**



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

## THE HARRINGTON & KING PERFORATING CO.,

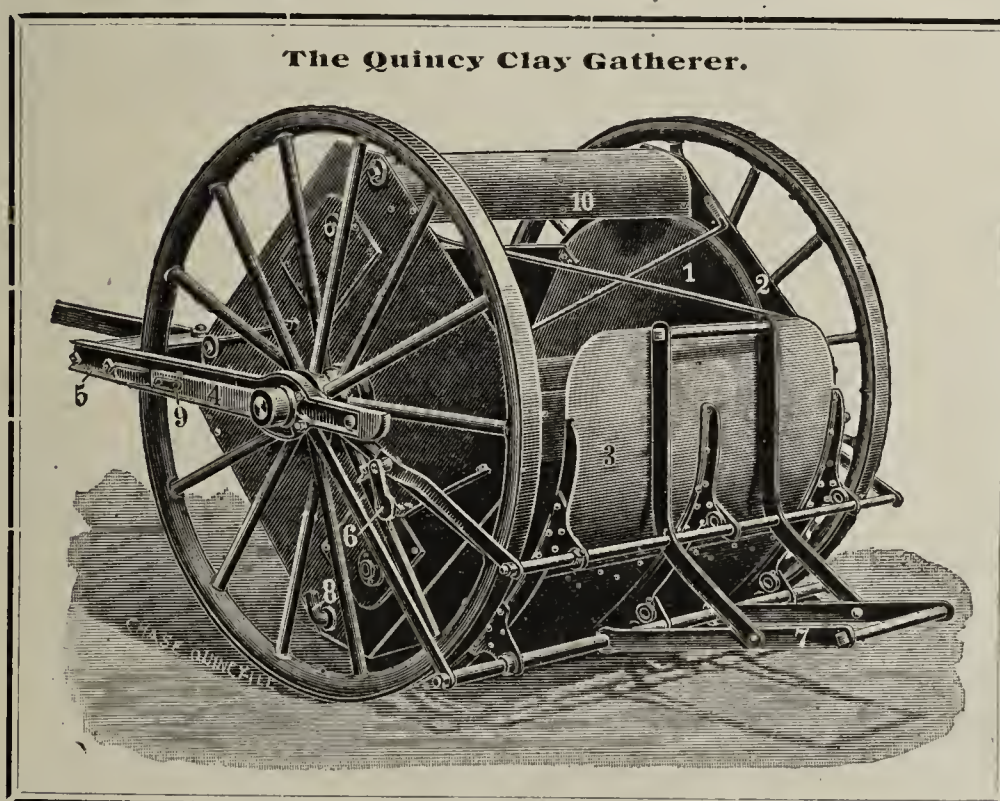
EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

The  
PERFECTION  
HYDRAULIC  
BRICK PRESS  
and....

ANDRUS IMPROVED  
DOUBLE PRESSURE  
BRICK PRESS

Are the best Presses in  
the market.



The  
GRATH DOUBLE  
DOWN DRAFT KILN,  
PERFECTION CLAY  
DISINTEGRATOR  
....and  
QUINCY CLAY  
GATHERER.

Write for Circulars and  
Prices.

ALL of the above appliances are in use at the yards of the American Hydraulic Press Brick Co., Collinsville, Ill., who are producing the finest quality Press Brick in the country, free from granulation.

We solicit an inspection of our works.

# ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.



# THE SIMPSON BRICK PRESS.

*NO SEAM AROUND THE BRICK.*

CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

**IMMENSE STRENGTH.**

**IMMENSE PRESSURE.**

**Beautiful Bricks.**

Fully Guaranteed.



## THE SIMPSON BRICK PRESS CO.,

Agents for Canada:  
WATEROUS ENGINE WORKS CO., Brantford, Can.

Room 412, 87 and 89 Wash. St., **CHICAGO, ILL.**



# The SIMPSON 5-MOLD Brick Press.

— Apply to —

**THE SIMPSON**

**BRICK PRESS CO.,**

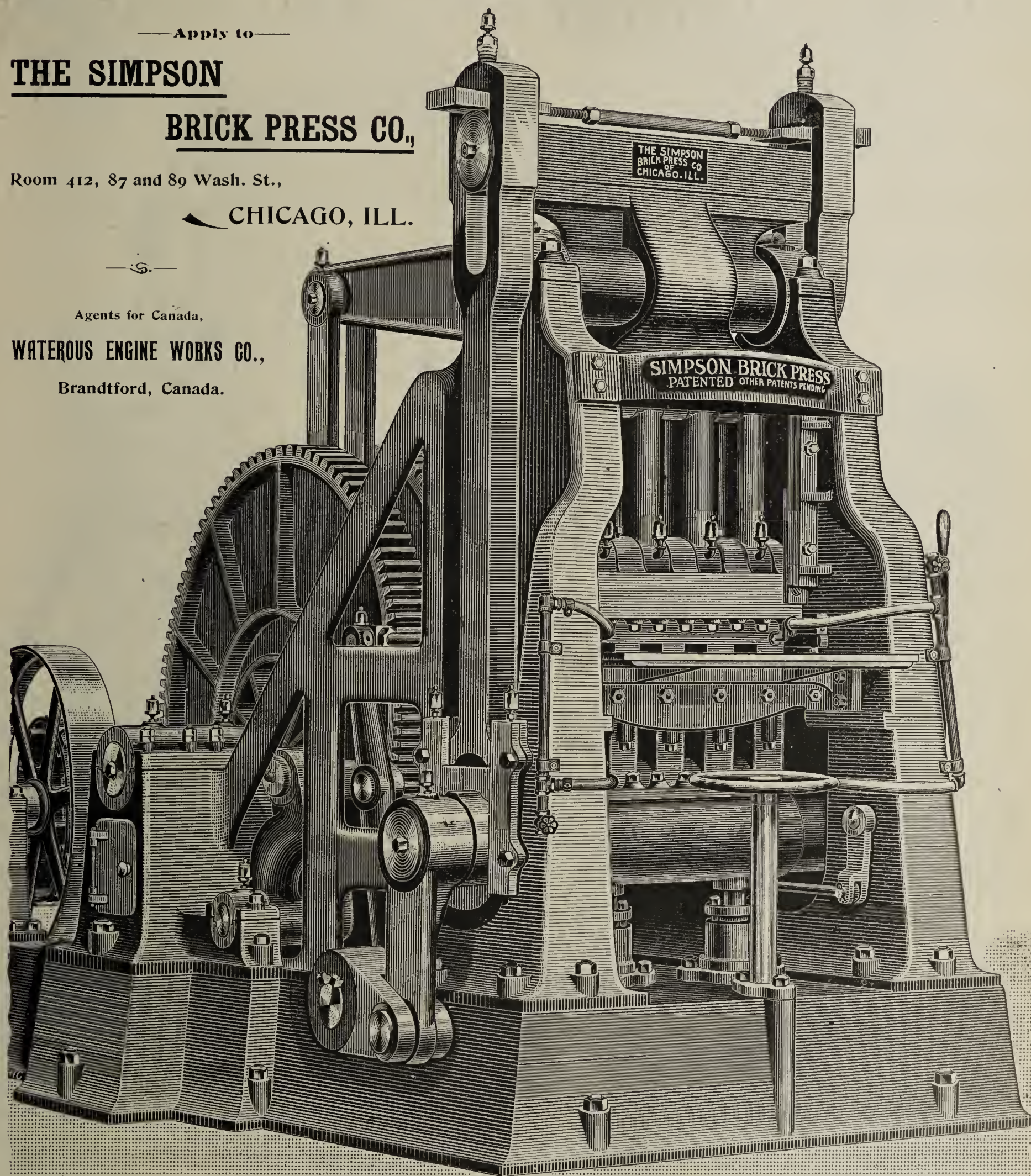
Room 412, 87 and 89 Wash. St.,

CHICAGO, ILL.

Agents for Canada,

**WATEROUS ENGINE WORKS CO.,**

Brandtford, Canada.





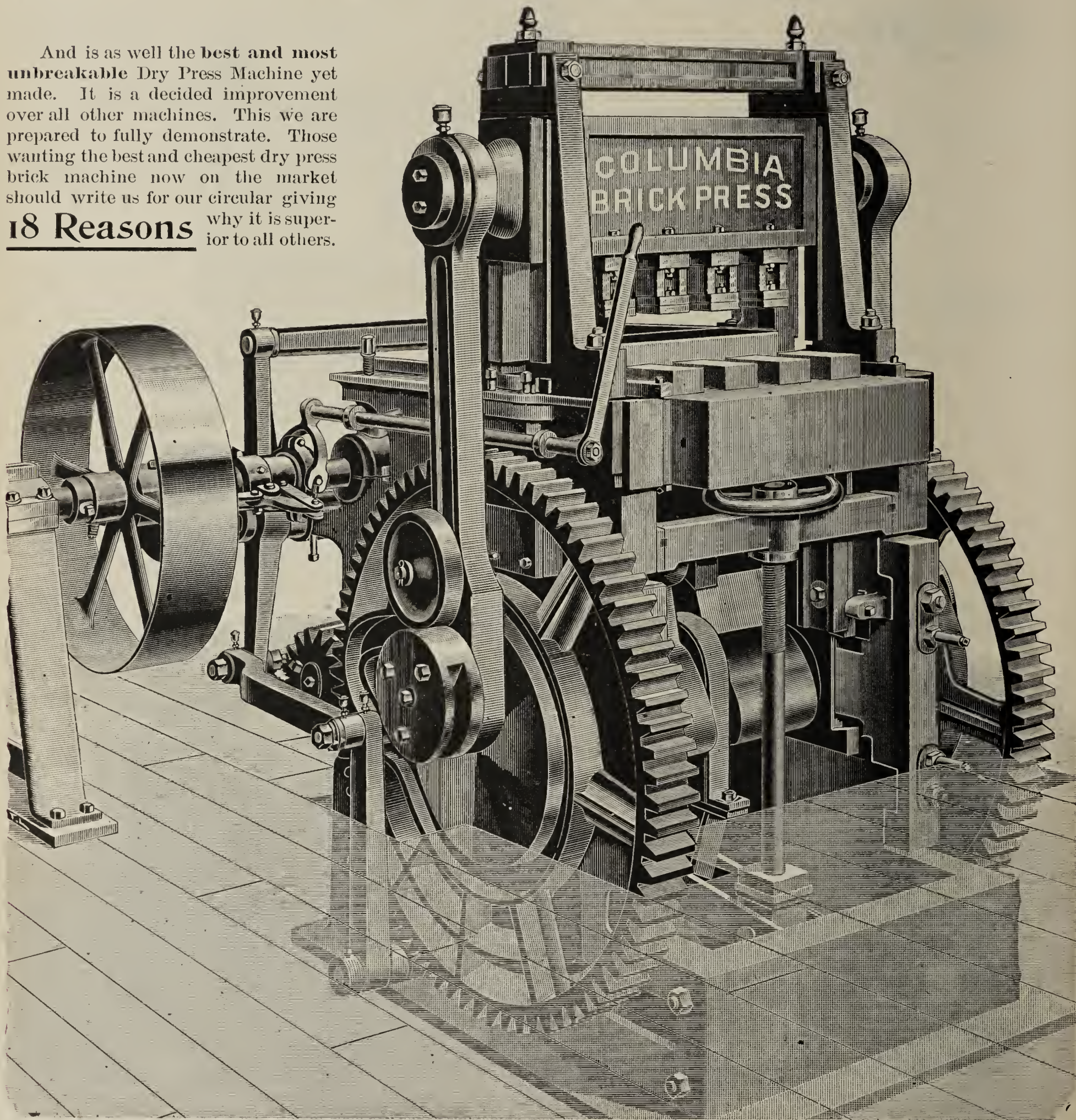
❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving

**18 Reasons** why it is superior to all others.



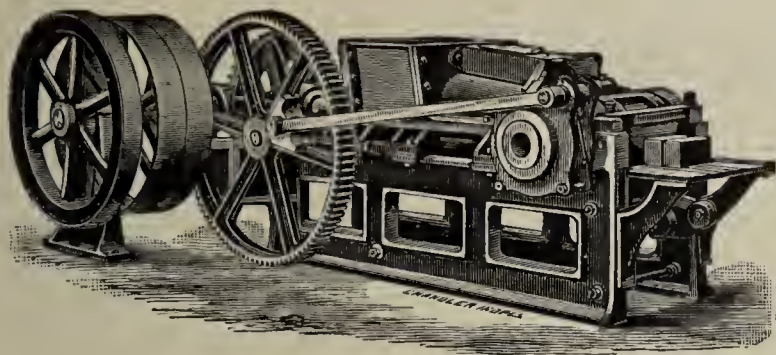
OUR TERMS ARE REASONABLE. ADDRESS,

**COLUMBIA MANUFACTURING CO.,**

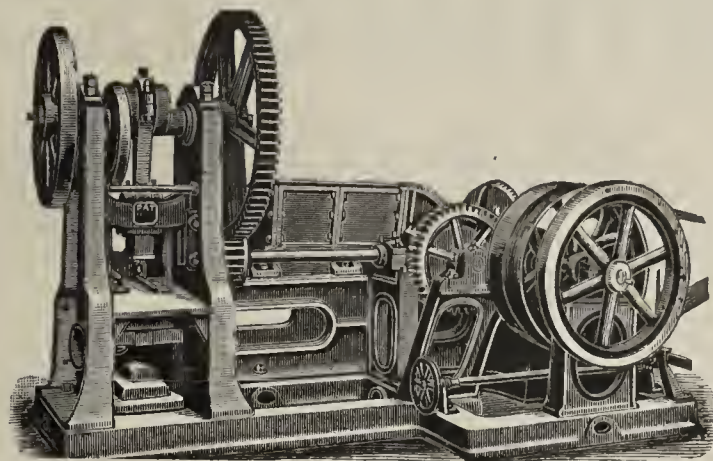
Send your clay and we will test it and send you the results....

**2119 N. Ninth St., ST. LOUIS, MO.**

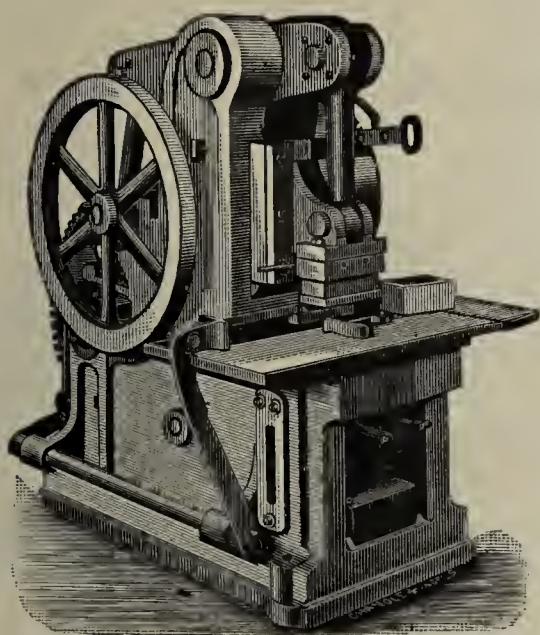




IMPROVED STIFF-PLASTIC BRICK-MAKING MACHINE.



COMBINED STIFF-PLASTIC PRESS BRICK MACHINE.



PAT. LEVER BRICK & TILE PRESSING MACHINE

## THE BEST PRODUCT FOR THE LEAST COST

Is produced by WM. JOHNSON'S  
Patent Process Brick Machinery  
and Kilns.

We have the best machinery for  
making

Fire  
Paving  
Building

# BRICK

and the best and most economical  
kiln in which to burn them.

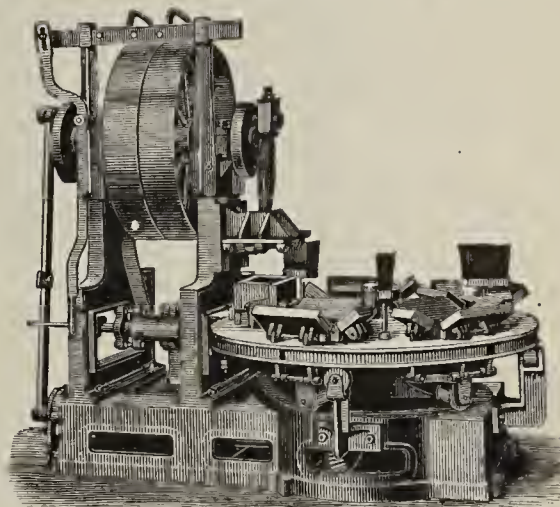
We are prepared to furnish complete  
equipments for brick, tile and  
pipe making plants of any desired  
capacity.

Correspondence solicited.

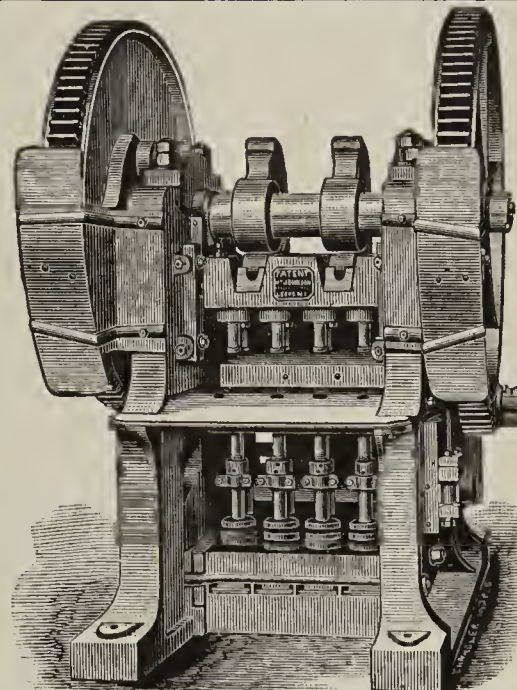
**Somerset & Johnsonburg Mfg. Co.**

SOMERSET, MASS.

BRANCH OFFICE { 713 Lewis Blk.,  
Pittsburgh, Pa.



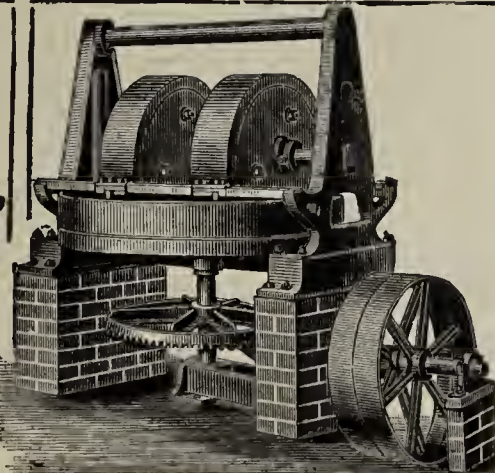
PAT. STEAM SAND-FACED PRESSING MACHINE



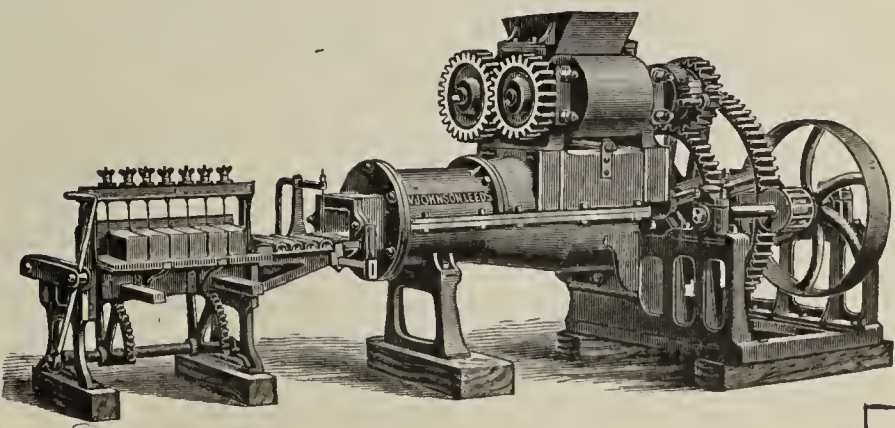
DIFFERENTIAL DOUBLE SHAFTED CLAY MIXER



HAND LEVER BRICK PRESS



PERFORATED-EDGE RUNNER CLAY GRINDER



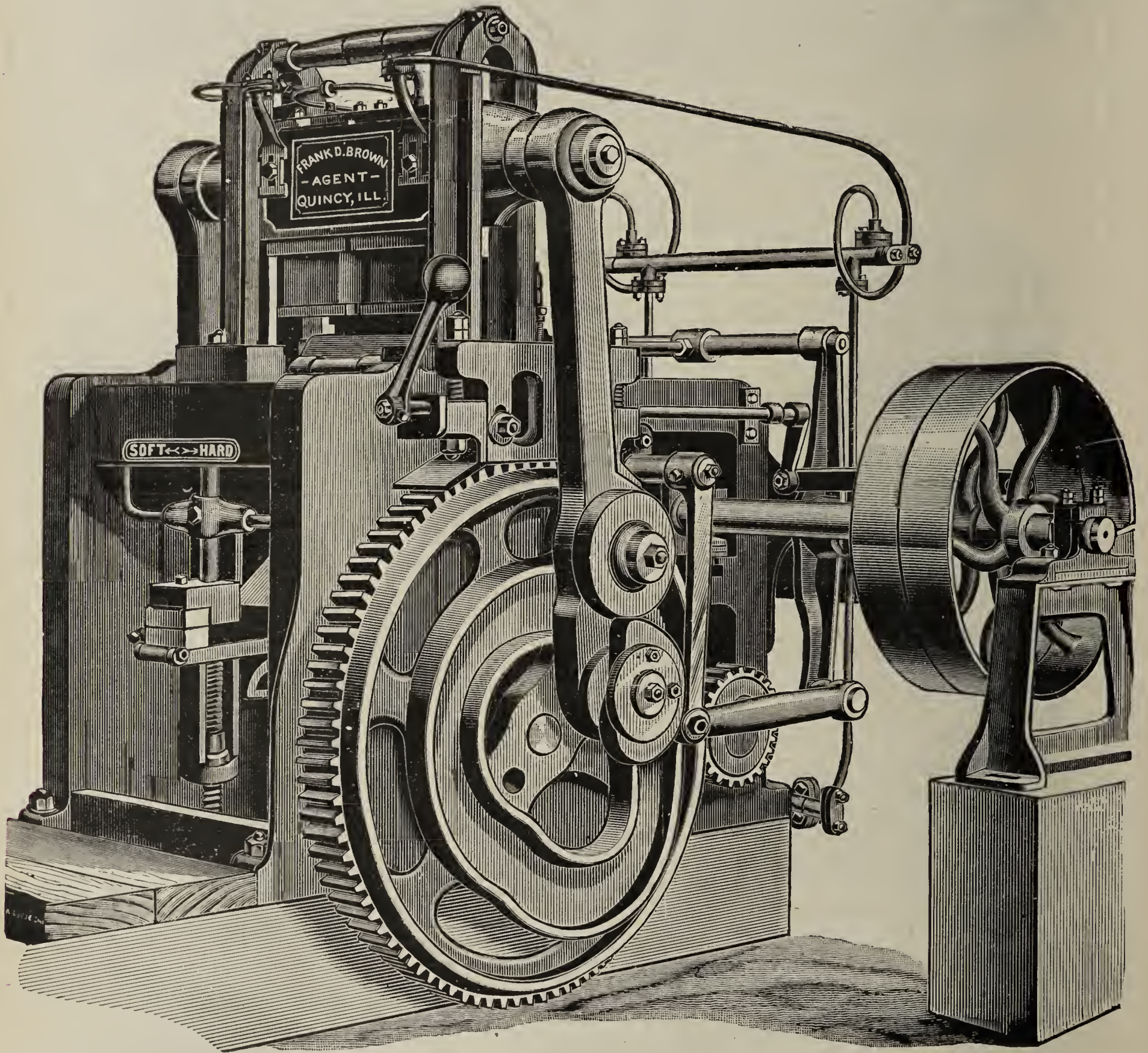
COMBINATION PUG MILL BRICK & TILE MACHINE



# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•➤HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.✧•



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN, Quincy, Ill.**



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

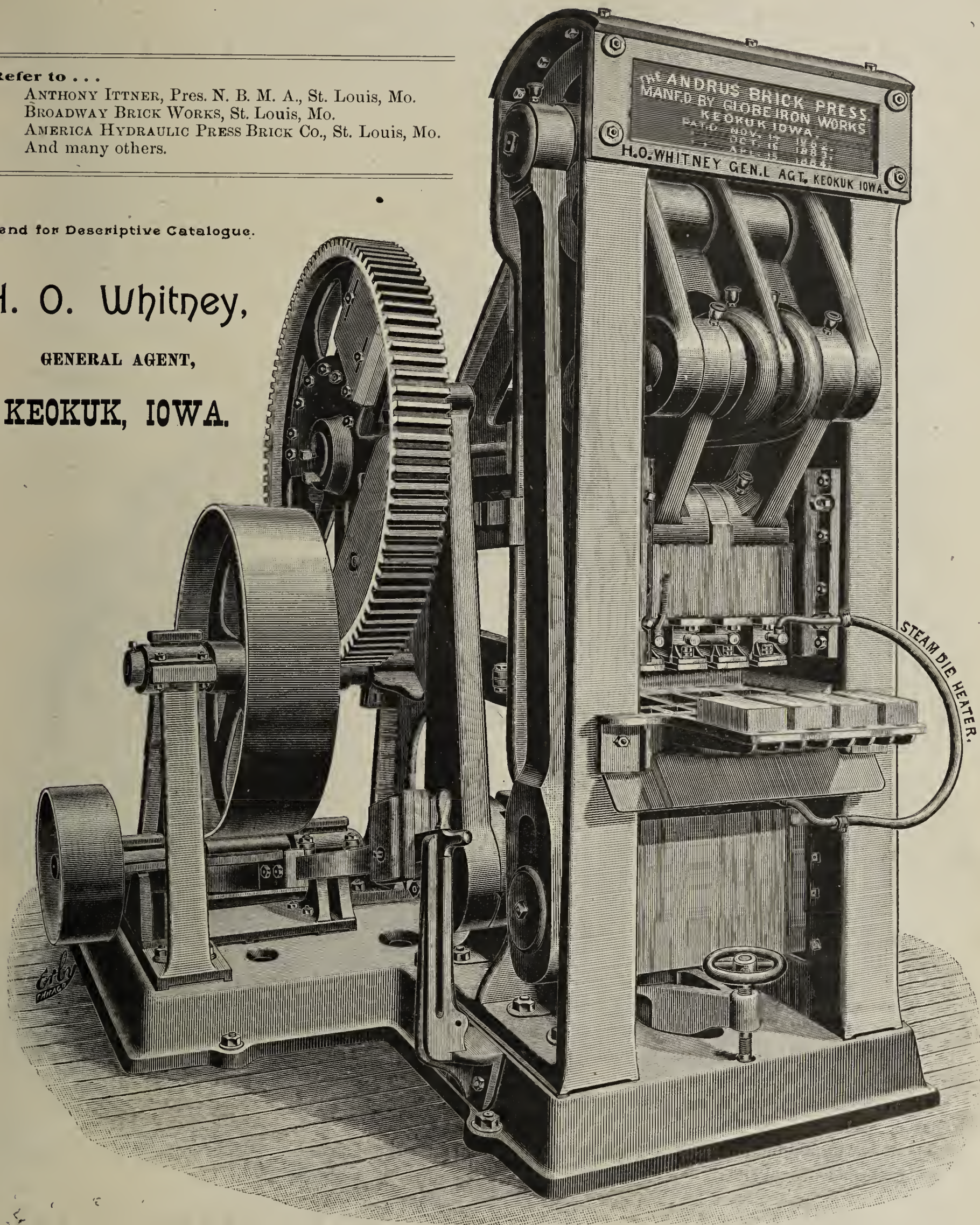
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.

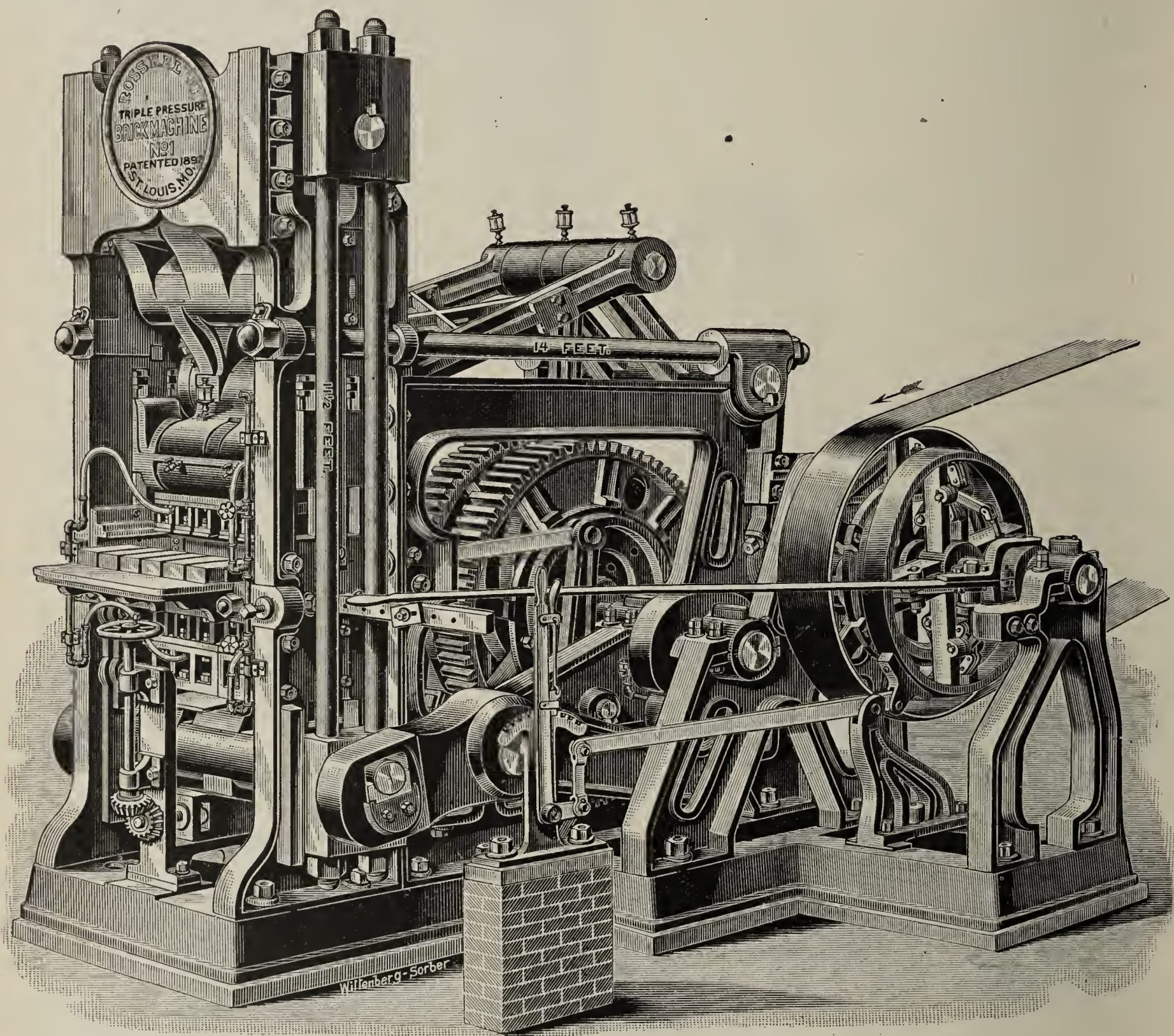




# The Ross-Keller Brick Machine.

## (Triple Pressure)

Weight 75,000 pounds, Capacity 35,000 pressed brick per day.



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**

Room 207 Laclede Building,

ST. Louis, MO., U. S. A.



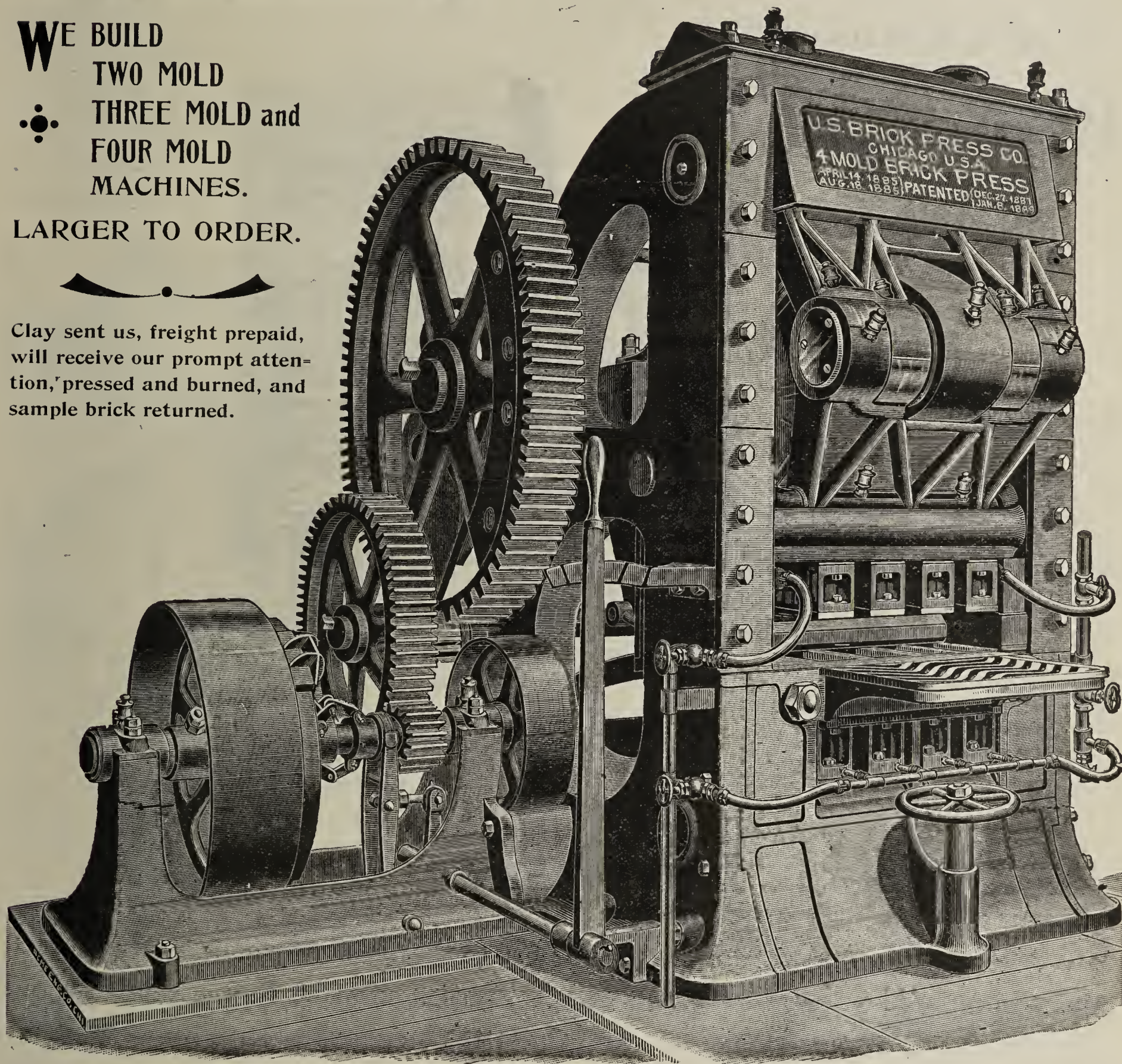
# THE U.S. DRY CLAY BRICK PRESS

Is specially designed to meet the requirements of the modern Brick Plant, inasmuch as it is representative of STRENGTH, DURABILITY, and above all, of SIMPLE CONSTRUCTION.

—✦ MAKES FINE FINISHED FACES ✦—

**WE BUILD**  
TWO MOLD  
THREE MOLD and  
FOUR MOLD  
MACHINES.  
LARGER TO ORDER.

Clay sent us, freight prepaid,  
will receive our prompt atten-  
tion, pressed and burned, and  
sample brick returned.



SEND FOR CATALOGUE AND PRICES TO

**THE UNITED STATES BRICK PRESS WORKS,**

OSWALD KUTSCHE, Proprietor,

1111 to 1113 UNITY BUILDING,

79 DEARBORN STREET, CHICAGO, ILLS



# Millions . . . . .



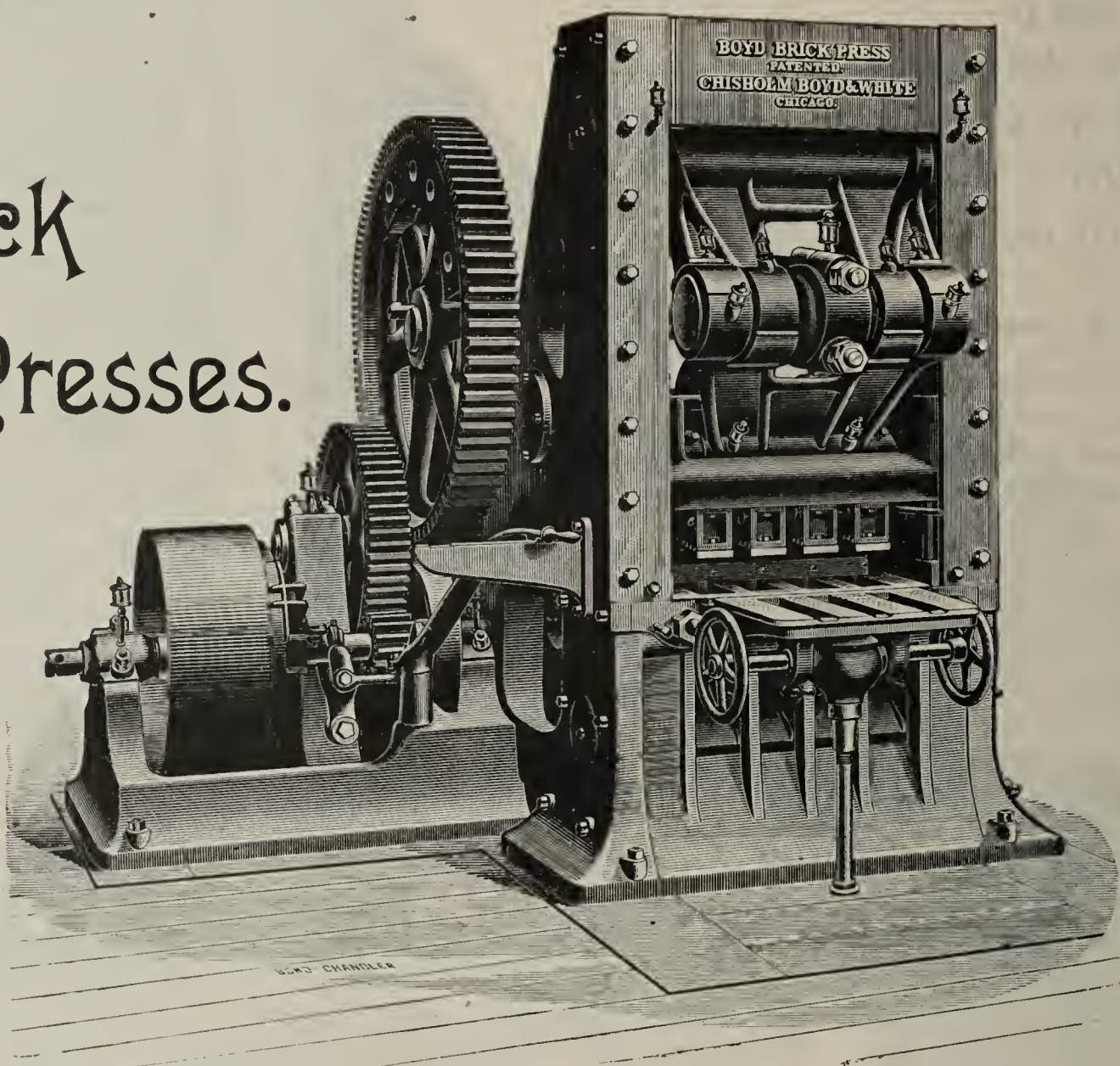
--- OF ---



# Beautiful Brick

Are Being Made Daily on

## Boyd Brick Presses.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you can have a sure thing?

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street,

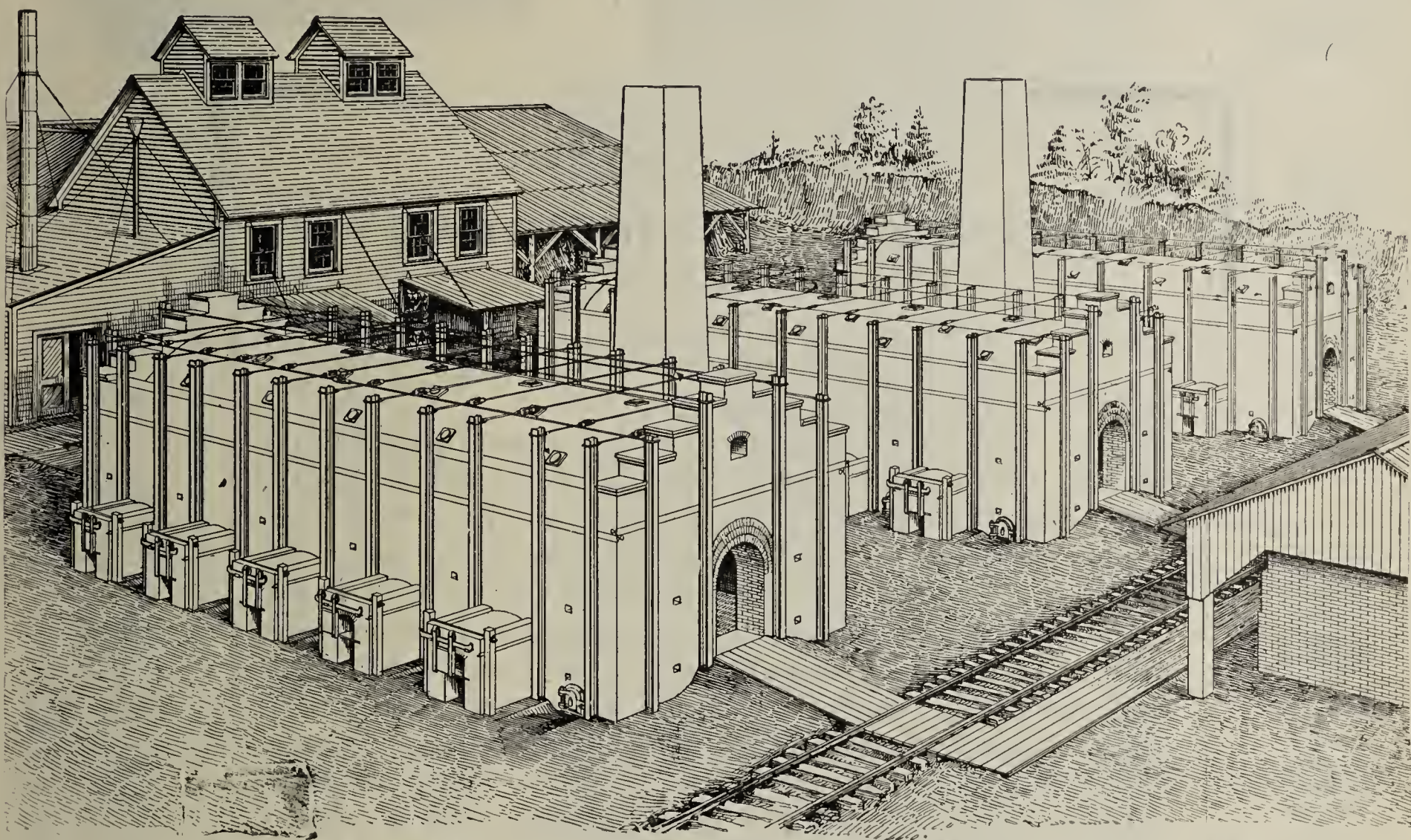
CHICAGO.



# THE FLOOD KILN.

•⇨ Up=and=Down=Draft. ⇨•

The Flood Kiln for burning brick of all kinds is a wonderful success. It uses less fuel than any other down-draft kiln. Old experienced burners are enthusiastic in its praise. It dries the brick up-draft, having special furnaces for this purpose. It burns down-draft. It is scientifically and correctly proportioned. All parts are under the perfect control of the burner, enabling him to produce brick all hard and of a uniform color from top to bottom. There are many Patent Kilns in use, great fuel eaters, which we would change over at our own expense and take for our pay the value of the fuel saved in one year.



## Extraordinary Offer.

We will build the Flood Kiln for any responsible party, at our own cost for material and labor, and superintend one or more burnings of front, ornamental, common or paving brick, under guarantee of absolute satisfaction in quality of product and cost, the loss to be ours in case of failure. The time has come when the brickmaker should demand, and obtain, satisfactory results in burning his own brick before paying his money for yard rights. Correspondence solicited.

**CHISHOLM, BOYD & WHITE,**  
**Monon Block. CHICAGO.**



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



## Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



## Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

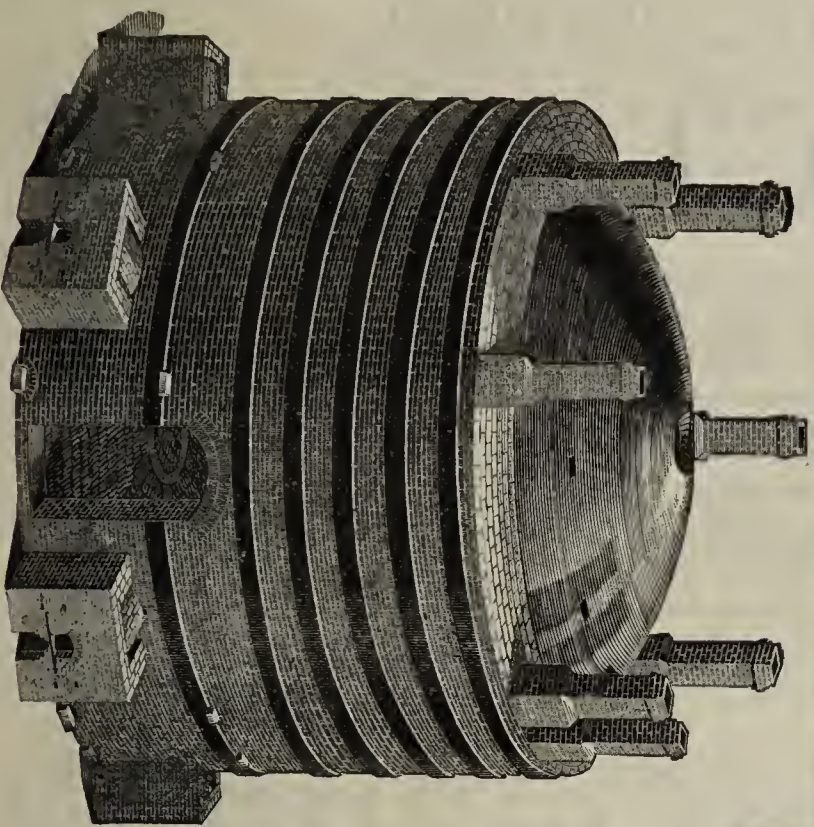
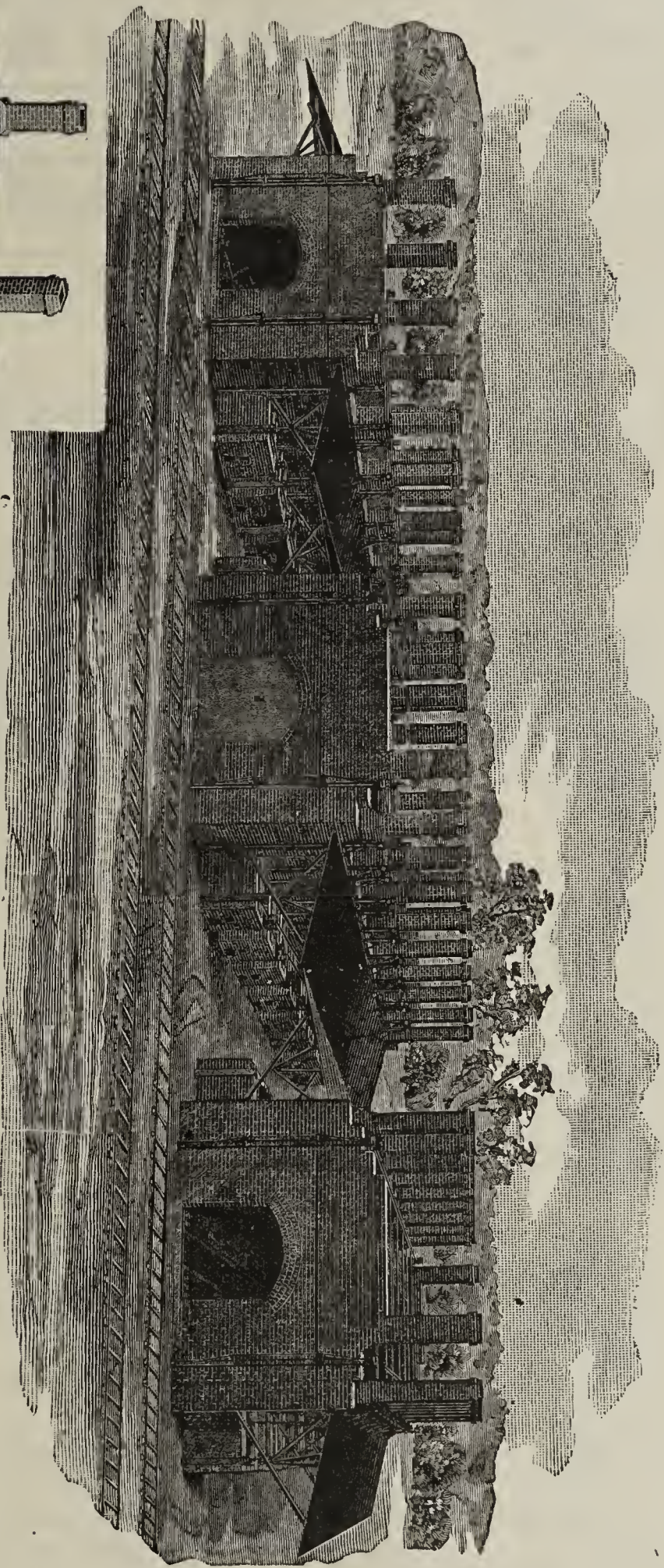
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,  
 Fulton Fire Brick and Mining Co.

## FROM CANADA.

Toronto, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular. (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN & WARREN,

Mention the CLAY-WORKER

EXMOUTH, DEVON, ENGLAND.

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.



W. H. KELSO, President.

MAX A. TH. BOEHNCKE, Gen'l Manager,

PAUL BOEHNCKE, Sec'y and Treas.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

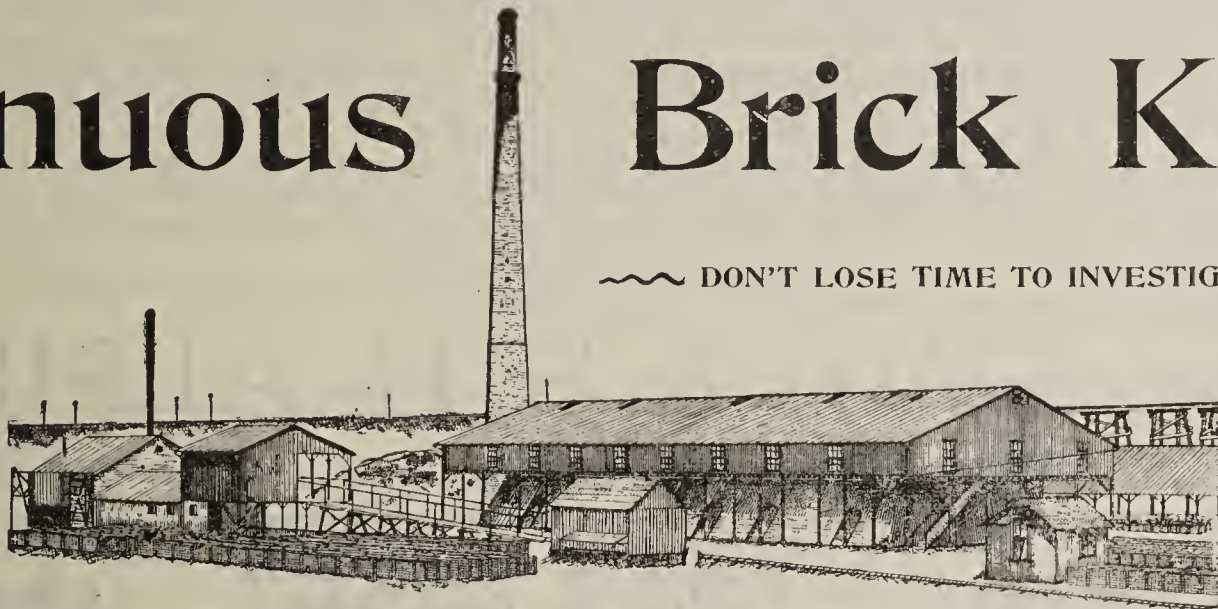
UP AND DOWN DRAFT

## Continuous Brick Kiln.

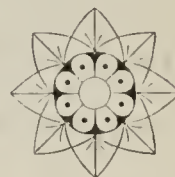
12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.

DON'T LOSE TIME TO INVESTIGATE.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.



### ADVANTAGES OF THE KILN.

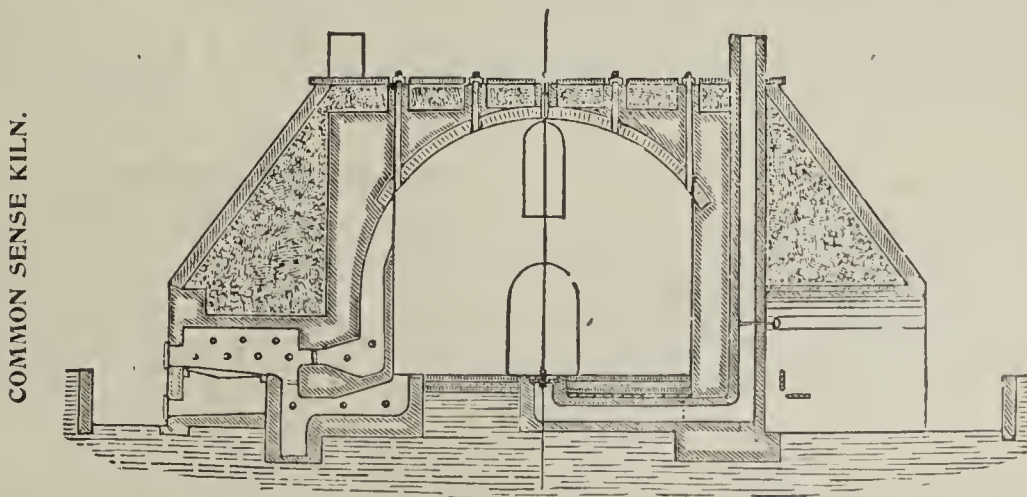
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln &amp; Drier Co.,

Box 35,

Centinela, Cal.



FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A New Brick Dryer.

now so popular in Germany. It is very economical. For full particulars see our catalogue.

We have secured the sole control in the United States of Albert Schaaf's Brick Dryer, (U. S. Patent 483,018.) which is



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

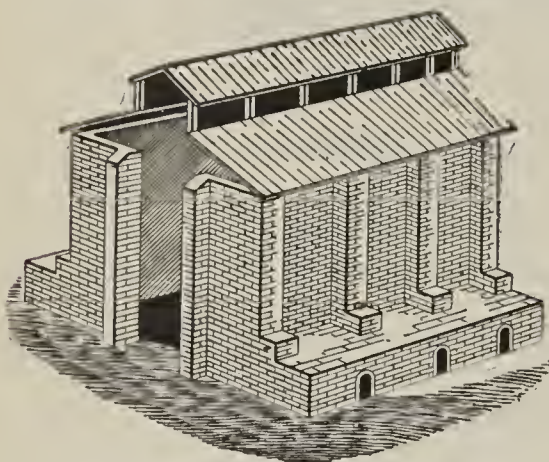
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

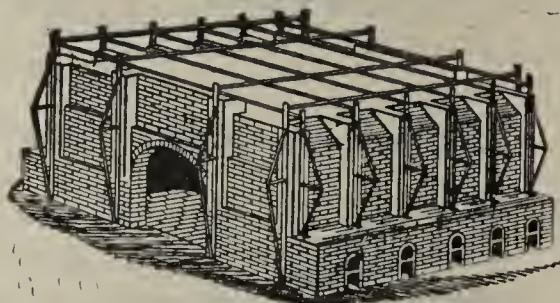
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ VITRIFIED PAVING BRICK. ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa.  
120 Pearl Street, Boston, Mass.

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for  
Leather, Rubber and Canvas Belting.

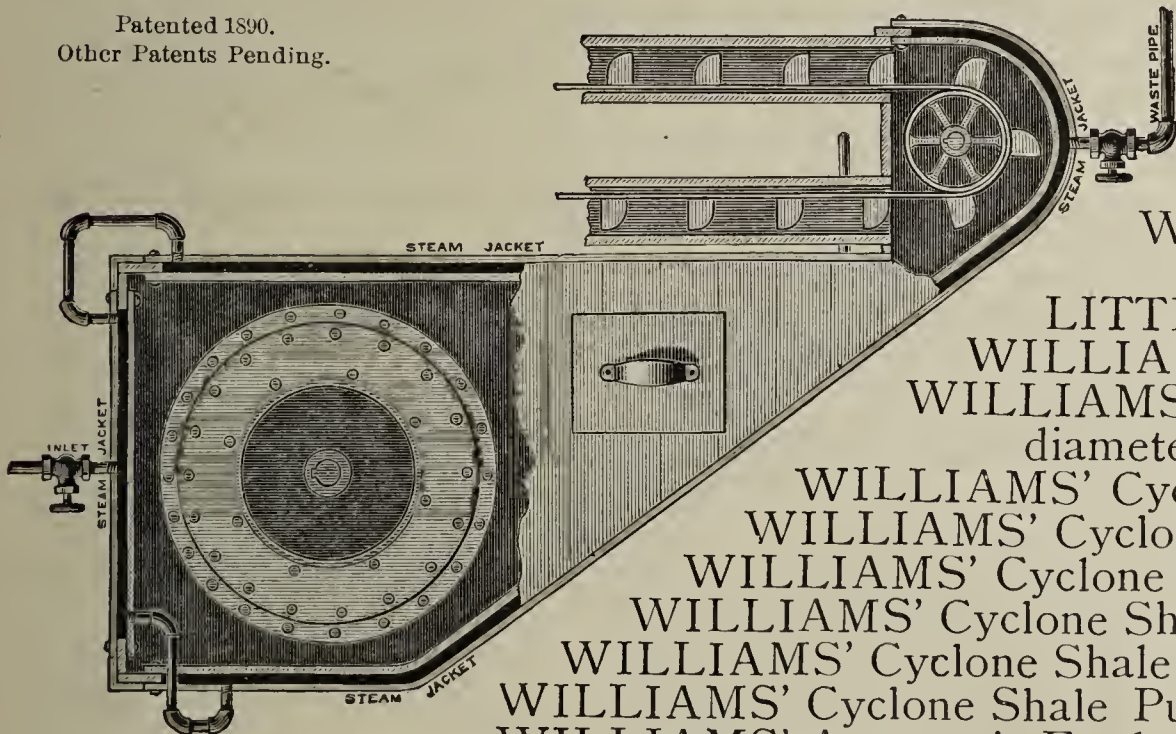
No user of Belting can afford to be without it.



the End.

# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

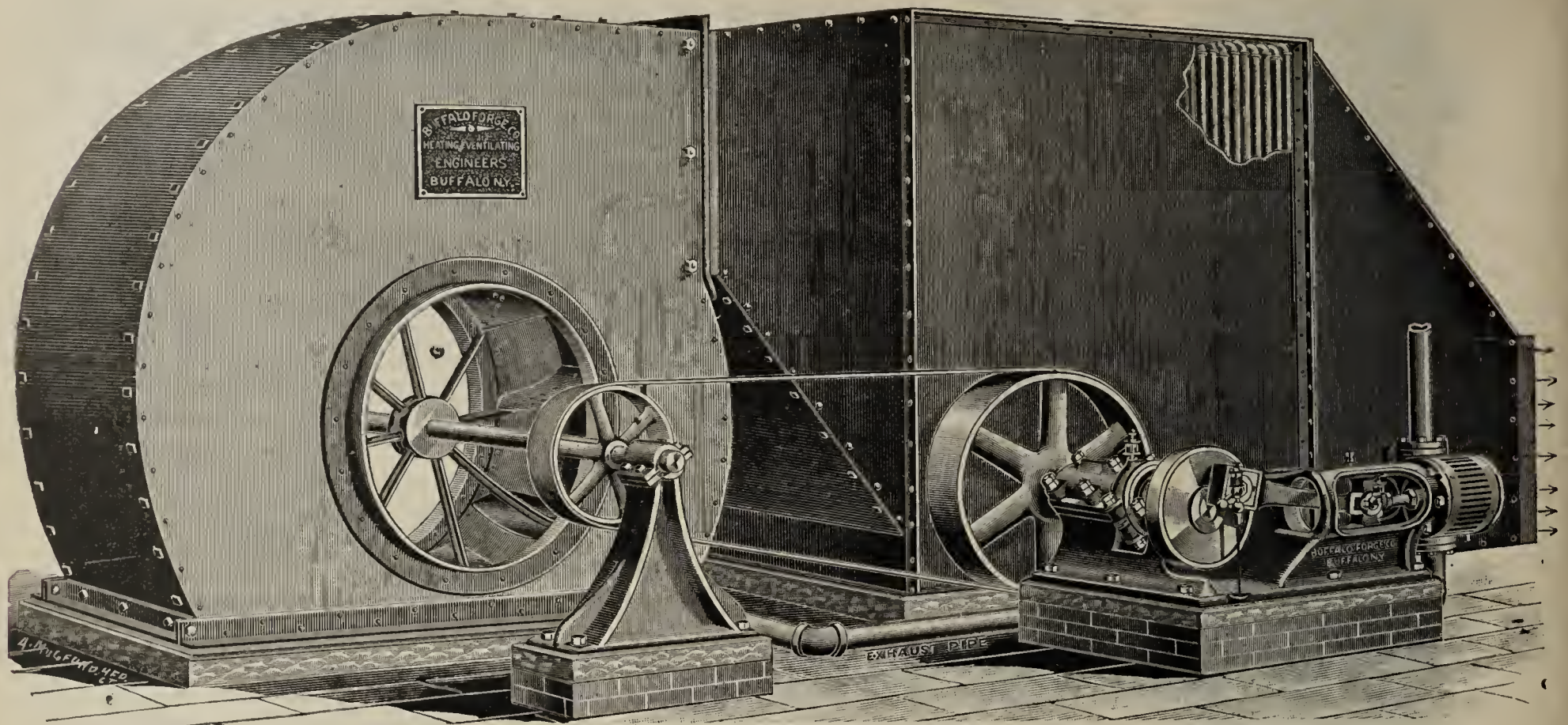
WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To **CLAIM** that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is **ONE** thing; to **PROVE** it is **QUITE ANOTHER**.

The proof that **Buffalo Progressive Brick Dryers** embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO. Buffalo, N. Y.**

**S. G. PHILLIPS, Agent and Patentee,**

WOODBRIDGE, N. J.,

DEALER IN

"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.

"Air Dried" Bricks All the Year Round.

A new plan of reducing old, approved methods to a System. This frame enclosure needs no iron pallets.

**THE INSIDE FAN STEAM DRYER.**

A cross, spiral current from fan to fan. Bricks are safely dried in five hours. No "checking" or discoloration.

**NO CHIMNEYS OR BRICK STRUCTURE!**

And only half the doors are required. A little easy running machinery that lessens the cost for cars, room, continuous use and appears in practical operation to pay remarkably well.

**MORE FANS! LESS PIPES!**

The Zig-zag Coil Radiator pipes are compactly placed, with steep drainage for condensation from rapid radiation, due to ample air supply at low temperature which is better for the belts, and drying most material. Makes a thousand feet of pipe about as effective as three or four thousand. Exhaust steam worth more than "live," as now in common use, and saves enough in this one item alone to pay for all the fan wheels, cars, and, in fact, the entire dryer.

**"Seeing is Believing,"**

Therefore, "at home," this system of drying is replacing others, and may be seen in operation at several of our neighboring brick works.

**"Better Than Drying in the Sun."—"Exhaust Steam."**

OTTUMWA, IOWA, April 6, 1893.

S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—I have had your Dryer in operation during the last season and it continues to give me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the bricks come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTICK.

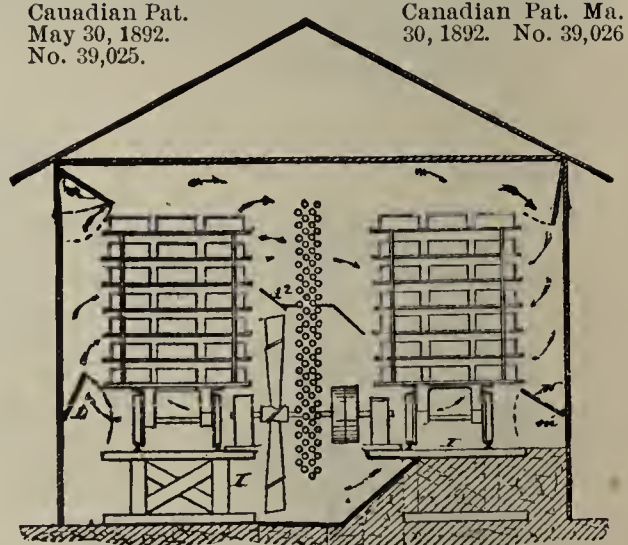
**"And Met the Requirements in Every Case."**

MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,

CHAMBERS BROTHERS CO., J. H. Chambers, Gen'l Mngr.



U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

PHILADELPHIA, December 14, 1892.

### THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.

**"I think you have the Dryer the brick people are looking for."**—JNO. C. GIBSON, Superintendent of the Fultou Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently: **"Not over 12 hours to make them VERY DRY—the best by great odds of any in the market"**—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance.

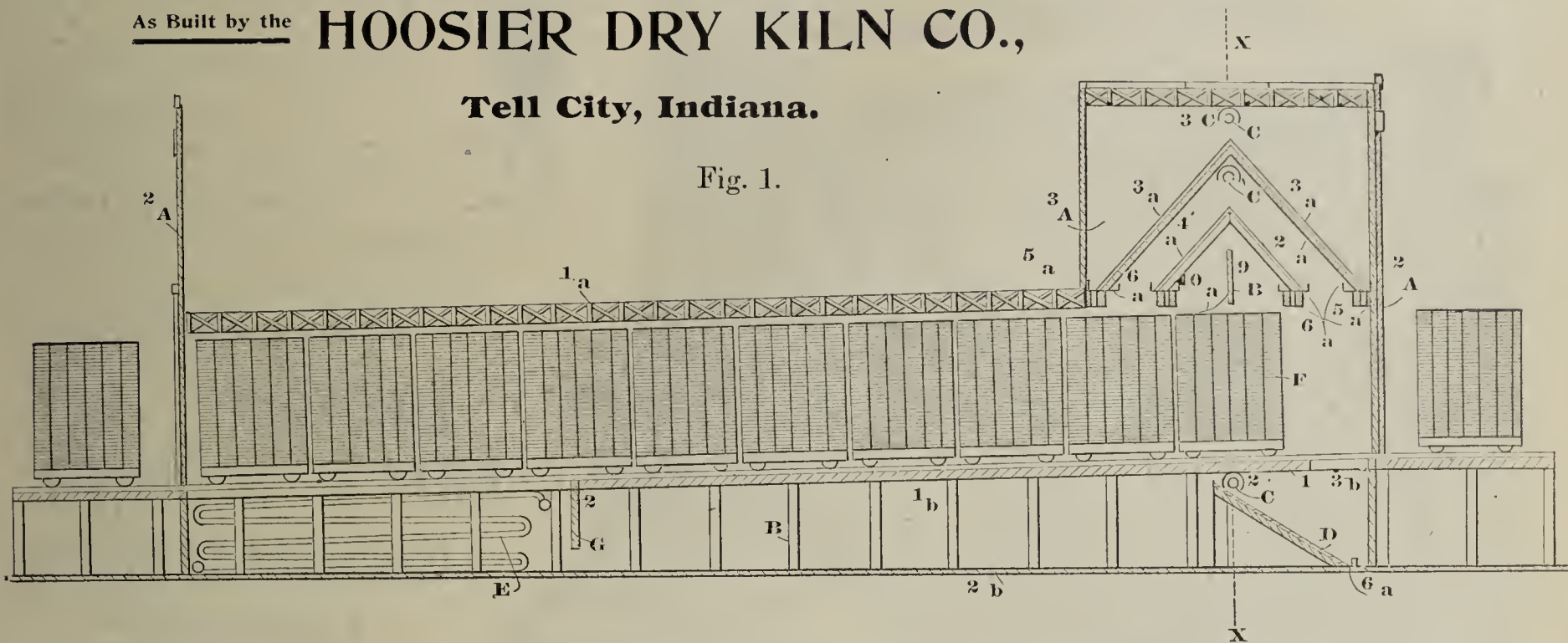


# HOOSIER DRYER,

As Built by the **HOOSIER DRY KILN CO.,**

**Tell City, Indiana.**

Fig. 1.



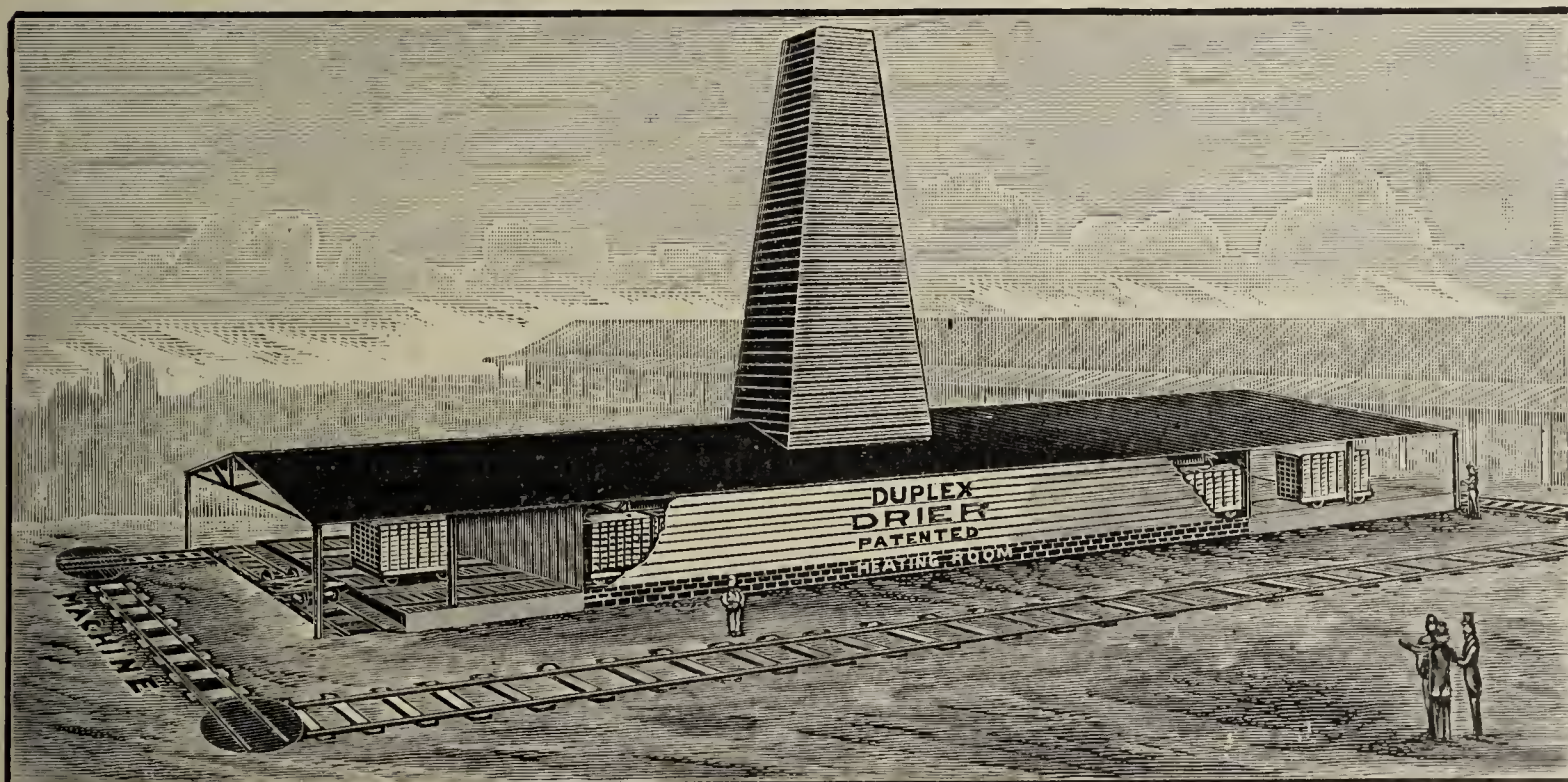
**TEST ON THE MARKET.**  
**ITTLE IN APPEARANCE.**  
**ARGE IN RESULTS.**  
**EAST IN FIRST COST.**  
**IGHT IN COST OF OPERATION.**

**THE HOOSIER DRYER** in addition to the advantages indicated is constructed and operated in a manner that enables us to guarantee quicker work and more satisfactory results than any other dryer now on the market. By our system, which is covered by letter patents and which does not conflict with any former invention, we can handle clays that heretofore have defied all attempts at rapid drying. Our terms are reasonable and satisfactory results are guaranteed.

Either Gas or Steam used for Heating.

## ATTENTION BRICKMAKERS!

Do not be alarmed by the  
 screeching of Wild Cats  
 or the howling of WOLVES.



**The  
 Duplex  
 Steam  
 Drier**

IS NO.,...  
 INFRINGEMENT.

Harland Brick Co. have been using it at Bernice, Ill., for eighteen months, 75,000 daily capacity. Harland Brick Co., Shermerville, Ill., twelve months, 75,000 daily capacity. Galesburg Paving Brick Co., Galesburg, Ill., six months, 150,000 capacity. J. B. Legnard, Chicago, Ill., four months, 160,000 capacity, and others.

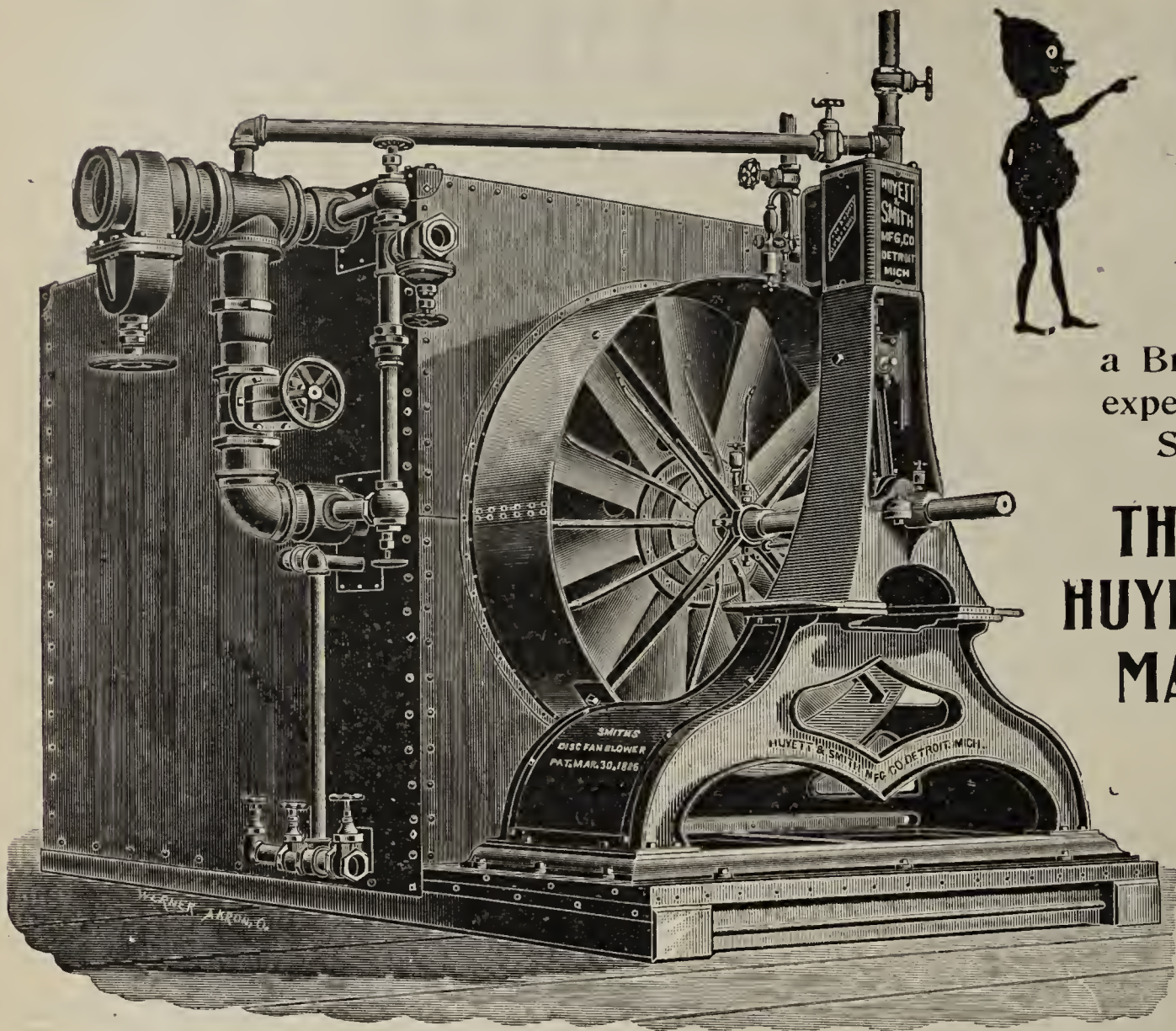
Now is the time to buy. Address,

**W. C. BYRNE,**

**Room 67, 162 La Salle Street,**

**Chicago, Ill.**





# Old Sol

What about him?

He is uncertain in this rainy weather,

Why not purchase a Brick Dryer that is no experiment?

Such a one is made by

THE....  
**HUYETT & SMITH  
MANUFACTURING  
COMPANY.**

Main Office  
and Works.

DETROIT,  
MICHIGAN.

This Hot Blast Apparatus used in connection with a system of tunnels forms the only perfect and efficient Brick Dryer known for the following reasons:



- 1st. It duplicates nature, the brick being placed in contact with a large volume of air in rapid motion.
- 2nd. The drying can be carried on continuously night and day in all kinds of weather.
- 3rd. Dries more brick to the ton of coal or cord of wood than any Dryer made.
- 4th. The brick are evenly dried, without cracking and will not "mash" in the kiln.

*For full information, prices and references, write*

**The Huyett & Smith Mfg. Co.,**

MAIN OFFICE & WORKS: **DETROIT, MICH.**

CHICAGO, 31 S. Canal St.

BOSTON, 48 Union St.

NEW YORK, 107 Liberty St.



# ANOTHER GOOD REPORT FROM THE EAST.

A PERFECT  
PRODUCT AS  
REGARDS DRYING  
IS GUARANTEED.  
THE "STANDARD"  
SYSTEM SO  
TREATS THE  
CLAY THAT  
COHESION AND  
DENSITY, THE  
ESSENTIALS OF  
"A GOOD, STRONG  
BRICK," ARE  
PRESERVED AND  
INTENSIFIED.

T. B. McAVOY & SONS  
BRICK MANUFACTURERS.

YARDS: { Twenty-fifth and Tasker Streets.  
Twenty-second and Mifflin Streets.

FINE PRESSED BRICK A SPECIALTY.

Residence: 1528 South Broad Street.

*Philadelphia,* June 14, 1893.

The Standard Dry Kiln Co.,  
Louisville, Ky.

Gentlemen;

Your inquiry as to how we like the Drier you put in for us this spring, at hand.

We are pleased with the Drier. It has come up to our expectations in every respect.

There are three points about the Drier that we admire, viz.:

1st. It was on the ground and in place ready to dry brick within the time specified in your contract. In other words, you were ready to dry brick when we were ready to make them- (two months after contract was signed.)

2nd. We get a good, clean, strong brick, entirely free from checks, or cracks, and in 24 hours.

3rd. It is economical in operation, and gives us no trouble whatever.

The Automatic Pump for returning condensed steam to boiler is a complete success.

We use Chambers' Machine.

You can refer to us at any time.

Respectfully yours,

*T. B. McAvoy & Sons  
per Frank B.*

ECONOMY  
OF OPERATION  
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DINAL FEAT-  
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PATENT  
FORCED  
DRAFT  
BRICK  
DRIER.

IT PRODUCES  
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RESULTS AT  
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COST.

SEND FOR CATALOGUE AND PAMPHLET OF ENDORSEMENTS FROM USERS.

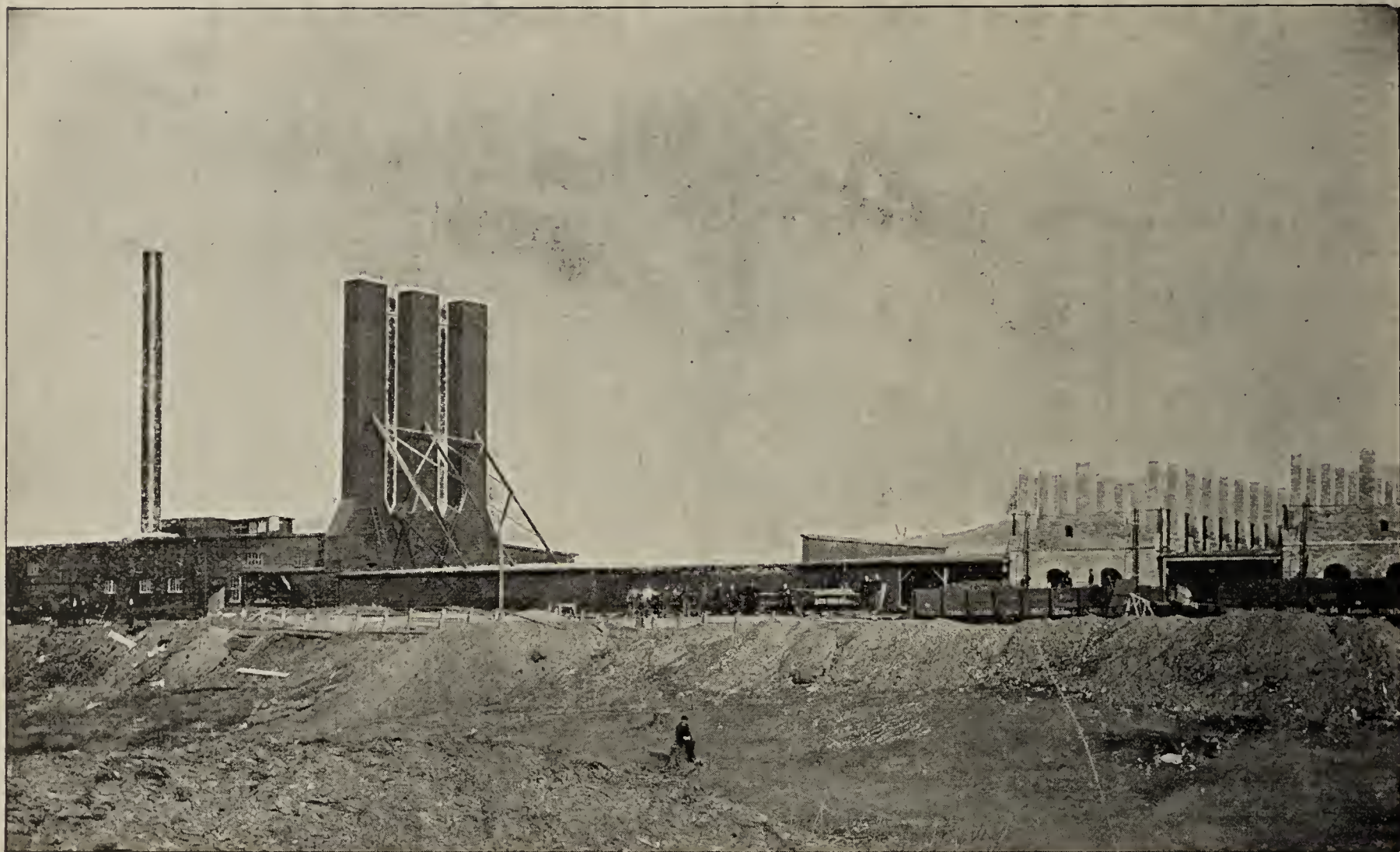
## THE STANDARD DRY KILN CO.,

General Office and Salesrooms, 923-925 W. Main Street,

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# The Best <sup>ALL</sup> <sub>AROUND</sub> Brick Dryer



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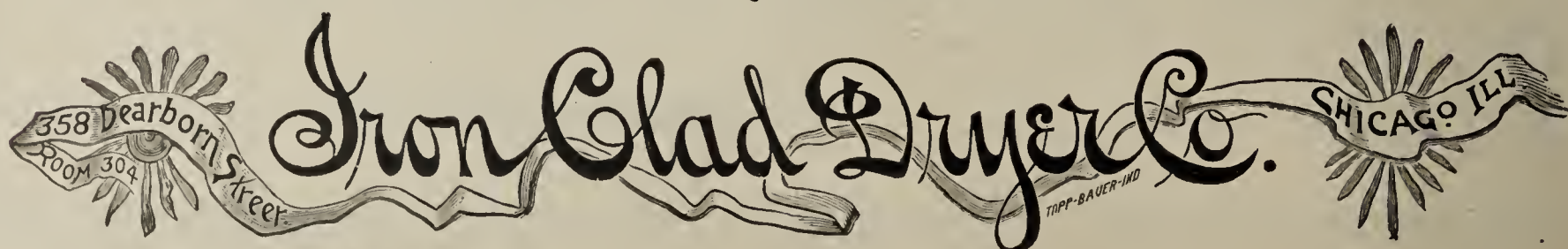
IRON CLAD DRYER CO.,  
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ALTON, ILL., May 5, 1893.

GENTLEMEN:—Perhaps the last three months have not been equaled for severe storms in years—still your dryer has given us entire satisfaction—we have put brick  $8\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{3}{4}$  through your dryer in eighteen hours and they come out dry. Our clay will stand any degree of heat and I am satisfied that we can dry our brick in fourteen hours if we wish. There may be other dryers that will dry brick, but we want nothing more satisfactory than the Iron Clad.

Yours truly,

EDWARD RODGERS.





# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XX.

INDIANAPOLIS, IND., JULY, 1893.

No 1

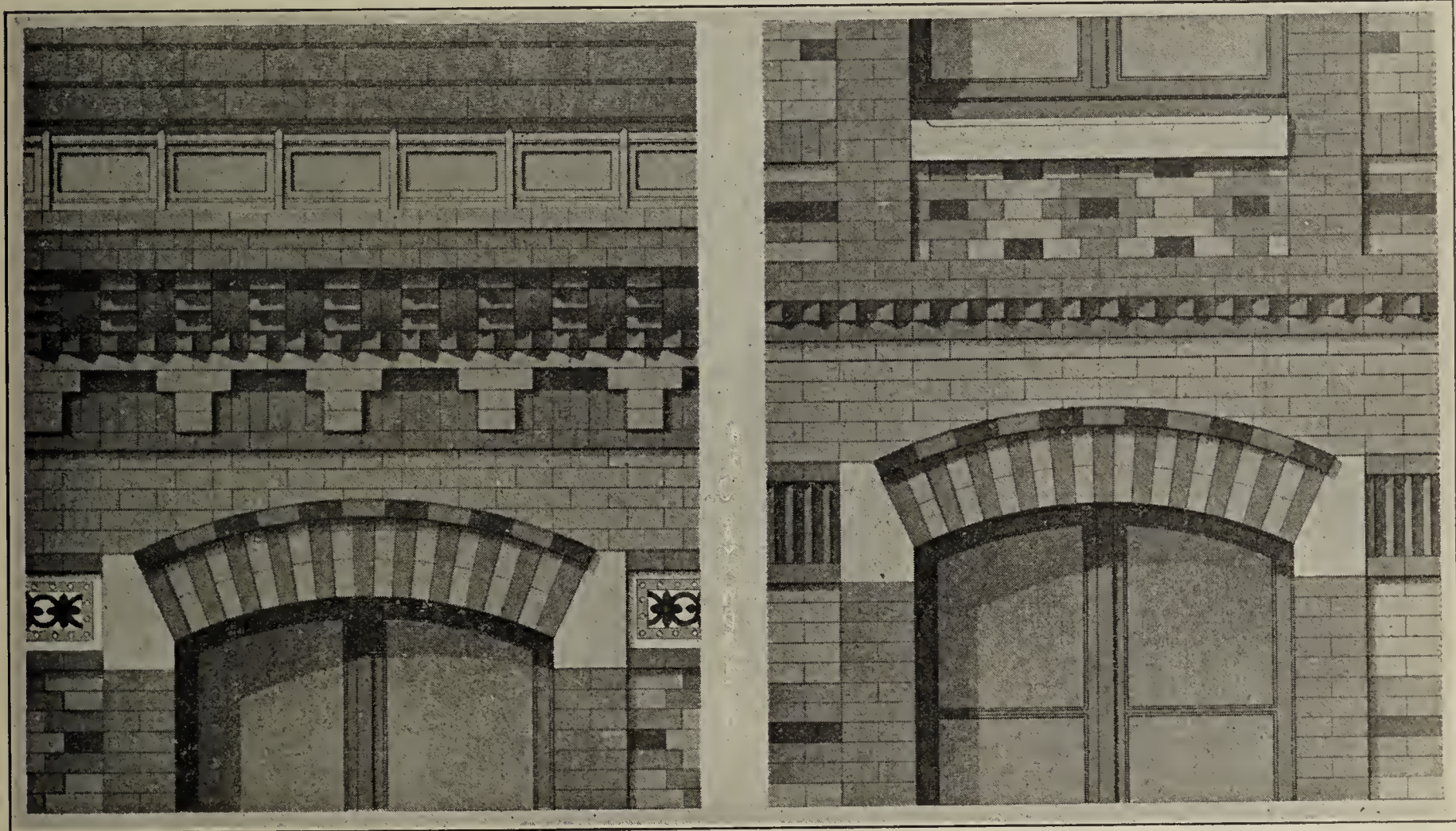
Written for the Clay-Worker.

## ORNAMENTAL BRICK WORK.

IN previous issues we have given a number of examples of French brickwork. The French are artistic in all things and their methods of construction, especially the selection and arrangement of color effects, may be studied to great advantage by very many of our American architects and builders. We are frequently made

difference in the cost as to how many colors she had in the stained glass for her front door. The architect told her that it was all the same price. "Then," said she, "I will get all the different colors I can," and she did. And so did the one who selected the colors of enameled brick for the room in the station referred to. Unfortunately this is not an isolated case. We have color blind frescoers, color blind architects, color blind users of brick, and the result

where there is a red wall, he may use chocolate for the upper and lower margins of the band and fill in between with a lighter shade. We will say that there are five courses in the band of brickwork. With chocolate for the upper and lower courses there will be three courses between. This may be of a dark buff or even a buff which is light. In event of the former being used, if the general character of the architecture will admit of it, it is entirely possible to



ORNAMENTAL BRICK WORK—WINDOW DETAILS.

aware of a sad lack of taste and judgment in this character of work by the exhibition of crazy patch designs that are awful examples of the worse than waste of good materials by improper use. The writer's attention was recently directed to a job of this kind in a railway station in one of the largest cities in the west. In one of the public waiting rooms enameled brick are used with stunning effect. The builder evidently had the same idea of color as the lady who once asked her architect if it made any

is before us in many different directions. The unskilled walk in difficult paths without embarrassment. They undertake combinations of color which would cause a true artist to hesitate. For a man who has really some timidity in his soul, some sense of his obligation to the world in the arrangement of color, there is a reasonably safe path, in which there is little opportunity for serious error. Such an one may use buffs, reds, chocolates, without much danger. In running a band through a building

place at regular intervals a header of the lighter buff; or in case the band is of a light buff, use a darker color, or even a chocolate for the occasional header. By adopting this plan of using colored brick; that is, by selecting varying shades of one color, no great risk is run. However, we bear in mind an instance where some very beautiful brick were used in a business building, in which two shades of the same color were used disastrously. The second story was laid up in a light buff brick,



and the body of the third story in a dark buff, almost a chocolate color. Here a heavy color was placed over one light in quality as well as tone. Generally speaking, it is best to use the stronger color below, and the lighter one above. So simple a thing as this would have made the difference between success and failure in this case.

The accompanying cut shows two windows taken from an actual construction. While we are not able to give the colors, the illustrations show the color values, excepting in the case of the tiling on each side of the left hand window. The darkest part of the figure in this instance, happens to be a bright green, surrounded by gray and white. The green is thrown into relief by its relation to the red brickwork in the body of the wall. The white of the tile also has the quality of subduing it. Above the window is a very simple cornice with good color qualities. Above the cornice is something which should interest us all, viz.: A gutterface of burned clay. This is ideal from an insurance standpoint. Above is the tile roof. As we have said before, there is a possibility that some of these designs may appear somewhat startling to an American. But when we bear in mind that the color combination is perfectly harmonious, we can feel sure of the results. Where variety is harmonious, it is not offensive. It is difficult for us, who see many mistakes in color, to get rid of the "ginger-bread" idea in connection with their liberal use.

The window on the right, while it has a head of the same general design as the other, is interesting because of the simple character of the design on the skewbacks. Above there is a very pretty panel, under a window sill, which is worked out in a perfectly natural way. The little pilaster of color running up on each side of this window and coming yet below the sill gives an added appearance of height which might supply deficiency in this part of the composition. The tendency in using ornamental brickwork as it is done here, is to make a building look low. The pilasters on the sides of the windows add to the height, at the same time that they practically frame the opening.

There is a feature in connection with these windows, which while it does not apply to the brickwork, is of sufficient general interest to be mentioned in this connection. We refer to the fact that the frame does not show excepting

very slightly on the sub sill. The sides of the frame are concealed excepting for about a half an inch on each side of the jamb. Thus there is very little woodwork in connection with the window exposed excepting what belongs to the sash, and in the case of an American window, that amount of sash could be considerably reduced in the middle of the opening. By building in all of the frame, excepting about half an inch on each side, there would be a reduction in the amount of perishable material exposed, a chance for an increase in the size of the opening without any corresponding disadvantage.

We wish to repeat what we have mentioned before in connection with these brick of French manufacture. They are not equal to our product, either in color, texture, general uniformity or other qualities having to do with mechanical excellence. It is in the use of the brick from an artistic standpoint that they succeed conspicuously.

As has been said before, in the descriptions of ornamental brickwork, it is not necessary or desirable to make exact copies of these designs, but rather to use them as general models and to take such suggestions therefrom as may be apt and proper in connection with our own construction.

It is our purpose in future numbers to take up some of the early brickwork, such as was developed in the public structures and private residences of the French people during the fourteenth and fifteenth centuries, and we may promise a very rich treat for those interested in the beautiful and picturesque in architecture.

#### PROTECT THE AMERICAN FAMILY.

THERE are ten Chinamen in this country to every American in China—the figures are eleven hundred against one hundred and ten thousand. In round numbers there are five hundred million Chinamen in China and sixty-five million Americans in America. Now the rights of the eleven hundred Americans in China are not as important as the rights of our sixty-five millions at home; and it is a solemn fact that without restriction of Chinese immigration in ten years the Chinese in this country would outnumber us two to one. Our workers need protection against these live, parchment-bound mummies, who have not at home the respect we give our cattle, and whose morals are bad. The

American family is entitled to some consideration, and Americanism must be protected against the wholesale invasion they will visit upon us if they can. —Judge.

#### BAKING BRICK BY ELECTRICITY.

UNDER the above head the *Pittsburg Dispatch* gives the following account of a radical departure in brickmaking. We regret that the relator did not tell where the electrically baked bricks are now being made:

"In view of the rapidly-increasing development in all branches of electric heating, it is hardly surprising that the idea of an electrical brick kiln should have assumed practical shape. In this, as in all other applications of electricity, a great saving of time is effected, and whereas by the ordinary method the baking of brick extends over three days, by the new process they are turned out in three hours and a half. Moreover, in the same way that in electrical welding the parts joined together are more tenacious in texture than the rest of the metal, so the brick electrically baked are said to be harder and better than those made in the usual way. A singular point in connection with the improved process is that the presence of mineral, which formerly created such havoc by cracking the brick wholesale, is now a distinct advantage. In fact, the more mineral there is in the clay the better, because it forms a resistance and heats the interior of the brick. The apparatus is of the simplest description, consisting of a table covered with iron brick molds. The table is 8x14 feet, and holds 1,000 molds, which are joined together like pigeon-holes. Each mold is the size of a brick which has been pressed but not baked, and has a loose cover, which follows the brick as it shrinks. The pressed brick are placed in the molds, the covers adjusted and current is turned on. The iron sides of the molds form the resistance, and the brick are virtually inclosed by walls of intensely heated metal. When the brick have shrunk to the right size the covers automatically turn off the current, and the brick are dumped."

Joseph Cook proposes that the people be kept out of the World's Fair grounds by soldiers. We may judge from this, perhaps, the tolerance of the church if there were only one of it.—Ex.



Written for the Clay-Worker.

### DOWN IN MEXICO.

#### Third Paper.

AFTER getting our machinery in position and all in good working order, we took time to look around a little, to see what was going on outside of the brickyard. While working inside the walls of the yard, we had noticed from time to time, just over in an adjoining piece of ground, men coming up out of the earth, one after another, each with a sack swung across one shoulder and hanging under the other arm, or partly on the back and hip, very similar to the manner of carrying a sack when sowing wheat by hand. They would go some distance to one side, empty their sacks, then back and disappear like so many rats going in a hole. There must have been fifty of them at least. There were a few old traps of buildings around the place and some peculiarly ancient looking pieces of machinery, and we were curious to know what it all meant. We knew this property all belonged to our Spanish friend of the brickyard, and to him we went, through our guzzling interpreter for information.

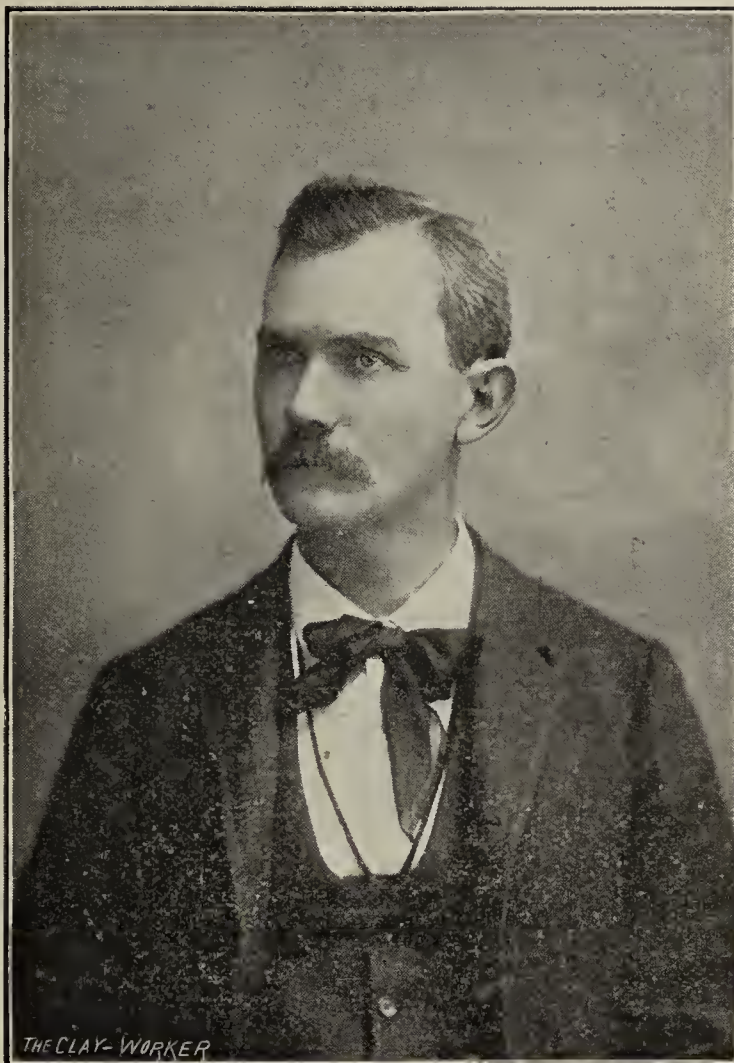
Now we did not expect to find any Mexican brickmaker the possessor of anything that would be the envy of nearly all fellow craftsmen in this part of the country, but it was a fact, this man had what all the brickmakers that we have ever seen, *longed for*; and that is, a *silver mine* in connection with his brickyard; this rat hole from which we had seen the greasers emerge, and then into which disappear, was nothing but a common every-day silver mine, and the loads carried out by the men wassilver ore. We visited the place and found everything of the most crude character. They said the mine was 1,400 feet deep, and the ore was carried up this distance by the Peons as described, climbing pole ladders, and that it had been so brought out for over 100 years.

We could look down the shaft and see the pole ladders as they stood on platforms, which formed rests for the men, until our eyes could penetrate no farther, but we did not go down to verify the 1,400 feet story.

We asked why he did not put in improved machinery for taking out the

ore, and work it more extensively. he replied that the same thing had been suggested to him before, but said he was better satisfied to carry on the business just as his father had done and his grandfather before him had done, that he did not wish to exhaust the supply too soon. He wished it to last him his life time (he was then 23 years old) and that his children and their children should enjoy it for all time to come.

We thought this certainly was providing for the family a long ways ahead, but it was suggested to our mind that some day, some one of these sprigs of Spanish blood might have a little more



C. W. EDMONDS, SECRETARY TENNESSEE BRICK CO.,  
MEMPHIS.

of the spirit of enterprise about him and would knock the bottom out of that silver mine in true American style.

The ore brought from this mine is of a soft shale nature, and when water is applied it is easily reduced. The manner of working it is of the crudest nature. They have a large pit, something similar to a tempering pit in a brickyard, only it stands above ground, with heavy walls about three feet high; it is 20 feet or more in diameter; in the center is an island forming a platform. The ore is placed in this pit, and the water applied, and a sufficient time given for soaking, then the machinery

is brought in for reducing it, and this machinery is in the shape of twelve horses, placed four abreast; the driver stands on the platform with a line to each team of four, cracks his whip and away they go, and all are soon splashing around in thin lob lolly above their knees. When sufficiently reduced, it is run into a long sluice trough about 1,000 feet long, having a proper grade to allow the water to run freely. This trough has catch bars and at intervals a sort of fish trap arrangement for stopping parts that should not be wasted.

The silver is collected and carried to the mint in Zacatecas, where it is turned into Mexican dollars. This money is put into sacks made specially for the purpose out of a peculiar grass; the sacks are very strong, being about a quarter of an inch thick. One thousand dollars is put in each bag, and after once counted in, go by weight entirely until the amount is to be broken. There are no banks in Zacatecas, and New York exchange cannot be purchased, therefore it is necessary to ship the silver dollars up to El Paso or Laredo to be exchanged into gold or New York drafts.

If you go into any business man's office; you will see corded around stacks of these grass sacks, looking more like small bags of coffee or dates than anything else. They are not afraid of their being stolen, they are too heavy; this is one thing they won't steal; but if those bags were filled with wood there would be a constant guard kept over them.

When we made our settlement, and several of these bags were tumbled out on the floor, with the remark, "*There's your money,*" we felt sick, but with the help of several carriers, we got it to the express office at the R. R. station, and by the time it reached Indianapolis in the shape of gold it had cost us just \$112.00.

One of the great drawbacks to Zacatecas is the lack of water. The city, as heretofore described, is about 9,000 feet above the sea level on the top of a bare rocky mountain, with an inhabitation of 100,000. There are but two sources of water supply in the city; one is in about the centre of the town; it is an immense spring or flowing well, and has been confined in a large round basin forty or fifty feet in diameter, with a heavy stone



curb all around. The water is carried on the heads or shoulders in jars or cans by men, women and children, to all parts of the city, and a file of water carriers can be seen at almost any time, 300 to 500 feet long, waiting their turn to get at the pool.

There are, of course, a large number of licensed carriers who supply water to families at a stipulated price, as a dairy man would supply milk up here.

There is a constant detail of police on hand to keep order and to see that the women and children are not imposed upon, and that each comes in their turn; the regular licensed carriers have their special side of the pool from which to get their water; the stone curbing all around shows the impression of the knees, worn by the constant kneeling to fill their vessels.

There is another pool on the outskirts of the city but the water is of an inferior character and it is not much used only for laundry purposes.

They don't have many *blue* Mondays down there on account of regular washings. Washing is too expensive a luxury to be indulged in often, as everybody is taxed for the privilege. Of course the better classes have their regular *wash day dinner* *graces*, and pay a stipulated tax for the privilege, but the poor class have nothing to pay with, and therefore go without washing. The city is very compactly built, with narrow streets, and the police are everywhere, and they keep a constant lookout for any offender who might be playing on the wash tub.

There is but little rain in this latitude and that only at certain times of the year, and at such times the women can be seen in every direction, running out to the puddles in the street hurriedly washing the few duds they possess, but all the time with one eye on the lookout for the police, who pounce down upon them without mercy.

The water for the brickyard and for washing out the silver ore as described is obtained from an old mining shaft right at the yard; it has filled with water up to within 200 feet of the surface, and is brought up by an endless rope with leather buckets tied onto it, which look like old boot legs. A very peculiar and anciently constructed horsepower arrangement is in operation from morning till night, bringing up the necessary supply.

There is but one street car line in Zacatecas, and it is not for the benefit

of people wishing to pass from one part of the city to the other, but connects Zacatecas with another city of about 20,000 inhabitants (the name of which I have forgotten), at the foot of the mountain, in a very rich valley to the south; this is not an electric line, it is a self acting, but not a back action rail road. It is on the principle of coasting in the winter. It is lots of fun to ride down hill on your sled, but hard work to pull it back. This street car line runs a train of two passenger and one mule car. On the down run four mules get aboard the mule car and the passengers the other two, away she goes gliding over a beautiful grade for five miles, but on the return trip the mules take their place at the helm and the schedule time is changed.

#### VITRIFIED BRICK STREET PAVEMENTS.\*

“**A**RE Vitrified Brick suitable for street pavements?” This question has often been asked. All cities in this section of the country are concerned in the matter of the best material for street paving. Thousands of dollars are annually spent in temporary roadways. Good streets are essential to the successful conduct of business. Easy transportation is one of the principles of success. A rough street, or a street full of holes, retards business and is a curse to horses and men alike; an inconvenience, a constant source of expense and perpetual annoyance. From a sanitary standpoint much could be said against the wet, soaked up, rotten timber streets that, for want of better materials, have been a great convenience, in that traffic has been lifted from the mud. But our far west cities have assumed business proportions that demand new roadways, affording better facilities and giving the fullest sanitary protection to the hurrying, bustling thousands who throng our thoroughfares in seasons of rain or sunshine, during the hours of day and night.

Brick pavements, for light and heavy traffic, have been thoroughly tested during the past eight or ten years in various cities throughout the East. Only scattering reports as to the results have been at hand, and but little on the subject has appeared in the public prints, save in clay publications, which find but a few readers among the final judges, when a material for street work is to be

chosen. Authentic information has, therefore, not been at hand on which to base an opinion, in localities far distant from cities where the actual test has been made, followed by miles of vitrified brick pavements as a result of the experiment. Where the subject is not understood, the first cost of a brick pavement, when properly laid, is sometimes held as against it. Such reasoning is, however, as faulty as is any pavement that has a poor foundation.

It must be admitted that quality in brick, as well as in any other materials, is an important factor. No two clays are alike. A pure clay must have age. All sticky substance is not entitled to the term clay. Decomposing vegetable matter, sedimentary deposits, or surface (clays) earth, lack the chemical constituents of a true clay. Such clays will not endure sufficient heat to form a solid body—a homogeneous mass. They show, in the burned article, a fractured, granular or pitted body. The two former conditions are due to the fact that during the drying and burning processes, the clays being irregular, the shrinkage of the clay varies, and perfect unity of particles is impossible; whereas the latter cause is the result of vegetable matter or light mineral substances burning out, leaving pit marks, making the brick porous; and in all these cases the structure is impaired. Nor is the clay that will simply “vitrify” the best. The mass must be annealed; if simply viterous, it is “glassy,” consequently brittle so as to be unfit for street work. The burner must be skilled, the clay, pure. The State of Washington and especially this, Puget Sound county, contains inexhaustible supplies of pure clay, but too little of it has so far been used simply because it has cost too much.

Investigation into the cost of our present system of street planking, proves that it is a more expensive pavement than brick. The average cost per square yard of fir planking is from forty-five to fifty cents. The life of this pavement is about two and one-half years, under heavy traffic; besides this, is the constant cost of repairs, the terrible annoyances from unsafe and uneven streets, retarding traffic to a degree that few people appreciate and who never figure the excess of wear on vehicles over that on smooth, even pavements.

Information at hand being unsatisfactory, the Denny Clay Company recently sent a circular letter, containing

\*From a pamphlet issued by the Denny Clay Company, Seattle, Wash.



fifteen questions on the subject of vitrified brick pavements, to fifteen city engineers in different parts of the country, where brick were known to have been thoroughly tested. The reports, as they were received, are herewith given and show a grand record for vitrified brick. It should be borne in mind that the earliest of these brick pavements were laid in a crude manner; that present recommendations and customs are far in advance of the former method of sticking the brick into the ground or sand alone; and furthermore, that the quality of the brick of to-day has wonderfully advanced. Brickmaking was, for a long time in the country, a mud business. There was nothing more or less of it. It has now become a matter of the fullest research, and the study of clays to-day is receiving attention never before accorded it by the American people. As a result of this, superior goods are produced, and even better results in the future are guaranteed, though the record at hand needs no apology.

The questions sent out were as follows:

How many miles of vitrified brick street pavement are there in your city?

When was the first brick pavement laid?

How are these pavements divided, as between business and residence streets?

Have you brick pavements in use where some of your heaviest hauling is done?

Do contractors guarantee the life of the pavement?

If so, for how long a term?

What is the present condition of your oldest brick pavement?

What is the average cost per year for repairs, based on contract price?

Is the brick pavement noisy, so as to be annoying?

Is it slippery?

On what per cent. of grade do you use the brick pavement?

What size brick do you use?

Are the brick square-edged or rounded corners?

What kind of base do you recommend for brick pavements?

What, in your opinion, will be the future of vitrified brick pavements?

The following are some of the replies to these question:

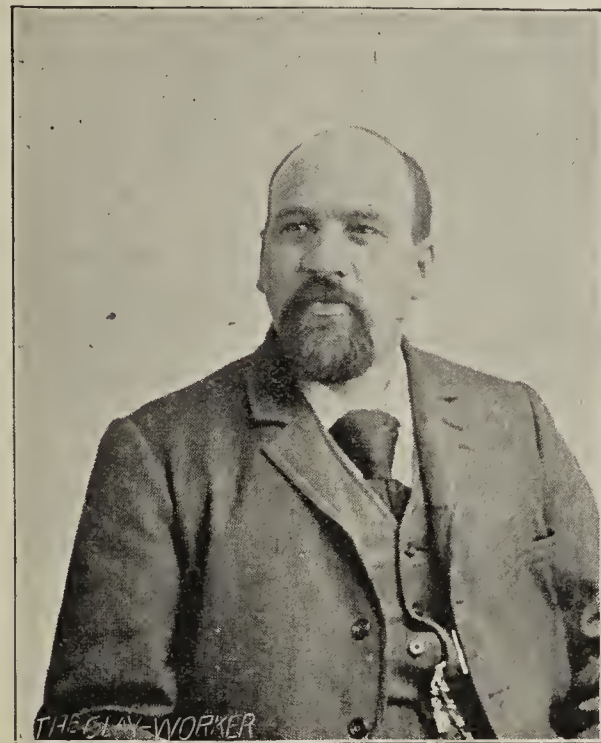
L. E. Chaplin, City Civil Engineer, Canton, Ohio:

"Of vitrified brick street pavements, we have 190,000 square yards in streets from 18 to 120 feet

wide. The first brick pavement was laid in 1888. These pavements are on both business and residence streets, two-thirds the total amount are on business streets. Contractors do not guarantee the life of the pavement, it is not required. Our oldest brick pavement is in good shape. The average cost per year for repairs, based on contract price is nothing. The pavement is not noisy so as to be annoying. It is not slippery. Our per cent. of grade is: least, 3 inches in 100 feet; maximum, 6 feet per hundred. Our size brick are  $2\frac{1}{2} \times 4 \times 8\frac{1}{2}$ -inch brick, and  $3 \times 4 \times 9$ -inch block. The brick are square edged and round corners. For a base, I recommend for brick pavements, generally speaking, concrete 6 inches thick. I think vitrified brick pavements as good a road pavement as any now laid. So far it seems to give good satisfaction and is rapidly increasing in amounts."

Frank Riley, Deputy, Department of Public Works, Cleveland, Ohio:

"There are about six miles of vitrified brick pavements in our city. The first brick pavement was laid in 1888. These pavements are



WM. HAMMERSCHMIDT, LOMBARD, ILL.  
Vice-President Illinois Tile, Brick and Drainage Association.

all on residence streets. Contractors do not guarantee the life of the pavement. The present condition of our oldest brick pavement is good. No repairs have yet been made. The brick pavement is not noisy. It is not slippery. The heaviest grade is not over 3 per cent.; see no objection to use on five per cent. grade. The size brick we use is  $8 \times 2\frac{1}{4} \times 4\frac{1}{4}$ . Both rounded corners and square-edged brick have been used here. For base, all here is sand ballast, joints fitted with tar. Brick pavements should be laid on hydraulic cement concrete, or should be water-proofed by filling all joints with asphalt, tar or cement. In my opinion, the future of vitrified brick pavements is this: I think it is a good pavement for residence streets and will be very extensively used on such streets."

August Pfafflie, City Civil Engineer, Evansville, Ind.:

"There are six miles of vitrified brick street pavements in this city. The first brick pavement was laid four years ago. These pavements are equally divided as between business and residence streets. Yes, we have brick pavements in use where some of our heaviest hauling is done. Contractors do not guarantee the life of the pavement. The present condition of

our oldest brick pavement is good. For repairs we have had no expense as yet. The brick pavement is not noisy. It is not slippery. We use the brick pavement on 1 per cent. grade. We use round corners and square-edged brick. I recommend a concrete base. In my opinion, the future of vitrified brick pavements will be general use under moderate travel."

Lewis Kingman, City Engineer, Topeka, Kansas.

"There are now 36-40 miles of vitrified brick street pavements in our city. The first of this was laid May 19, 1890, mostly on residence streets, none in use where our heaviest hauling is done. Contractors guarantee the life of the pavement two years only. The present condition of our oldest brick pavement is good. We have not spent 5 cents on ours yet. The brick pavement is not noisy or slippery. We have it on 4 per cent. grade. Size brick,  $2 \times 4 \times 8$ -inch. We use square-edged brick. For base, I would recommend 6 inches of sand. In my opinion vitrified brick pavements will be used for residence streets and that it will take the place of all other paving in this city. At present we have asphalt on our main street."

S. W. Parshall, City Engineer, Akron, Ohio:

"We have about seven miles of vitrified brick pavements. The first brick pavement was laid three years ago last summer (Mill Street). These pavements are about equally divided, as between business and residence streets. We have brick pavements on Main, Howard and North Union Streets, where some of our heaviest hauling is done. Contractors do not guarantee the life of the pavement. The present condition of our oldest brick pavement is first-class in every respect. Vitrified shale clay needs no guarantee, and the work should be thoroughly inspected; the trouble, if any, will be in the workmanship. Have had no cause for repairs yet. The brick pavement is not noisy; vitrified shale brick clings to iron. Per cent. of grade, some here, 8 per cent. (North Howard Street); some,  $6\frac{1}{2}$  per cent. (West Market Street). Size brick,  $4 \times 8\frac{1}{2} \times 2\frac{1}{2}$ -inch; West Market Street, repressed, some smaller. Our repressed brick are rounded corners; I prefer square-edged brick. For a base I recommend concrete. We have used mostly slag. It makes a very firm and homogeneous mass, but I hesitate from using it on account of the cry from water and gas companies, claiming it produces an acid detrimental to pipe (iron), and also on account of the lime in it slacking. A deep sandstone surface with some harder material, say limestone, thoroughly rolled and flushed, seems to do well. My opinion on the future of vitrified brick pavements is, when brick companies get to making larger brick, similar to stone; use more care in burning and cooling off, so that brick will not be so cracked and full of fine checks, I think brick will take the place of all other material under any kind of traffic; having combined within itself all the pleasing features of other paving material, at the same time needing a minimum care in any climate or condition."

Josiah Kinnear, City Civil Engineer, Columbus, Ohio:

"Columbus has sixty miles of vitrified brick street pavements (including all kinds of manufactured blocks). The first brick pavement was laid in 1885. We prefer stone for business streets, but use brick for both kinds, and have brick pavements where some of our heaviest hauling is done. Contractors guarantee the life of the pavement for five years. Our oldest brick pavement is in fair condition. No repairs of any consequence have been made. Brick pavements are not noisy. In some instances they are slippery. We have no grade over 3



feet to 100 feet. Sizes of brick, arc,  $2\frac{1}{2} \times 3\frac{1}{2} \times 9$ ;  $5\frac{1}{2} \times 6 \times 10$  (Hollow Hayden block). We have both kinds of edge. I recommend a 6-inch concrete base. There has been a continued improvement in manufacture of paving brick, and there is no doubt improvements will yet be made, so as to make the best paving material in regard to cost and service."

James Cairns, City Engineer, Des Moines, Iowa :

"We have 142-10 miles of vitrified brick street pavements in our city, the first brick pavement being laid in 1889. About 90 per cent. of it is on residence streets, but have brick pavements in use where some of our heaviest hauling is done. Contractors do not guarantee the life of the pavement. No repairs have been necessary yet. It is not noisy nor slippery. We have brick pavement on 9 per cent. grade. Our bricks are  $8\frac{1}{4} \times 4 \times 2\frac{1}{4}$ -inch. We use square-edged brick. For a base I recommend good concrete 4 to 6 inches thick. I think vitrified brick will supercede all other kinds of pavement, except on streets subject to extra heavy traffic."

E. J. Garland, Assistant City Engineer, Springfield, Ills. :

"There are about two miles of vitrified brick street pavements in our city. The first was laid in 1886. These pavements are mostly in business districts. The heaviest hauling is done on our brick pavements. Contractors agree to keep in repair for two years. The present condition of our oldest brick pavement is very good. We have never repaired any yet. The brick pavement is not noisy nor slippery. The common size of our brick is  $2 \times 4 \times 8$ -inch and also large blocks  $4 \times 5 \times 12$ -inch. The bricks are square-edged. I would recommend broken stone for base, if it can be secured at an average cost. We use here a foundation of 2 inches of cinders; 1 inch of sand for bed; then bottom brick laid flat; then 1 inch of sand; then top brick on edge, and  $\frac{1}{2}$  of sand for surface. In my opinion, where cities cannot afford asphalt or granite blocks, would say brick is next in durability and cheapness—taken in consideration the life of granite—especially as compared to cedar block."

F. L. Hays, City Engineer, Wheeling, West Va. :

"We have eleven miles of vitrified brick street pavements. The first brick pavement was laid in 1883. About equally divided as between business and residence streets. We have brick pavements in use where some of our heaviest hauling is done. Contractors do not guarantee the life of the pavement. The present condition of our oldest brick pavement is fair. I have not figured as to the cost of repairs. It is not noisy or slippery. It is laid on a 10 per cent. maximum grade in city. Size brick is  $8\frac{1}{4} \times 4 \times 2$ -inch. We use square-edged brick generally, but used rounded, last year. For base we use generally 9 inches gravel, 2 inches sand; but I would prefer a concrete bed for any street which is the permanent roadway, on which any wearing surface can be used and renewed. From my own experience and what I read in engineering journals, the brick pavement, from its cheapness and durability and excellence from a sanitary standpoint, will be the pavement of the future."

Harry L. Weber, City Civil Engineer, Bucyrus, Ohio :

"There are 42-10 miles of vitrified brick street pavements in our city, the first being laid in 1890. As between business and residence streets it is about half and half. The heaviest hauling is on these brick streets. Contractors do not guarantee the life of the pavement; but the engineer requires him to build according to

specifications and has to guarantee good work; 5 per cent. is retained for one year. Our oldest brick pavement is as good as the day it was laid. We have not expended one cent so far, so cannot give you any idea of the average cost per year for repairs. The brick pavement is not noisy, nor slippery—I have never known a beast to fall on our pavements. We have no grade in our city over 7 per cent.; this will be paved this summer. Size of brick, "Standard," 60 to square yard;  $8\frac{1}{2} \times 4 \times 2\frac{1}{2}$ -inch, "Shale Brick." The brick are square-edged. I recommend 6 inches of crushed stone, put in place by 12-ton steam road roller, upon which is placed 2 inches of sand. The future of vitrified brick streets will depend upon the brickmakers. If the brickmakers aim for quality instead of quantity in their manufacture, these brick streets will stay with us, for in the 'Vitrified Brick' you have more good qualities than in any known material for roadway purposes. Give us the 'Vitrified Brick,' and we will build upon the model and practical roadways of the nineteenth century."

J. B. McAuley, City Engineer, Galesburg, Ill. :

"There are eleven miles of vitrified brick pavements in our city. The first brick pavement was laid during the season of 1886. They are about equally divided as between business and residence streets. We have brick exclusively where our heaviest hauling is done. Contractors guarantee the life of the pavement one year; this is only to cover poor construction. The brick we pave with we do not require contractors to guarantee the life of; we know they last longer than any contractor could guarantee them. The present condition of our oldest brick pavement is first-class. We have not spent one cent for repairs except some places where pavement has been disturbed. Brick pavement is not noisy. It is the smoothest pavement except asphalt, but is not slippery. The small brick give good foot-hold. The brick can be used on 2-10 to 5 per cent. of grade, or steeper if laid right. Our brick are  $2\frac{1}{4} \times 4 \times 8$ -inch. The brick are square-edged, although I think corners could be rounded to advantage. We use sand; macadam or concrete are good bases. I believe vitrified brick pavement to be the pavement for our Western country, and if brick are such as we have here, I am sure brick pavements will be satisfactory if properly laid."

Adna Dobson, City Engineer, Lincoln, Neb., says :

"Of vitrified brick street pavements we have in our city thirteen miles. The first was laid in 1888. These pavements are about equally divided as between business and residence streets. We have brick pavements in use where some of our heaviest hauling is done. Contractors guarantee the life of the pavement for only one year. The present condition of our oldest brick pavement where vitrified brick was used is good. No repairs as yet. The brick pavement is not noisy so as to be annoying. It is not slippery. We have pavement on a five per cent. grade. We use standard size brick. The brick are square-edged. For a base we use mostly sand. I think broken stone better. For pavements we use nothing but brick, and I think it is the coming pavement, being cleaner and less noisy than any other material having the same durability."

#### OVERHEARD.

"Wot day o' de mumf do de Fouf o' July come on dis yeah, Hannah?"

"'Deed I dunno, Rastus; I reckon its somewhar 'bout de thirty-second."—*Ex.*

#### R. J. BURDETTE'S GYMNASIUM.

"For my health," I would do just as I did when I was a boy. Out of school hours, summer and winter, rain or shine, I would spend a great deal of time in the gymnasium. I am a strong believer in athletic scholarship and gymnastic training. I had the advantage, which you may possess, of one of the best equipped gymnasiums in the country in which to build up my health. It extended over the greater portion of Peoria, Tazewell, Woodford and Stark counties, Illinois. I could walk, climb or coast where I pleased. When I went hunting, which was often, I didn't ride in a close railway car through clouds of dust and cinders to the hunting grounds. I walked both ways. When I wanted to go anywhere, unless I had mislaid my legs, and couldn't find them, which was frequently the case with my hat, I knew how to get there. At home I had a private gymnasium, in which I exercised most faithfully. My father was a gymnasiarch, and he furnished white oak and limb-hickory, "buck" saw, and hamrind at his own expense. The ventilation in my gymnasiums, private and public, was perfect. The air came with a free sweep from the sunrise to the sunset. There was sunshine all the way from heaven in the clearings, and graceful shadows under the trees. I don't know so much about gymnasiums hedged in with walls, and roof, and ventilated by machinery; but I know they are better than none. On my eighteenth birthday I enlisted in an infantry regiment, and shouldered a man's musket. I was in active service three years; went into every fight and on every march with my regiment; never was marked off duty one day by reason of sickness; never saw the inside of a hospital; never but once failed to march into camp at night when my regiment did; and many a time when I saw some big fellow lying "played out" in a fence corner, as I passed by him, carrying as big a load as any man in the regiment, unless it might be some convalescent with a haversack like a feather-bed, I felt grateful for my school-boy training in the gymnasium of prairie and forest. And to-day, with the tranquil digestive powers of an ostrich, as I think of past mercies, I thank the good Lord for the wood-pile. Live out of doors all you can my boy. "Walk a heap." The open air, the free, pure air and sunshine are as good as the exercise. Better.—*The Standard.*



Written for the Clay-Worker.

### THE PERFECT BRICK.



PERFECT brick has not yet been made; probably will never be, but on almost any ordinary brickyard, millions of imperfect bricks are made that pass for perfect bricks in the markets, and serve their purpose as such in the construction of our houses, walls, sewers, pavements, etc.

There is no one among the brick-makers striving to produce a perfect brick as a product. All that is required in this line is a good, smooth, square brick, or what will pass as such, burned hard, and uniform in color throughout the kiln. The effort of all brickmakers is directed towards getting this kind of a brick and producing it rapidly at the lowest possible cost.

It is evident, to the most casual observer, that the more rapidly the bricks are made, the rougher and more imperfect they are when finished.

In making brick by hand, it is a very easy matter to determine the output in a given length of time; that matter depending almost entirely upon the power of endurance of the moulder and his assistants, and as the work is allotted to them as task work, can usually be relied upon day by day. With the machine it is different; the iron and steel does not grow tired, sleepy, or hungry, although its maw is a rapacious one; its output is only limited by the means provided to take care of the bricks as they are discharged from the machine.

#### THE BRICK MACHINE CRANK.

We once met a man in our travels who claimed to have been at work twenty-five years, and had spent forty thousand dollars in his efforts to produce a brick machine that would make from one hundred and fifty thousand to two hundred thousand bricks per day.

We examined his machine, and must confess that it showed some ingenuity in its construction.

The first question that naturally suggested itself to the writer was, how would a machine of such capacity be fed with clay fast enough to keep up a continuous stream of bricks, pouring out at the rate of from fifteen thousand to twenty thousand an hour, or from

four to six bricks each second, for ten hours without stopping? The next question was, even if the machine would make the bricks all right, how could they be saved? or how could the machine be kept free, or from being choked with a back pressure?

A few questions propounded to this visionary brickmaker or inventor, settled the matter in my mind that here was a first-class "Crank." Strange to relate, he seemed to have the genius to convince some well meaning people enough to believe in him, invest their money in his schemes and tolerate him.



D. J. C. ARNOLD, NEW LONDON, OHIO, MANUFACTURER OF BRICKYARD SUPPLIES.

It is plain to be seen that machines have their limit beyond which it is unsafe to calculate, and the machine that has the largest advertised output is not always to be recommended, because of the haste required to dispose of the bricks. Should anything go wrong with the delivery or disposal of them for even a half minutes stoppage, they are piled up and block the way, spoiling large numbers of them.

The machine that makes one brick every second and does it consecutively for ten hours every day, should be considered good enough to be adopted as a standard or model machine. There are not many machines in this country that have turned out eleven millions of brick in a single year, which is about the

advertised capacity of most machines  
MAKE HASTE SLOWLY.

We believe there is better success in making, and a better product obtained where the machine is not crowded too fast. If there is a break in the delivery of bricks, and as is the case with some machines, the flow or output continues, there is a loss of time. The matter may seem trifling when looked at as a momentary stoppage, but let us assume that five times during the working hours the flow has been interrupted for one minute at each stop.

There are often as many as ten or more workmen who are affected by that stop; which would make ten minutes of lost time for one man at each stop, or fifty minutes each day. If we count 300 working days in the year, this would aggregate 25 days work of ten hours each for one man. This estimate of lost time is a very low one.

We have stood beside many machines timing the output and stoppages, and have noted as many as here stated in less than one hour. Aside from the stoppage of output was the extra labor of re-handling the bricks that had been piled up in a confused heap near the delivery table.

There is, among all good workmen, a certain gait or speed to which they are accustomed; beyond or below this their work is not well done. If the work is dragging and slow, there is inattention and carelessness. There seems to be no necessity for a display of skill on their part, as when the mill is running at a more rapid rate.

#### A HAPPY MEDIUM.

But bring the machinery to its regular gait, and there is a cry of delight among the men, while the work proceeds in an orderly manner.

Now, push the works and add speed enough to increase the output one-fourth its regular task, and continue it for some hours. At the close of the day the chances are that you will find most of the men overworked. Some will show it by sullen looks and threatening scowls. The extra haste compelled less care in the handling of the bricks, and because of this there are several places where losses can be counted. Trucks collided and spilled their loads, an extra hand was necessary to clear up the run-way,



bricks were spoiled entirely; some were marred and twisted. They were not so carefully placed on the drier floor or in the hacks or racks, and there is a loss of space, while there is a general air of slovenliness over all the work which will remain on the bricks, even after being burned and laid in the wall.

A yard run on this plan is always in disorder and confusion. There should be speed enough maintained to keep every man constantly employed in minding his own business; and that without working the laborer to the extreme limit. The man who uses his muscles should not be overworked or unduly strained to-day, or he will be in no condition to do a good days work to-morrow.

There are, on almost all public works, one or two powerful fellows, capable of doing the most severe muscular labor with apparent ease. I have frequently seen employers select such men to take the lead, and with a little extra inducement offered them, push their work far beyond the usual limit. The result would be that, on the following day, there would be a lack of hands, two or more of them remaining away, pleading sickness.

Now one could scarcely blame the men if they feigned sickness, as a means of retaliating against a greedy or unjust employer. If they were really sick, it was from the extra work imposed upon them, which caused them to become over heated, to drink too much water or catch a cold, which disabled them in some way, as the effect of their extra exertion.

J. A. REEP.



THE Exposition is now settled in its ways, and has reached the full stage of maturity that for the next four months will charm the world with its subtle beauty. For now that all of the exterior arrangements have been completed and the resulting rubbish cleared away, one realizes the wonderful architecture and splendid carrying out of the designs. Before now some noted pens attempted in a few words to give a clear conception of the Exposition, and all have failed, the writers themselves being the first to admit it. To attempt to tell all about the Fair in a few short paragraphs is as impossible an undertaking as the one meditated by Archimedes. It reminds me of the New York man who came to Chicago with the avowed intention of seeing everything in and about the White City in a day, for as he remarked: "I come from a city where things are big, too, perhaps on a bigger scale than this Fair." The gentleman rushed along at a Broadway

pace. When the shades were growing longer, a patrol wagon was seen working its way toward the hospital, and it bore the form of our New York friend. He was going up for a rest and some repairs. The undertaking had proven too much for him.

#### WHAT NOT TO DO.

As a matter of fact a day is well spent in learning how not to get lost in this 600 acres of handsome buildings and interlaced lagoons and canals. The cognomen of the White City is a most happy one, for it is a city and one of the most fascinating.

While it is simply impossible to give any account that will epitomize the entire Exposition, it is possible to give some general ideas of the beauties that there abound.

If the reader will notice the accompanying illustration, he will look upon one of the most typical views in the park, being a view from the north end of the canal and looking towards the south. Upon the right hand of the canal is, first, the Electricity Building, with open towers, surmounted with small gilded domes. Just beyond this is the Palace of Mechanics, the towers of this building reminding one of the old cathedrals of the eastern world. The long facade upon the right is the great Hall of Liberal Arts, and far beyond is the Agricultural Building, of which latter only a corner is seen, with a figure of a man supporting the earth above it. With great excellence is shown the methods of decoration about the buildings. The low terrace of the Liberal Arts Building is surmounted by a broad balustrade, and the latter is further ornamented by potted plants of a tropic nature. Grass plats are upon every hand, and wherever it can be done, shrubbery is introduced.

The canal is bounded by a sea wall and in every place where a post permits, ornamental statuary of a massive type is introduced. Some of the latter are remarkable pieces of modeling, indeed,



A GLIMPSE OF THE FAIR—THE CANAL, LOOKING SOUTH.



and are of great artistic merit. It has proven a fact that the Sabbath at the Fair is a quiet day, and that there is not a large attendance. It is upon such a morning, when all is serene and quiet, that the full beauty of the scene is to be appreciated. The air is pleasant, it is never sultry as it sometimes is in the city, for the breezes from the lake find their way to every nook of the White City.

The building that seems to contain within its walls the entire world is the great Hall of Liberal Arts. It is the most wonderful structure of modern times. Never in the history of the world was so great a building completed in such a short time, and that in such a lasting manner.

The cut that is shown is one of the best that has ever been made, for it is such a huge building that there is no getting it all upon a photographic plate. As it is here seen, we are looking across the court of honor almost due north, the details of the bridges and mural ornaments of all kinds being shown.

Across the basin and parallel to the last building is the Agricultural Building. It is a very handsome one, being ornamented with a most elaborate array of the sculptures such as are appropriate to the art of tilling the soil. Within the walls are shown samples of the culture that marks every people upon the earth, and there can be studied in its every form, all of the products of mother earth.

There are many similar views that may be caught from the various points at the Fair. If any of you are amateur photographers, let me take you into my confidence. The concession for taking pictures is in the hands of one man, but he is gracious enough to permit the use of a 4x5 camera without a tripod. The average amateur is aware that this prevents inside work, and in many cases outside work of great value. But one

concession can be worked to defeat another. There is a concession for renting camp stools in the grounds, and armed with three of these at ten cents each per day, you have a very good tripod, as they are so constructed as to fit one upon the other. While the camera fee is \$2 per day, you can change your plates or roller at a public dark room located near the 60th street fence. So for \$2.30 you are enabled to get a fair lot of plates.

However, there are other things of a less general interest that appeal to the worker in clay in its various branches, and your writer can be forgiven for turning from the absorbing buildings to some of the things that may be found within them.



MANUFACTURERS AND LIBERAL ARTS BUILDING—SOUTH END.

#### A BRICK PALACE.

Among the exhibits made in clays in the Hall of Liberal Arts, there is none more conspicuous than that of the United Hydraulic Pressed Brick Company, one of the largest concerns in the world for the manufacture of brick. It is composed of ten firms, located in eight cities. Together they make the enormous number of 283,000,000 of bricks every year.

This display is made entirely of bricks, and these are of the makes of the various companies in the concern. All are represented in some portion of the building. For it does amount to a building, although entirely open at the top. In its ground plan it is in the

form of a cross, the arms being in the points of the compass. While there is a similarity in the architecture that every face presents, yet there is sufficient difference to deserve separate attention. The main door is probably the one facing the east, it being called the grand portal, from a fancied resemblance to the famous doorway of the Transportation Building, a doorway of rich golden splendor, and which is attracting the greatest attention. The bricks are made in St. Louis and are extremely handsome. It is perhaps worthy of remark that the structure is entirely composed of brick, all ornamentation being formed of that material. And when the elaborate design of some portions is considered, one

cannot but look with admiration upon the work of the brickmaker.

The grand doorway is built in buff colors, being surmounted by a cornice of red brick. The arch proper is in courses of patterned bricks, there being several motives used, which are rich in their general effect, while it must be admitted that in detail they are very simple. The red coping or cornice is patterned in an elaborate design of concentric circles, something that with its shadows of deep brown is very

pleasing. The south portal is not so pronounced an arch, being in fact flat and a true vault arch. The sides are rounded and the corning of the arch is in simple beads, being supported at the ends with angular brackets. The right hand side of the facing is of brick from Omaha, while those upon the opposite end come from the factories at St. Louis. It will be noticed that a false gable is introduced above the door, and that the principal design is of concentric circles and a running scroll of parallel ovals. The front is entirely of red bricks, a few buff colors being introduced near the floor for the forming of ornamental diamonds.

The west front of the structure is





A BRICK PALACE—EAST SIDE.

without door, being in this respect similar to the north face. The brick in it come from St. Louis. The lower half of the wall is in brown shades, and marked by large diamonds of a buff colored brick. The upper portion is of buff granite bricks, the corners being trimmed in darker colors. The cornice is of gray granite and a pattern in diagonal lines with a diamond centre is worked out with red coursings.

The north end contains bricks from Chicago and Philadelphia, the former being in the broad band of red that is near the floor. The courses above are of the gray granite, and the bricks are of the Roman form. A red band made in the imitation of a rope extending about the entire structure marks always where the cornice begins. The cornice itself is made of a red and buff brick laid alternately, making a bold and effective ornamentation, and which is relieved only by a tiny block border.

Through the doorway of the east front, or the grand portal, may be seen a very handsome fireplace and mantel being built of buff bricks from Philadelphia. The fireplace is 3x4 feet and the decorations that surround it are broad and pleasing. The two designs seen upon the upright pilasters are classic, being from the Greek. They are rather novel and it will be noticed that each element of the design requires three bricks to complete it. Just inside of this grand portal and upon the left hand side as you enter,

may be seen some bricks that are pressed in the Capitol City, being plain red ones. They are pressed from the famous clay of the Old Dominion, a clay that sticks everlastingly, from the writer's own knowledge.

To the left of the grand portal and connecting it with the south front wall, there is a wall of bricks that come from Kansas City. The lower portion is of plain reds, while the upper portion is of buff shades and broken by three finely

finished arched windows, the latter being quite narrow. The bricks in the pillars and around the arches are very light, almost white, while the walls above them are of Roman buff bricks. The cornice is a plain red.

The wall opposite to this last one is made after the same plan, the materials however coming from Findlay, Ohio.

Looking in the south door, there is seen another fireplace and mantel, being in this case the work of a Kansas City firm. The design is rather handsome being worked out in plain red bricks, penciled in white, excepting the grate-back, which is of yellow fire brick.

Immediately inside the south portal and to the left, is found some of the work of the Minneapolis firm, and the backing of the portal itself is at the hands of makers in Collinsville, Ill.

The entire building is one that indicates some of the things that can be accomplished through the medium of plain and ornamented bricks in the various colors that are made by the United Hydraulic Brick Company. The imitation granites are well shown, being in both gray and buff colors, and while it cannot be said that in either case one would be deceived as to their imitative nature, still it is very true that both are a pleasing variation from the regular red colors. It is also worthy of remark that the workmanship displayed in the construction is the best, and it will not hurt many a bricklayer to look up-



A BRICK PALACE—SOUTH DOOR.





A BRICK PALACE—NORTH SIDE.

on it and profit thereby. Where a beaded or scrolled brick is placed so evenly with its neighbor that there is no break in the running lines, it is a pleasure to note the good architectural effects that are produced from an apparently difficult and monotonous material.

The building itself does not occupy all the room that was assigned to the company making the display. Running from the building and surrounding this space is a low wall of brick, capped with a coping tile which is one of the pet products of the factories. A few gates or entrance places are in this low wall, and the posts are surmounted by tall chimney cowls of white sand terra cotta, these being the make of the Hansen Co. The coping tile before referred to are salt glazed and provided with overlap. The drip is over both sides equally.

It has so happened that this is the only organized display of brick made in the great Hall of Liberal Arts. Why this should be so is one of the mysteries that are to be found here and there within the boundaries of Jackson Park. All other displays of brick, and they are very few, have been in some practical form in the walls of a building. However it is a tribute to the energy and spirit of the company mentioned not to allow themselves to be left out of the Arts Building, and the structure that I have just spoken of is a worthy display to represent the great corporation.

One of the features perhaps of the

display is the flooring, also of brick, it being laid in an ornamental and tasseled fashion.

The building may be said to show three things to the thoughtful onlooker. It shows what an advance has been made in the manufacture of good substantial building bricks, the kind that are desired for the everyday use of the people. Indicates that an industry that for years had advanced but little, has in

the last decade made great strides. It shows what can be done with plain bricks alone in the way of ornament both for mural work and the interior. For it may well be said that it is not at all a bad finishing material for the interior of the house. And more than this, it indicates that an ordinary brick is capable of being improved and utilized by the artistic hand, and that it is a powerful adjunct to the true art decorator. It is capable of working out elaborate designs, and after it has itself been stamped and pressed may form the chief or partial element of broad decorative works.

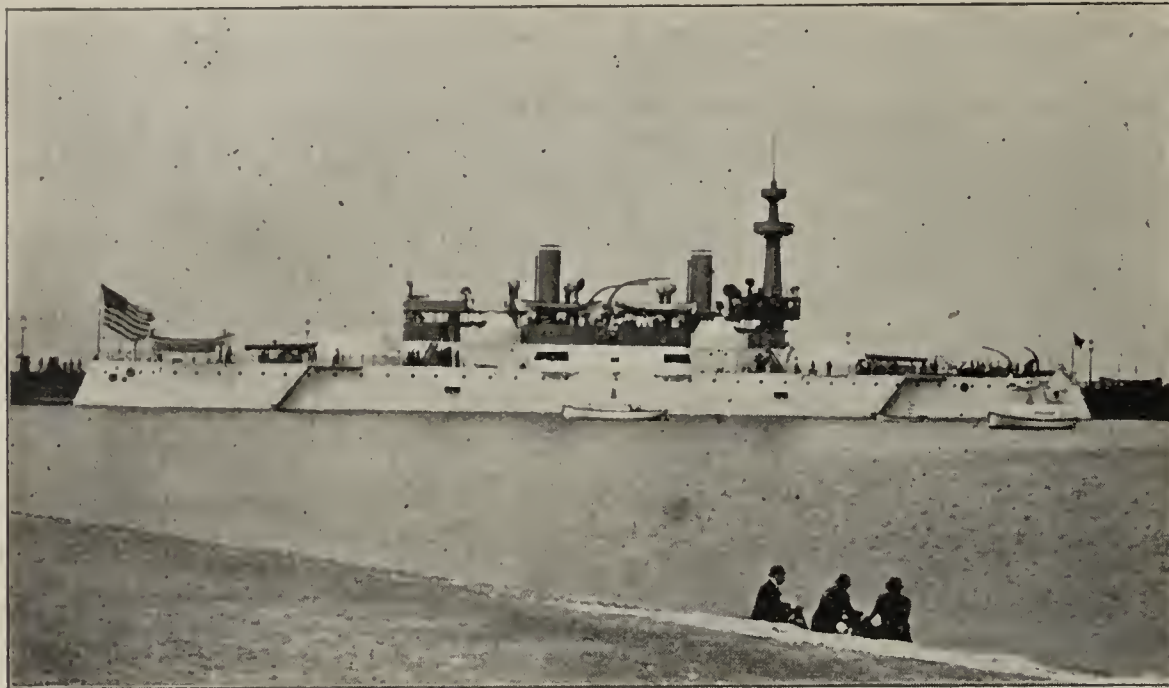
#### A BRICK SHIP.

The World's Fair has added another to the long list of triumphs for the common brick. Wherever it has gone in the world's history, there has been the founding of a great empire, but it has remained for this day to introduce it in naval architecture. Immediately in front of the building erected by the National Government and containing a very interesting exhibit of the workings and treasures of our country, there is anchored close to the sea wall the battleship Illinois. The anchoring part is a very simple process, and the crew has little fear that there will be a dragging out to sea. The ship is upon solid foundations and built right out of the water from brick. However the lines of the real man-of-war, Illinois, have been followed in their every detail. All over, its length is 348 feet and it is 59



A BRICK PALACE—EAST AND SOUTH DOORWAYS.





THE BRICK SHIP.

feet beam. The walls alone, or in more nautical language, the hull, are built of the clay material, all other parts being of iron. In the original the ship is one of ten thousand tons, but the one here is capable of sustaining considerable more. The water line gage is steadily at 26, though we suspect its accuracy.

Eight bells are just sounding in quick successive strokes; that means that it is 12 o'clock, and it was at this hour that the writer first went aboard the brick man-of-war. Above the water line all things are as in the white squadron, the marines pacing the deck upon his guard mount, and the jack tars being engaged in the duties about the ship. Above deck there is a full complement of guns, the large turrets, two in number having a pair each of the huge thirteen inch guns, the giants of the new navy. Smaller turrets are mounted with the eight inch rifles. The mechanism for operating these guns is shown, the loading being by machinery from below, and the firing from the conning tower. This latter is an interesting chamber near the bow of the boat, and is protected by twelve inches of steel. The openings are small rectangular spaces not an inch wide and about three long. In action, the steering is performed from this point. The military mast is shown, and is a very good place to obtain a view of the near buildings of the Exposition.

Below the decks, the ship is very different in its furnishing from one in actual service. Nearly all of the space has been utilized for museums of various naval branches, and the display of curiosities from our naval history.

In the waist where there is more room

than elsewhere, there is placed a number of models of our recent war ships, these having been brought from the Navy Department at Washington. They are beautiful pieces of workmanship, and are elegantly mounted in brass and silver. Every one of the new cruiser is represented, and from them one can obtain a perfect idea of what has been done in the reorganization of our navy, and see in miniature some of the achievements that have shown the world again, that the Americans are the greatest ship builders on the earth. In 1812 they wondered at the navy that broke the power of the Queen of the Sea, and in 1893 after years of inactivity the world's record was again broken with

the New York. In the turret room, as the space beneath the turrets is called, for it is from them that the loading takes place, beneath the rear turret is a collection of paintings, old and dingy now, but such as should arouse the enthusiasm of every American. They represent some of the famous sea fights of 1812, when the bravery of our sailors became a watch word. Some of them are victories under great odds, and others are illustrative of the courage that could fight a losing battle to the bitter end. In this connection, it is proper to speak of the fight of the famous Armstrong where one little ship fought a squadron, and although run ashore and burned, she so crippled her adversaries that they had to refit for sea. It was to this fact that Jackson's victory at New Orleans was in a measure due. The large gun of the Armstrong lies upon the bank a short distance from the Illinois, and it is an interesting thing to compare the veteran of old with some of the monsters that now make war well nigh impossible.

Every phase of jack tars life in the uniform of the American navy is shown. The bunks of the second officer, the cabin of the captain, and the hammocks of the men are all shown. The sick bay is in ready shape for Dr. Sawbones to go to work. The cook has a chance to show the instruments for the manufacture of his "prog," and in fact every department is shown from the master gunner to the powder boy.

Even the most staid presser of bricks



THE ROOKWOOD EXHIBIT IN THE LIBERAL ARTS BUILDING.

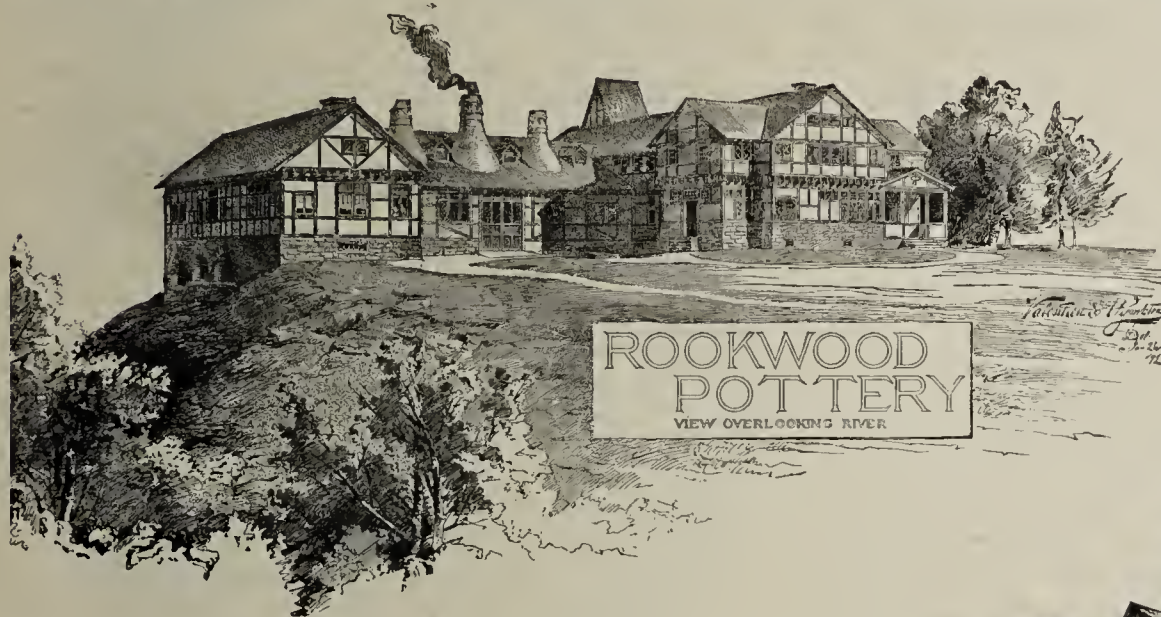


can find something upon the cruiser, to stir him and make him feel glad that he came. The knowledge that it is built up out of bricks will suffice for that, if nothing else.

#### THE UNITED STATES POTTERY ASSOCIATION.

While there is not an organized display of the association, a number of its members have joined together, to place upon exhibition in the Liberal Arts Building, a generous selection of their wares. They procured a liberal spacing, and have made it into a very attractive place indeed, with stands arranged in an open system of aisles. As they are located directly beneath one of the glazed

at a place called Sandbach. While it is not a very large place as far as size goes, it is a great place in the trade, and has sent an able exhibitor in the British section. Coming to this country, Mr. Mayer found that the Ohio Valley and the region near Pittsburg the best for his trade, and settling there developed the industry just mentioned. They do not attempt to produce the finer wares, but are content to make the best quality of white granites that can be obtained. They make more than anything else, an underglazed printed ware, and a lustre band and sprig ware. The latter is of especial value because of the manner of gilding. Wherever gilt is applied



portions of the roof, their lighting is superb, and every effort has been made for an attractive display.

The Rookwood of Cincinnati has placed a small line of their wares here also. But they do not compare with their own main exhibit in the eastern portion of the hall.

The American Kaolin Co., has shown some of their clays, both in the ball and crude forms, and in the finished ware of the finest grades. Numerous hunks of the clay is placed about, moulded in great cubes. Among other things they show is a new silica brick for the stopping of kilns. It is pure silica, and is bound by means of a process that is kept secret. They are becoming very popular, and sales are upon the increase.

The Potter Supply Co., of East Liverpool has a great number of their saggers, stilts and spurs upon exhibit. The latter are placed in jars, and the lot reminds one of a country fair fruit display.

Among the exhibits of pottery, there is no better representative of the regular line goods than the Mayer Pottery Co., of Beaver Falls. Mr. Mayer learned his trade in the great clay fields of England,

an underglaze of brown is applied; the gold being above this, when it wears does not look so bad, the brown reinforcing the color. In their printed

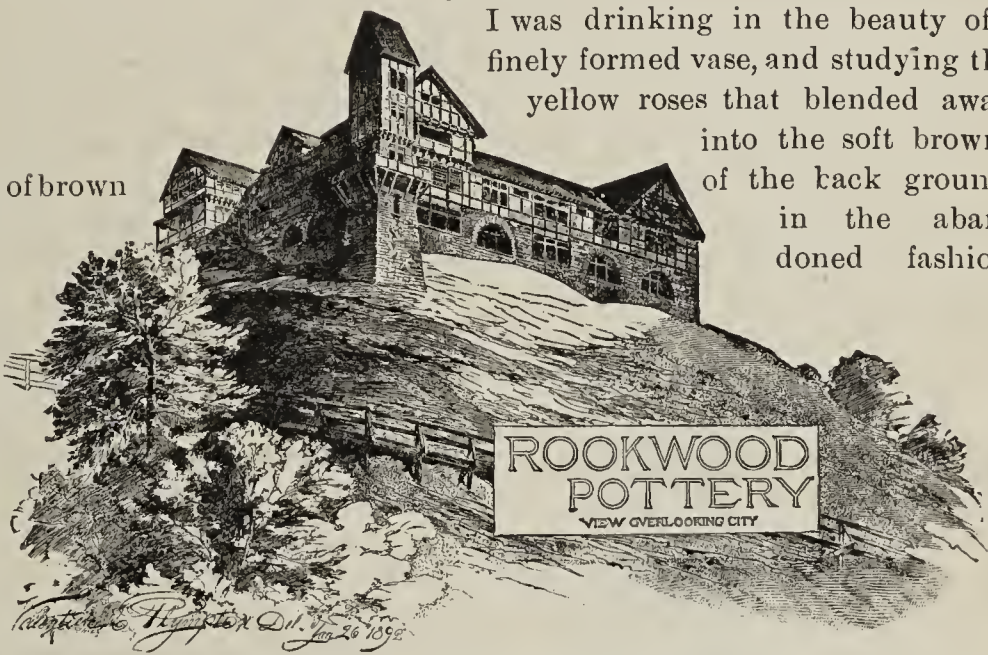
wares are some very pretty designs indeed, in neutral and dove tones. The method of printing is a well known one to the trade, the Mayers having however a secret method of taking the oils out of the colors after they are applied to the ware; this results in a sharper outline.

Some of the potters have placed handsome pieces upon exhibition here, some of them comparing favorably with the best specimens that have come from abroad. And this is saying a great deal, for the wares from Belgium and Austria are beautiful in the extreme. France is not behind hand, and Japanese cloisonne and faience are beyond belief in their loveliness.

#### ROOKWOOD POTTERY,

Whose works are located near Cincinnati, Ohio, were among the first of the exhibitors to complete their display. The floor space assigned to their use, has been covered in a decorative and unique way, that is highly suggestive of the art. The theme is a symbolization of the two elements, fire and clay, these entering into the making of ware. The designs are all original and were executed at the works. Two walls of warm yellow fire-clay body, form an arcade leading to the back screen, and are four feet high and fifteen feet long. From each rise three columns shaped as alternated stacks, from which burst flame shaped torches. At the screen is a small portico with a dome having the outlines of a kiln. Here are some beautiful specimens of the Rookwood product. It is a true faience, and is made from the clays found in the Ohio valley about Cincinnati. The decorators are all graduates of the local art school, excepting one Japanese, and the founder. As copies are seldom made, there is great encouragement for individuality and originality of design.

I was drinking in the beauty of a finely formed vase, and studying the yellow roses that blended away into the soft browns of the back ground, in the abandoned fashion



that fallen petals take, and noticed the lustre known as "tigers eye," a mist of glinting gold, like the finest sands glinting in a ray of sunshine, through a brook pool that has been disturbed. The attendant noticing my interest, glanced at the bottom and remarked, "That's the Jap's work, he is our best designer." The Japanese painter deserved more respect.

Another of their jars had painted in a bold artistic manner, the turbaned head of an Egyptian captain of the guard. It is a bold, strong face and worthy a lasting canvas.

TO BE CONTINUED.

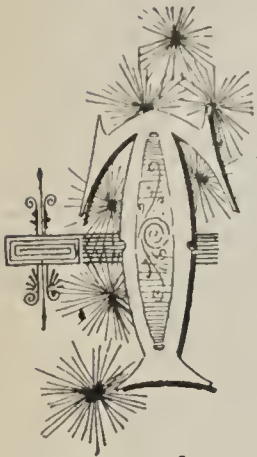


Written for the Clay-Worker.

## BRICK SETTING AND BURNING.

Serial No. 1.

BY J. W. CRARY, SR.



HIS subject has been so often discussed, and so much written about, that quite all the possible ways of setting and burning brick are, as it were, stereotyped upon the minds of most all intelligent brickmakers. Still, there is room for improvement, and no man can say, "I have found it," and efforts will continue to be made until the means for improvement are all exhausted.

The inducement to make the art of setting and burning brick more generally, practicable and perfect, will stimulate inventive genius, just in proportion to the inducement. The two main inducements are the saving of labor and fuel, and the increasing demand for uniform, well burned brick. If the supply of fuel depends on wood, coal, and oil, its cost will gradually increase; but new improvements in electricity, may evolve some process by which brick can be burned as well, and for less cost, than with any kind of fuel now in use. In fact, it has been admitted by *clear-headed* men, that such is within the range of possibility, and it has come to be an axiomatic saying, that, "Things possible, are things probable."

### THE DEMAND FOR PERFECTLY BURNED BRICK STEADILY INCREASING.

The fact that in all the past centuries, very imperfectly burned and often unburned brick have been used in building, has made it common and possible, that the same absurdity may continue, and many architects and all common, small builders still use imperfectly burned brick, as well as other bad materials. It is a common thing to use salmon brick and trashy bats in the inner parts of walls. The brick are laid dry, and in bad mortar, spread so that the brick are seldom well bedded. Bad brick and mortar, and careless, bad laying, are common defects in nearly all brick work. These, with bad foundations, are the fruitful and common causes for the daily, serious accidents that occur in all of our cities.

### THE COMMON BUILDER WILL CUT PRICES TO GET A SALE.

He depends on smoothing things with the supervising architect, and cheating the owner, so he goes to a good brick-

maker and gets brick to show well on the outside, and to a bad brickmaker, to get cheap brick for all inside work, and thus the life and property of the tenant of such a house are in peril all the time. Nine times in ten, fires and falling of buildings are at once traceable to defective materials and workmanship, and yet the same thing goes constantly on in all of our cities.

### ARCHITECTS DO, OR ELSE SHOULD, KNOW BETTER.

They ought to know that a salmon brick cannot be laid to make good work for a valuable building. They ought to know that brick cannot be well laid dry and not well bedded in good mortar. They ought to know that the foundation of a building is an absolute prerequisite consideration, and that in no case, the least possible defect can be permitted without destroying the real intrinsic value of the entire structure.

*First of all to be considered in first-class brick work*, is well made and thoroughly burned brick, and in order to have a good supply of such brick, the setting and burning must be done by skill and practice, based on a scientific understanding of the art. No hear-say or practice, founded on some vague notion or theory, will ever enable a man to set and burn brick with uniform certainty; he must first learn and study the laws of heat and combustion, then he must know how, best to apply these laws, and get the best and most perfect distribution and equalization of heat throughout his kiln. To do this, the setting of brick is of the highest importance.

### A WANT OF FREE DRAFT UP THROUGH THE KILN, A COMMON FAULT.

The old way of setting brick was to start a bench for the end or outside of a kiln, one brick and a third in width on edge, thirty-five brick long and five to six brick high. The inside benches were set two brick wide and two brick, or about the 16th of an inch apart. The top course of the benches was set tight. Upon these courses was started the overhangers, each projecting toward centre of arch about two inches, until they met and closed the arch.

The brick were set about half an inch apart, and the space between two brick was covered by the brick in the next course, or, in other words, the joints were broken, so that the brick would set and stand without toppling. It was not seen or considered that the open spaces thus covered, would cut off all the principal draft up into the body of the kiln, which was set above the arches

transversely, three over three, and as a common rule, thirty brick high. This way of setting brick was not improved until about 1832. In the early summer of 1832, on my father's brickyard, in Cincinnati, Ohio, I made the first innovation on the old methods of setting and burning. It was not that I had inventive genius so much, as that it was that I did not like hard, slavish work well enough to keep up the old stupid practice. It is said that, "Necessity is the mother of invention." I think that laziness is often mixed with the necessity. It was a good deal so with me when I determined to make brick burning more easy and certain; and at the risk of being called an egotist, I will tell just how it happened:

Late in the brickmaking season, in 1832, my father had a kiln of thirty arches to burn; he had all the needed fuel and laborers, and the weather was favorable; he directed me to set fire to the kiln. It was of the old fashioned style—two brick in the bench, and cased up, with no furnace outside of the kiln. We set fire to one side and "water-smoked" about 60 hours, then it was in order to open the opposite head and close the head we had dried off, and slide wood (*"sliders"*) over until all that head was "*settled*." Up to this time, I had three boys, like myself, to help me, but now it needed, at least, six hands on watch—6 on and 6 off, but a heavy snow storm backed all the men out I had engaged, except the three boys, and my father told me to close the kiln, and we would burn it early in the spring.

The boys I had were "perfect bricks;" they said, "We will stick to you and finish this kiln, if your father will give us the money he was to pay to the men who deserted." I proposed this to my father, but he said, "It is impossible for you to do it." But we all said, "We will, for the pay," and he reluctantly consented. For over three days and nights we *charged and fired* that kiln, never resting only 8 or 10 minutes to eat and drink. It was a most remarkable prodigy of human labor performance, but we did it, and did it successfully. But I then and there told my father that I would never set or burn any more brick in that way, that I could improve the whole thing, and would do it next year or else entirely quit the business. So I think both necessity and laziness were active agents with me to improve on the old ways of setting and burning brick.

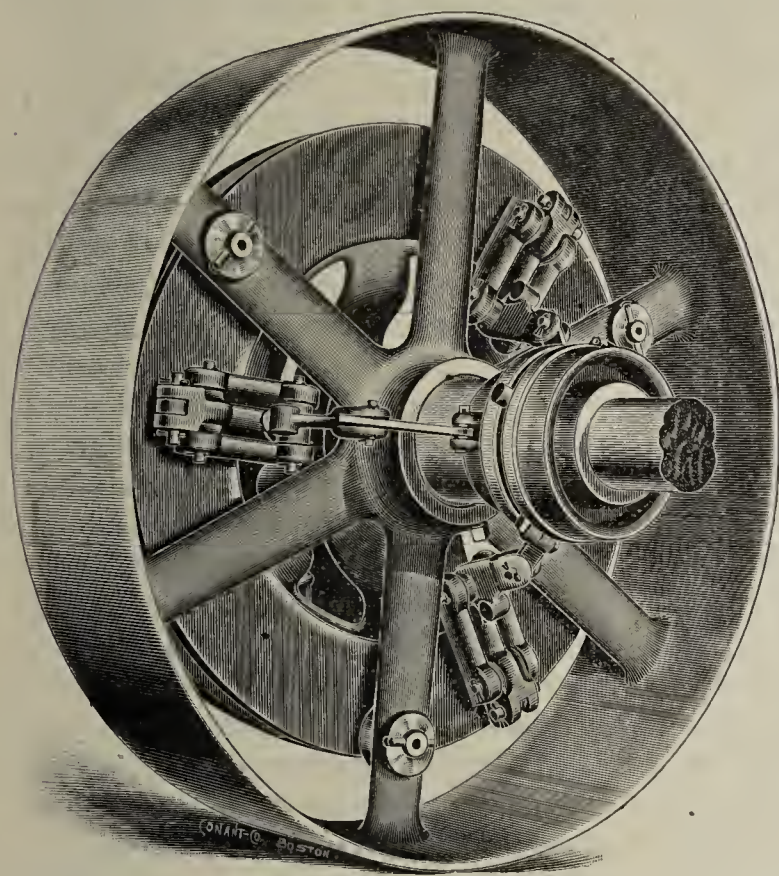
In 1833 I set my first kiln three in a bench, and built a furnace outside, from the kiln four feet, and fired from each side of the kiln at the same time. I had no more use for "home poles" with a *spike* in the end, to shove "*sliders*," (wood) all the way across the kiln. I saved 20 per cent. of wood and 150 per cent. in labor, and made a sure good burn.

I will, in my next, show my further progress in improved ways of setting and burning brick.



## A NEW FRICTION CLUTCH PULLEY.

THE utility of friction clutch pulleys for power transmission has been fully demonstrated by long and continuous service, and to the thoughtful investigator, no argument is needed to prove that the advantages they offer make them the most economical and profitable in the long run. The instant control they afford over shafting, belts and machinery, and their adaptability for high speed, service and heavy work of all kinds, make them



IMPERIAL CLUTCH PULLEY, MANUFACTURED BY J. W. PENFIELD & SON.

well nigh indispensable to the modern factory, equipped for service, speed and convenience. Shifters,—a fruitful source of damage and wear to belts—are dispensed with, and belts too wide to be successfully shifted can be used with best results upon friction clutch pulleys. By placing the clutch pulleys upon the line shaft, all the belts stand still when not at work, still further decreasing wear and tear of belting and also making a saving of the power which would be required to keep belts and loose pulleys in motion.

In some quarters, the mistaken idea prevails that the initial expense of equipping a plant with clutch pulleys is much greater than where tight and loose pulleys with the consequent necessary driving pulleys with double width of face are used. The fact is, that taking into account the cost of loose pulleys and of extra wide driving pulleys (which

are not required with clutch pulleys,) the initial cost of an equipment using clutch pulleys is but slightly, if any, in advance of the other (and admittedly inferior) arrangement, while in some cases, by using clutch pulleys, the cost is even less. Even if this were not the case, it is obvious that the advantages afforded by clutch pulleys would soon compensate for the additional cost, and consequently the matter of first cost should not deter any one from equipping their plants throughout with friction clutches.

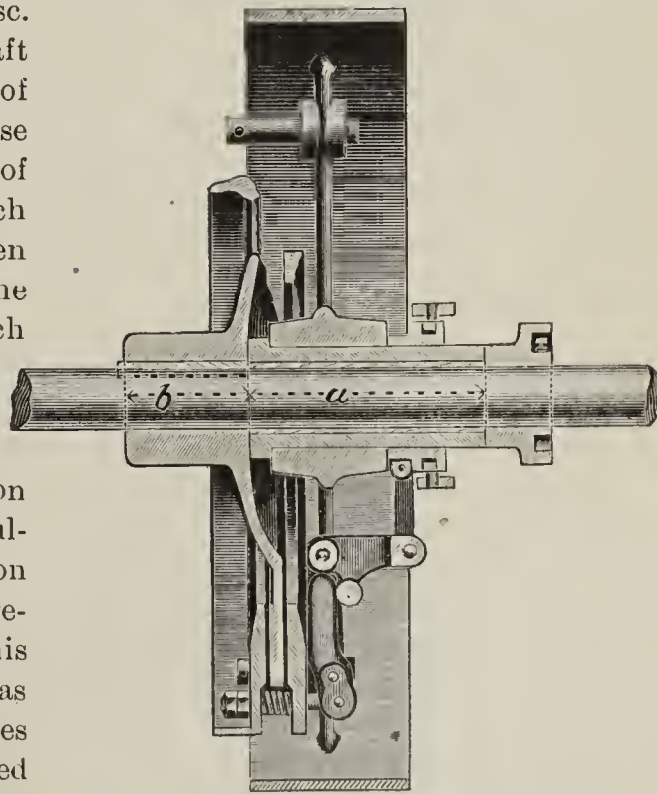
Our attention has lately been called to an improved pulley of this kind, called the "Imperial," and manufactured by the firm of J. W. Penfield & Son, of Willoughby, Ohio, and we present herewith cuts showing the general appearance of the pulley as well as the principles upon which it is constructed. The novel manner of construction, it is claimed, secures increased efficiency, durability, ease of adjustment and quickness of repairs, and at the same time overcomes the only valid objection heretofore urged against clutch pulleys in general.

As will be seen by examination of the sectional view shown herewith, the Imperial Clutch Pulley is provided with two circular friction rings, between which is a friction disc. The friction disc is keyed to the shaft and turns with it, while the balance of the mechanism and the pulley is loose on the shaft. The clutch levers, of which there are three sets on each pulley, clamp the friction disc between the friction rings, thereby setting the whole pulley in motion. The clutch mechanism is very positive and quick acting, giving immediate control over the pulley.

The friction surfaces of the friction rings are protected by strips of insulated fibre, affording an extra precaution against wear. These strips can be replaced by others at any time, and this portion of the pulley kept as good as new. The bushings are made in halves and are renewable. They are babbitted and can be removed and rebabbitted at any time without taking the pulley from the shaft. As the bushing and friction

surfaces are the parts subject to greatest wear, the manner of construction of the Imperial Pulley, permitting the renewing of these parts (as well as of all others) readily, enables the user to keep his pulleys in perfect repair and running order and adds to the profitability of the investment.

The advantages of equipping the line shaft with clutch pulleys are well known and appreciated. By this arrangement, the belts stand still when not at work, avoiding wear and tear, and also saving the power which would be required to keep loose pulleys and belts in motion. The only valid objection heretofore has been that if a friction clutch pulley on the line shaft should slip and require adjustment, the entire line of shafting would have to be stopped for this purpose or the pulley would have to be thrown out of clutch, losing the work of the machine it was driving until the shaft could be conveniently stopped and the friction of the pulley increased. This objection has been entirely overcome by the Imperial Clutch Pulley. Owing to its manner of construction, the friction disc is the only part of the pulley that is in motion when the pulley is out of clutch, the clutch mechanism and the balance of the pulley being loose on the shaft. Therefore, should an Imperial driving pulley on the line shaft slip at any time, the pulley can be thrown out of clutch and the adjustment of friction effected without stopping the shaft. This feature is of great advantage to any establishment, and especially to works



SECTIONAL VIEW OF IMPERIAL CLUTCH PULLEY,—J. W. PENFIELD & SON.



where constant and continuous motion of the line shaft is essential.

The Imperial Pulley also enjoys freedom from injurious effects, due to centrifugal force. The resistance is in direct line with the strain; consequently centrifugal force does not exert a twisting strain upon the clutch members, nor throw them out of balance. As the friction rings move parallel to the shaft, centrifugal force cannot accidentally throw the pulley in or out of clutch. The permanent balance of the clutch mechanism and pulley being assured, and centrifugal force having no effect on the action of the pulleys, there is apparently no limit to the speed at which the clutch may safely be driven.

The large friction surfaces and manner of applying the friction make the pulley very positive and reliable in action, and it will transmit all the power exerted by a belt of the size for which it is made.

The Imperial Friction Clutch Pulley is free from complicated devices, has few parts, occupies comparatively small space on the shaft, is light running and powerful. The fact that it combines all the essentials of a first-class pulley with freedom from difficulties heretofore encountered with other makes, should make it a most attractive appliance and insure its widespread adoption. Further particulars, estimates, etc., will be cheerfully furnished by the manufacturers, Messrs. J. W. Penfield & Son, who also produce a full line of power transmitting machinery of all kinds at their extensive works at Willoughby, Ohio.

Written for the Clay-Worker.

#### HINTS ON BRICKMAKING.

No. 77.

BY R. BRICK.

#### THAT TRAINING SCHOOL.

**M**R. ROBERT PORTER, Superintendent of the late census, was asked to write an article for the *Youth's Companion*, giving his advice to young men, as to the vocation in life that would ensure greatest success; among other things, he said the professions were crowded, in proof of this he says, that doctors and lawyers were glad to get work to do, in taking the census, at two dollars and fifty cents to three dollars per day, while clerks in stores are glad to get from \$30 to \$50 a month. A merchant in Atlanta, Ga., advertised for a bookkeeper at \$40 per month, and

at once received more applications than he could attend; in the same paper an advertisement for a wood carver, at \$3.50 per day, run along for two weeks and no response. Mr. Porter's advice was to learn not only the practical, but the scientific part of mechanics or manufacturing; he mentioned, civil and mining engineering; a good mining engineer capable of taking charge of mines, could command \$10 to \$25 per day. The electric light and power plants that are being erected all over the country are under the supervision of young men almost exclusively, as it is something new, older men do not feel equal to the task of learning the business.

Training schools are in operation in different parts of the country, where young men go and fit themselves for this work, and step from a training school into a lucrative position and make a complete success of it, too. How long would it take a man to learn this business by simply using practical knowledge, without the aid of scientific and accurate knowledge of electricity, or how long would a man have to work in a mine, in order to be able to assay ores, and do the work of an expert mining engineer. Suppose an intelligent miner who had spent twenty-five years of his life in practical mining, and by observation and reading books written upon the subject, and twenty-five years practical experience, had managed to climb step by step, to the top of the ladder and was able to take charge of a mine; would it be right, just, or reasonable, for him to say to his son, "I want you to be a manager of mines sometimes, but you must do as I have done, you must go into the mine and work until you are broken down and gray with toil and age; and get your knowledge as I got mine, I have no use for those colleges and training schools, a boy will never be half as smart as his father unless he travels the same road." "Save the mark, there is nothing like natural ability," he says. Let us see how this is; a young man may have natural ability, he may be a giant in physical strength, he may have a high intellect; you send him into the arena of strife and competition, like a gladiator without sword, shield or helmet he must meet and combat with others, perhaps inferior in physical strength, and "natural ability," but they are protected by the helmet of knowledge and the breast plate of systematic training, and armed with the sword of scientific truth, and this stalwart young man

soon goes down in the unequal struggle.

In the days when there were no swords shields, or helmets, when only the arms and protection that the Creator gave to men, then the young man could go forth with even chances of victory, but the father that would send his son into the field at this day, armed only with natural ability, and perhaps a few pointers that he might get from his old foggy, mossback sire; well he don't care much what becomes of the poor boy, to say the least.

Mr. Porter says, give the boy an education, give him all the knowledge attainable, that pertains to his business, make him an expert, in other words equip him thoroughly for the race that is before him. No intelligent man in any line of manufacture, would think of trying to compete in the markets to-day, with the appliances that were considered first-class twenty-five years ago. He must keep up with the march of improvement, or fall ignobly by the wayside and mournfully watch the procession go by, and the only consolation the poor fellow has, is the thought that the good old way is best. If these things hold good in other arts and manufactures, why not in brick manufacturing. If scientific knowledge and systematic training is necessary and best in other lines, why not in the manufacture of clay goods.

It seems to the writer that a thorough knowledge of chemistry, is especially desirable and necessary for the intelligent preparation, drying and burning of clay wares, not only in reference to the clay, but to the fuel as well, as this is one of the largest items of expense. The manager should know something of the chemical composition of fuel, as well as clay. He should understand the process of combustion, how to most economically convert coal into heat. My excellent friend and able chemist, from Indiana, thought it absurd that a brickmaker should have enough knowledge of chemistry to analyze clay, that he had been studying clays for 20 years and didn't know all the important constituents of clay yet. I cannot of course dispute the professors statement; will just say I am sorry, very sorry, it is thus, and express the hope that he can make a better report next time.

The writer said in the N. B. M. A. Convention at Louisville, Ky.: "The time is coming when the manager of a brick plant, must be not only a practical brickmaker, he must be a scientific brickmaker, and understand chemistry



well enough to analyze clay, and say what it will produce before it is burned." This brought forth the professor's statement. A practical brickmaker of large experience with the knowledge of chemistry, can examine clay and give a tolerably correct opinion as to its quality, and the bricks it will make; if he can do this from practical knowledge and experience alone, why could he not with the aid of chemical knowledge applied to confirm his practical knowledge, tell in advance pretty nearly what a given piece of clay will produce when burned, in regard to strength, shrinkage and color.

We will continue this discussion in a future number, provided we are not "knocked out" by some of the able opposers of systematic training of clay-workers.

Written for the Clay-Worker.

#### CHEMISTRY FOR CLAYWORKERS.

##### Paper No 13.

**I**N RETURNING to the principles of chemistry, let us first briefly glance at chemical nomenclature again.

The naming of chemical elements and compounds is constructed, as much as possible, on a system, so that it may supply information concerning the properties of elementary substances and in the case of compounds to tell the nature and proportion of its elements.

You will remember what was said about those substances which had the terminal "*ate*." To refresh your memories a little, we will take the well-known substance carbonate of lime, (common limestone, marble, chalk, etc.) The word carbonate means, carbonic acid combined with some other substance; in this case it is lime, with its formula  $\text{CaCO}_3$ ; the same applies to all the carbonates, also to the sulphates, nitrates, phosphates, etc.

You will, no doubt, observe that the formula given above does not read in the same order as the name; it reads more like calcium carbonate, with the addition of an atom of oxygen; this incongruity leads up to the new nomenclature, but for the present only hinted at, and taken up again further on. It requires no very high attachments in chemistry to see the inconsistency of reading formula backwards; this alone is sufficient in itself to call for reform. Therefore, in the new nomenclature, carbonate of lime is called *calcic carbonate*; of this, more anon.

There is another class of substances

with their names ending in *ide*. Take for example, chloride of sodium, (common table salt,) with its formula  $\text{NaCl}$ , (reading backwards of course). Oxide of iron, (common iron rust is one form of it, and the black scales seen around a blacksmith's anvil, is another form of it). Iron ores are usually oxides of iron in one form or another. The formula for oxide of iron is  $\text{FeO}$ , this, however, is a very unstable compound which rapidly takes up more oxygen and forms a higher oxide, usually  $\text{Fe}_2\text{O}_3$ ; this is the formula for red oxide, or hematite ore.

Another very familiar oxide is water; this is an oxide of hydrogen, formulated  $\text{H}_2\text{O}$ . It would be an immense task to even mention all the known oxides and very briefly describe them.

Besides the chlorides and oxides, there are iodides, bromides, phosphides, sulphides, etc. These *ides* are the result of the chemical combination of one element with another. You will remember that the *ates* were the result of the combination of an acid with an element. The acids are, of course, compounds. The *ides* then are composed of element combined with element, for example, take the oxides and chlorides mentioned above, and their formula shows them to be a combination of two elements.

In former treatises on chemistry, the sulphides were called "sulphurets," the phosphides phosphurets, and the carbides carburets. The well-known substance, known as iron pyrites, was called sulphuret of iron, later on, they named it sulphide of iron, later still, and it is called *ferric sulphide*. Similarly, phosphuretted hydrogen was changed to phosphide of hydrogen and then to *hydric phosphide*; the formulae for these are respectively  $\text{FeS}_2$  and  $\text{H}_3\text{P}$ . Those names italicised are the modern ones, that is, they are modern now and have been used for the last 21 years to my knowledge.

It is to be regretted that no definite system of nomenclature has yet been agreed upon. Prof. Wilson says: "There are, at present, unfortunately, several systems of nomenclature in use in this country. Almost every writer has considered it expedient to introduce modifications of his own, and it is not easy to see where a sufficient authority exists to settle the question, and decide between the different systems. The student must, therefore, be prepared to hear the same thing called by different names, according to the place where he happens to be working."

There is still another class of compounds distinguished by the termination of its name, which is *ite*. I have not mentioned these compounds in proper order, if I had done so the *ides* would have been named first, the *ites* second and the *ates* third. I gave you the *ates* first because you are more familiar with them.

The distinguishing feature of these three classes of substances is, that the *ides* contain no oxygen, while the *ites* and *ates* do; the *ites* containing less oxygen than the *ates*. If you examine the formulae of the Chlorides, Bromides, Iodides, etc., you will find no oxygen symbol (O) in them, we must, however, make an exception of the oxides. For an example, examine the following formulae:

$\text{Na}_2\text{S}$ , sulphide of sodium, or, *sodic sulphide* in the modern nomenclature,  $\text{NaCl}$  chloride of sodium, or, *sodic chloride*; in these you find no symbol O, but see the next,  $\text{Na}_2\text{H}_2\text{SO}_2$ . This is sulphite of sodium, or, *sodic sulphite*,  $\text{Na}_2\text{SO}_4$ ,  $10\text{H}_2\text{O}$  sulphate of sodium, or, *sodic sulphate*. This, you will remember, is also known as Glauber's salt. These, you will observe, do contain oxygen, also,  $\text{Na}_2\text{O}$  oxide of sodium, or, *sodic oxide*. You will also observe that the sulphate contains more oxygen than the sulphite.

Many of these compounds are of little consequence to the clayworker at present, and it may seem waste of time to learn them, but the advances made in my short time is something marvelous to reflect on.

The brickmaker's duty does not now end, in merely shaping, drying and burning clay. He is now called upon to vitrify it, to glaze and enamel it, etc. Glazing and enameling are sealed books to the majority of clayworkers, and many who profess to know all about it do not know the first principles of it. They build and sustain their reputation on the recipes they have become possessed of, which may be quite successful at one works and a flat failure at the next. Why it is so, the empirical glazer or enameler has not the slightest idea.

This reminds me forcibly of the time—not many years ago—when men, professing to be ahead of ordinary iron and steel workers, peddled round from one works to another a mysterious mixture, called "physic," which was said to purify iron and steel. Ninety-nine per cent. of these men were totally ignorant of the ingredients composing their "physic." All, or very nearly all, were as absurd a



conglomerate as it was possible to mix up. One smart gentleman came to England from the United States; he carried his "physic" in his pocket and dealt it out in homeopathic doses; he played it very successfully on some of the Sheffield steel and iron manufacturers, and was looked upon as one of the cleverest metallurgists that ever visited Sheffield—by a certain class of course. With the utmost *sang froid*, he would take a pinch from his vest pocket and drop a grain or two into a pot of molten steel and then *talk* the quality of the steel into the manager or proprietor, as the case might be; and what do you think this wonderful "physic" was? Iodide of potassium, or *potassic iodide*. I have taken as large a dose to cure neuralgia as he would give to half a ton of steel.

The clay industry is not without its sharpeners, and their game can only be blocked by superior knowledge.

WM. WAPLINGTON.

#### THE PICTURESQUE IN CHIMNEYS.

**N**EARLY all chimneys are uninteresting. We are used to their plainness and simplicity, and for that reason are not disturbed by what we see. It comes pretty near being a truism that we can get used to nearly anything. Lovers of the picturesque have had, however, rather a hard time with chimneys. In a house that should naturally be picturesque, where the effort has been to make it so, we find many lapses in the way of chimney tops. We have pointed out before the picturesque interest which the chimneys in Edinburgh lend to that city. We might here point out the fact, that our chimneys have degenerated to such a degree of plainness, that they lend no interest to our architecture. It is true that in many buildings we see outside chimney breasts, and that they are often profusely ornamented; but when it comes to the cap there is a lapse, and that which started out with so much of promise at the bottom, finishes with a hardness and rigidity which is chilling.

In these days when good mortar stains are provided, and when hard cements and mortars may be used, there is no reason why a brick layer may not take some liberties in his work and construct that which is picturesque and interesting. The present plainness, which is common to chimneys, was the result of poor workmanship and worse mortar in

the past. When a chimney is badly built as to external decoration, everything added to it, influences its tempo-



FIG. 1.

rary character; it soon rots down and reaches a state of decay. But with good workmanship and good material, such as are now available, there is no reason why something more venturesome and more beautiful may not be used.

The illustrations which are here given are from French examples. They are large and it is possible that they are not capable of exact reproduction in much of our work. However, it is true, that there are not many ideas which come from sources outside our immediate locality, which are capable of exact reproduction; they are to be considered in a suggestive spirit. For instance, a

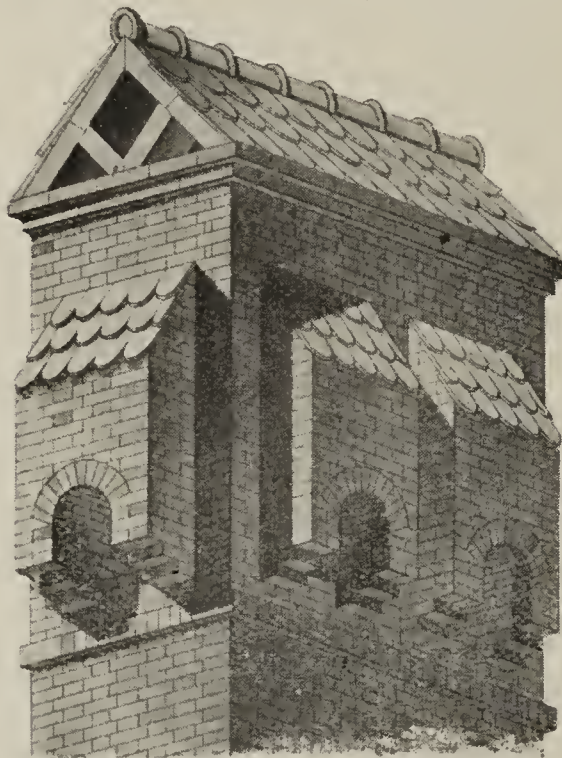


FIG. 2.

chimney with one of the openings on each side, as shown in Fig. 1, would have an interesting quality; then again, one might use a band or two of differ-

ent colored brick; say, chocolate with the red, and thus add, in a simple, unobtrusive way, to the general effect of the chimney.

Fig. 2, is much more elaborate than the other; the top is covered with tile which are laid in cement on a brick covering, the side projections are protected in the same way. In this connection it may be stated that one finds the most beautiful chimneys, those which are the most picturesque, in the sections of the world where workmanship has reached a high standard. In Edinburgh, in which city one will find the very highest class of mason work, there are chimneys which are elaborate in detail. In France, where all building work is regarded seriously, and done in a most painstaking and skillful manner, the chimneys are highly artistic, and there is no fear of a little unusual detail in connection with them.

#### NEW YORK NEWS.

##### WHAT HAPPENED.

**B**EFORE my last article was set up, one of the many changes which so often occur in the brick market, came to pass. As then stated, the market was in good shape with a fair price for stock, and with sound judgment, as regards supply and demand, exercised by shippers they could control the price for two months at least, which would bring them up to August, when shipments would be larger on account of accumulation of stock, and would then place the market in the buyer's favor. During the war, both sides were surprised at times, by a shot or shell coming from some unexpected quarter. Just so the surprise came, when the buyers about the first of June informed the commission men, when they tried to sell their stock, that they were not in need of any. As Capt. Leash said: "Here was a category, fair market, no accumulation at the dock and demand comparatively gone." What was the matter? A day or two developed the cause of not wanting any stock, when a fleet of 40 barges, besides sailing vessels were on the market for sale. A waiting game on the part of the buyers, for the market to turn their way which they knew was sure to come. What did shippers do, withhold sending? No. Did he tell commission men to have a stiff back bone? No; and the result is soon told, a decided fall in the price. The last week in May some



brick were sold for \$6 $\frac{1}{2}$ , but \$6.50 was the going price for most grades. First week in June the "No wanted" commenced; second week, New Jersey price \$5.75, with scale down toward \$5; third week, no increase in price with good many arrivals. The continued good weather has allowed the uninterrupted laying of brick. The buyers are looking for an increase of arrivals, as it is near the Fourth and many manufacturers rush them in at that time. The last week shows a stiffening in price, as some are holding back. Within the past two weeks Hackensack's have sold as low as \$5 $\frac{1}{2}$ , quite a fall from \$6.25 of two weeks before; at present the same boat is on the market and they have refused \$5 $\frac{3}{4}$ , but whether they will get more is a question. Time will tell.

At the time of fall of price, the opinion prevailed that the buyers had agreed among themselves to keep off, for fall in rate. I will not say such was the case. The time favored them, as men in the trade ought to know. It comes around each year. There is a period from about the middle of May till sometime in June, when there is always a slow market, on account of the finishing up of old work and the beginning of new. The manufacturer sent them along for fear the other "fellow" would get his in, and he would not; and the short buying of a day or two brought the tumble in price. Will it be a lesson for the rest of the season?

#### THE OUTPUT

This season is far in excess of last up to the present time, the weather has been uniformly fine and the yards have made steady time. The scarcity of labor has kept the production down somewhat. One of the yards has wanted to start the third machine but could not get the men. Generally after the Fourth there are always less men around, and the probabilities are, this year will prove no exception.

#### LABOR.

The laborer of other days, the Irishman, is fast becoming a back number; he cannot be depended on, as he is sure to loaf just when you want him most, and he only wants to do such and such work. For two or three days or more after pay day, the most of them will be drunk. The Pole is all right as a green horn for trucking. When he is put to wheeling brick he cannot do the work—yes, he can, too, after a fashion, give him time enough, and get enough of them, and they will get the hack in,

but the setter is in danger of being injured by the way they toss the brick. Pay them \$1.50 a day, and the next pay day they will want \$1.75. By that time he has fallen in with other of his countrymen, and they will post him. The colored brother makes a real good hand, but he gets tired and rests when he is most wanted. We have some very good ones here who work steady, but how they do drink "lager!" The Italian is the boy to be depended on; as I stated in a former number, truckers hack the brick, and for truckers hackers the Italian cannot be out done. To get the brick up is one of the trials of a foreman here, if he has men of any other nationality to do the work. If he has Italians he can rest easy, as they will attend to that part of the work. As is often the case, they cannot get their brick up the same day, which will cause two pits of brick to be down, but they will hack them after quitting time, or come down at 3 a. m., and hack, as they do not like to lose time. I have seen them go home after the pit was out, if the day was cloudy, and the day before the brick were not dry enough to hack, they will come back several times during the afternoon, to see if the brick are fit to hack, and at seven in the evening hack them. He will be around Sundays to get up his Saturday brick, without having to go after him, as is often the case when other men hack, they will not come around at all on Sunday. The Italian is sober, the machine never has to wait in the morning for him, he will be the first around. As a brick wheeler he is not so good, but on the yards where there is not so much rush, he will do; or, if it was universal on yards for ten hours, he would be as good as the best. They are the coast line Italians, the dark swarthy class we have here.

#### COMPULSORY HOURS.

In the June number, mention is made of the Governor of New York signing the ten hour bill. There was a joke in it. Whether it was in the bill as it was passed, or inserted afterward I do not know, but it would seem as if the Legislature at Albany could not have read it. As placed before the people it says, "That brick corporations must make ten hours a legal days work," but does not make mention of the individual manufacturer, thereby making the law void, as it discriminates against corporations. I will quote one case in Haverstraw. The Excelsior Co.'s yard is owned

by a corporation, the adjoining yard by an individual. The Excelsior yard under the law would commence at seven and quit at six, while the next yard would commence at 4 a. m., and quit at sun down. The corporation would not be in it. As a brickmaker was the father of the bill, it would seem as though he was not conversant with common law.

#### ABUSE OF CONFIDENCE.

In a former number, in speaking of the use of coal dust, the careful handling of it was set forth. As then said, you may have all the confidence in those who handle it. On one of the yards this spring when burning the first kiln the proprietor, an old brickmaker, noticed that the kiln was keeping hot without much wood. He asked the foreman how he was coaling. "The same as last season," was the reply. He had burned too many brick in his day to think that the same stuff would take less wood without some other factor being present. When the kiln was opened quite a number of swelled were in sight. He then watched the men who drew the dust. When the first car backed up to the dust heap, the cartman placed the box in cart and measured it. He then looked around, and not seeing any one, he threw the box on the ground and shoveled the dust in the cart till he had, as he thought, enough. The second measured his load, but put in two boxes more than he should, for all the men think of, is to get done. On another yard the dust that they got this spring was somewhat coarser than usual, and must have been stronger, as there were quite a number of lammies in the kiln. As the foreman has uniform burns, it surprised him.

The two cases show that any one who is going to use dust, must keep a supervisor over his men, as they are not to be depended on. In the purchase of dust, always try to get the same grade. The bugbear of dust in brick that seems to frighten so many, would speedily be thrown to the winds, if they would make a trip along the Hudson from Albany to Haverstraw, where dust is used on all yards, and see and report if he ever saw anywhere in the States, in proportion to quantity, made as many uniform burns, and brick not set bone dry either. "Tenderfoot's" advise is good—not to experiment. The first person who used dust had to trust to what would be the result.

Why could not any one who wishes to







## CORRESPONDENCE.

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## THE WORLD'S FAIR CITY.

## Chicago Brickmakers Having a Season of Rest, Owing to a Dull Market.

*Editor Clay-Worker:*

"Of all sad words of tongue or pen,  
The saddest are these, it might have been."

It might have been that brickmaking in Chicago during this glorious World's Fair year was flourishing and prosperous, but sad to relate, it isn't. Comparatively few of the yards are running and the demand and prices are at the lowest mark since 1878. One year ago the price of common brick in this market from \$7.00 per M as a minimum to \$7.50 as a maximum. Now it is weak, with \$4.75 as a minimum and \$5.25 as a maximum. Labor, fuel, etc., are the same as last year, and the man who figures closely is unable to see a margin on his side. The result is that few brick are being made and fewer still are disposed of at any price. The wise men who attributed last year's prosperity to a united effort on the part of the manufacturers to raise and maintain price, now see that "All the King's oxen and all the King's men" could not do so when the supply is so much greater than the demand. For the present Chicago is overbuilt, and the younger manufacturers are learning what the older ones ascertained in '73, viz., that no branch of business feels the effects of a financial depression more quickly than the building trades. Food and clothes must be had, but new houses, factories, etc., can be dispensed with. Patience must be exercised and we must be content to live for a year or two on the recollection of the past years of prosperity. In the mean time Chicago brickmakers are taking in the sights of the White City. They ride in the electric launches, walk around the parapets of the Manufacturers' Building, gaze in awe struck wonder at the exhibits of the Transportation Building, are lost in admiration of the intricate and beautiful machinery of Machinery Hall, and vary the monotony of sight-seeing by a ride in the Ferris Wheel. Then they rest (and they all do this) while viewing the voluptuous contortions of the willowy Egyptian maidens or the magnificent Hagenbeck exhibit of trained animals. They have time to go around

with their brother brickmakers and show them the Fair and the fair and still have money enough to pay their own fare. Brickmakers have called on me from almost every State in the Union and several foreign countries and all are unanimous in their praises of what they have seen. Let the rest come.

D. V. PURINGTON.

Chicago, July 10, 1893.

## Fires, Furnaces and Flues.

*Editor Clay-Worker:*

Mr. J. B. Plumb, of Streator, Ill., asks the following, which you have referred to me for an answer:

"I am using round down draft kilns 26 feet diameter inside, with main flue 36 by 40 inches to stack; the stack is 44 inches square, 40 feet high, burning slack coal for brick and drain tile. Would I get better results in the way of fuel expense if stacks were higher?"

In replying, I will first say that the data is hardly sufficient to use as a basis in formulating a definite answer. Slack coal requires a good draft to burn it successfully. If Mr. Plumb's draft is good and the slack is readily consumed, probably no benefit would be derived from building the chimney higher. Economy of fuel depends upon the draft, as to whether or not it is sufficient for the perfect combustion of the fuel consumed. If the draft is sufficient for the fuel capacity of the furnaces, as constructed at present, nothing would be gained by building the stack higher.

Not knowing the area of grate surface, the amount of fuel consumed within a given time and so forth, it is impossible to tell whether or not better results would be gained by increasing the capacity of the chimney, or whether it is already sufficiently high.

It is a notable fact that the builders of modern, improved and patented kilns are abandoning the use of high stacks, and yet they advocate economy of fuel as one of the claims in favor of their kilns.

The amount or weight of mixed gas discharged by a chimney, is proportional to the velocity multiplied by the density. According to Professor Rankine, this becomes a maximum and "The best chimney draft takes place when the absolute temperature of the gas in the chimney is to that of external air, as 25 to 12." When this condition is attained, "The density of the hot gas is one-half of that of the external air."

The Professor goes on and says: "It

may be laid down as a practical rule, that to insure the best possible draught through a given chimney, the temperature of the hot gas in the chimney should be nearly, but not quite, sufficient to melt lead."

This, of course, is strictly theoretical and applies to chimneys that are connected directly to the furnace without the intervention of a mass of material that will remove the heat from the gases on their way from the furnace to the chimney, as the brick or tile in a kiln will do.

In estimating the size or capacity of a chimney for tile or brick kilns, it is not the size of the kiln that is to be considered, but the area of grate surface and amount of coal to be burned within a given time.

In designing and proportioning kilns and the "appurtenances there to," it is important to know how much fuel will be required within any given time to produce the best results. When this is known, the number and size of the furnace, the area of grate surface, capacity of flues and the height and interior sectional area of the chimney can be calculated from formula known to mechanical engineers.

Probably the method most commonly adopted is, to decide upon the number and size of furnaces necessary to produce sufficient heat to burn the kiln successfully. This is usually determined by intuition, or decided by exercising the judgment rather than by calculation according to the laws discovered and rules laid down by scientific experts in the subject of heat and combustion.

Experience has taught the furnace capacity that is necessary to burn a kiln of any given size, and this practical knowledge may be relied upon in guiding the judgment in designing new kilns.

In reality, this practical judgment, is the best and almost the only method that can be utilized in designing kilns, since the conditions and requirements in the various stages of burning are so different that it would be impossible to apply any fixed rules to them.

Having decided upon the number and size of the furnaces to be used for a kiln, it is a mere matter of calculation to determine the dimensions of the chimney that will serve these furnaces.

While it is undoubtedly true that the size or capacity of the chimney must be in proportion to the size of the kiln, since the larger the kiln the more fuel



and furnace capacity is required, there are probably no rules or formula given whereby the relative capacities of kiln and chimneys can be calculated.

Although the kiln may be considered simply as an enlargement of the passage from the furnaces to the chimney, it is of vital importance that the spaces in the floor should be large enough so that their capacity, after the kiln is set, is equal to, or greater, than that of the main flue and chimney.

It is well to have the sectional area of a chimney for a kiln larger than would be required by the furnace, since it is intended to carry away the water-smoke from the ware in the kiln in addition to the gaseous products of combustion within the furnaces.

In speaking of grate surface, it is only intended to use this as a basis for measuring furnace capacity or the amount of fuel to be consumed. It is customary to speak of furnaces as being capable of burning so much coal per square foot of grate surface within a given time.

The chimney capacity necessary to serve any style of furnace whose capacity is known, can be estimated by comparison with a furnace with grates of sufficient area to consume an amount of fuel equal to that burned by the particular furnace under consideration.

If Mr. Plumb succeeds in getting his fires hot enough without much labor on the part of the stoker, and the slack burns readily, I see no advantage to be gained by building the stack higher.

If the fires burn slowly and require much urging to secure sufficient heat, better results might be obtained by building the chimney higher, and possibly the difficulty is not with the chimney. Maybe the grates are too close and do not admit a sufficient amount of air to burn the slack as rapidly as is necessary. The furnace doors may admit more cold air than is required for the perfect combustion of the fuel, and thus reduce the heat. The draft may be retarded by the floor of the kiln being too tight.

Many chimneys are blamed when they are not at fault, but are made to bear the blame that is due to improperly constructed floors, choked air passages or obstructed tunnels.

After the gentleman has fully satisfied himself that the grates, furnace doors, kiln floor and flues under the kiln and to the stack are properly constructed, and working satisfactorily, and that the fireman is skilled and manages

his fires in the best manner, it will do to turn his attention to the chimney.

Experience and observation has taught me that many chimneys are made to bear censure that belongs somewhere else. Any ordinary chimney will give satisfaction if it has a competent corps of assistants.

D. W. STOOKEY.

#### How To Calcine Clay—A Query.

*Editor Clay-Worker:*

I would be very grateful if some of your correspondents who have had practical experience will tell the best and cheapest way to mildly calcine clay so as to admit of its being ground to a fine powder (to pass a No. 70 sieve.)

It must first be heated so as to drive out all the moisture, which in a fat clay takes some trouble and a red heat. I presume a drying flat is the only way; if so, what is the best plan to construct an economical one, and what fuel would it require to dry, say 100 tons per week. I will be glad to hear of any practical suggestion.

HY CLAY.

[By referring to an article by Alfred Crossley on page 314 and 315 of October '91 issue of the CLAY-WORKER, entitled "Calcining Clays," and to "Hints on Brickmaking," No. 73, page 382 March '93 issue, which describes the method of construction and operating a hot floor dryer, the desired information may be obtained.—ED.]

#### The Other Side.

*Editor Clay-Worker:*

In my letter published in the May number I said that "large bodies move slowly." Well, I think that is true and from subsequent experience, I am justified in the belief that when once in motion, results follow quickly; at least such was the case with us. About the time my letter reached you the company I. C. R., of whose tardiness I complained, commenced to lay the track to our yard and had it completed in three days. It made me feel bad to think that I had said anything about the I. C. R., not treating its patrons as it should, for they have since fixed us up in good shape. I think the company is doing all it can for its patrons, and where parties will show any disposition to open up any enterprise along their line, the company will meet them half way and give them every assistance reasonable, and I can say the traffic department is O. K. We have had no trouble so far in getting cars, they keep one man on the road to attend to the wants of its patrons and he

is the right man in the right place. If there is anything needing attention, all one has to do is to notify him, and things will soon be righted. I speak of Mr. Hays the traveling freight agent. I told you that the brick were on the boom here, and when I wrote such was the case. When we commenced to deliver them we did not get the chance to ship many, for an order came along the line to stop shipping. The brick on this road had been bought up by one man, and the yards sent them to him so fast, that he was completely blockaded and is not much better yet. Some of those who started up this spring, have already found out that a brick yard is not a gold mine, and I think there will be some yards this fall that can be had very cheap, as the capital will all be gone and nothing left but experience.

J. T. MOORE,

Osyka, Miss.

#### About Continuous Kilns.

*Editor Clay-Worker:*

Having had some success in burning fire brick in continuous kilns, it occurs to me that a few lines on the principles and workings of them, might not be out of place. The principle of the continuous kiln should be; first, to attain and then maintain such heat, so that all the coal put in the feed holes, is, within five minutes converted into gases, all the smoke consumed or nearly so, and the dross from such coal being of the smallest quantity possible, not to exceed eight barrows, (if kiln is properly worked) in a chamber of 25 M. capacity. Second, all such gases should be confined and passed into the green hot brick, and not escape up chimney shaft, only steam and water smoke should go that way. Third, the hot air flues should be so arranged, that surplus heat during process of cooling off chambers can be admitted into the wet brick (just stiff enough to sustain their own weight) at a temperature of from 100 to 200 degrees, first rising gradually to at least 1,000 degrees, and thereby allowing the brick to prepare for the fire. Fourth, after such drying process the heat should be admitted to commence burning brick, first gradually increasing every hour till the highest required heat is obtained. On the gradual increase of such heat depends a good deal of the successful burning of all brick. A kiln aiming at less than this, falls short of what the continuous kiln principle has, can and is being made to do



at the present time. A continuous kiln in the hands of one who means it to be successful, is best likened to a mouse under the eyes of a cat, it must be continually watched.

Sufficient air should be admitted at the back of the kiln, to push forward the fire without cracking or damaging the goods (especially is this required in burning vitrified or paving brick, which in some red clays are liable to crack if cooled off too quickly).

I might add in passing that the properly constructed and worked continuous kiln can be made to burn from one and one-half to six chambers per week, at will of burner to suit the output of machinery. As to reputation, a good many firms have lost instead of gained, all because, in many instances brick yard proprietors will allow their own men to start the kiln, instead of doing like others have been obliged to do, have a proper training in the continuous principle. It is as good policy to take a laborer out of the field and put him at the head of a hospital, as to put an ordinary clamp or common kiln burner in charge of a continuous kiln. I am firmly of the opinion that where continuous kilns are properly constructed, and intelligently operated, they are more economical than the old style kilns.

A BURNER.

#### Among the Brickmakers.

*Editor Clay-Worker:*

During the past few days I have visited Franklin, Pa., where I was very much pleased in viewing progress at the Franklin Paving Brick Co's. plant. It is exactly 9 years since my last visit to this pretty town on the banks of old French Creek, and upon the truck garden patch of 9 years ago, I found a large and increasing (in size) brick plant for the manufacture of shale brick for street pavers. At the present time "Every body and the cook," are engaged there in building a continuous kiln of immense size. It is of the Sercombe, Osman & Warren type, and to one unused to the style, looks very massive, but simple of construction.

Mr. Cramer, the Sup't., very kindly gave me all the information asked for. He appears to be one of those large, (6-foot tall) fellows one often runs across, who is not afraid to tell a brother brickmaker a part of what he knows about making the paving material of the future.

This plant was started four years ago,

so Mr. C. told me, at an expense of \$20,000 before making a brick, breaking machinery about as fast as it could be placed; finally, getting a machine that would stand the racket all O. K. Their first kilns were old, square up-draft, (now being torn down to make room for continuous kiln,) then 4 round down-drafts, where the writer saw some very handsome vitrified brick, all burned with natural gas.

The expectations are that this new kiln will burn their shale more completely and at much less cost than old style, and it does look very reasonable. The shale is taken from one of the bluffs, about 300 yards away from the works and is of a magnificent quality, as well as quantity. The present face must be, at least, 75 feet high, and will still be higher as they go back into the hill. I am informed that this can be quarried and put into the works for 25 cents per M,—certainly a very reasonable price. This same Company also have underway a new dryer, expecting by the use of this to do away with the present method,—a hot floor, where the brick are hacked to dry.

Franklin shows her faith in these brick by having paved several streets, which, by the way, make the little city look very cleanly.

During my visit at Homestead, I spent several days in the "Smoky City," where I also found Booth & Flynn experimenting with a continuous kiln of still another pattern. Results—sometimes a good chamber, then again a poor one. The dry press brick made at this place though, were very well made by the Simpson press. Material used, a conglomeration of "red bastard fire clay," I should call it, and yellow clay and spalls of sandstone, the brick coming from the machine hard enough to handle very roughly, still keeping the corners in good shape. The Company have erected for themselves an office building on 4th Ave., with these brick for fronts. If their material was screened a little more carefully, the brick would be smoother and make a better front.

Building operations in Pittsburgh at the time of my visit, (early in June,) were not fully under way, but since my former visit of one year ago, I notice many improvements notably, Joseph Horne & Co., on Penn. Ave., an immense building of buff brick and terra cotta, a large school building, Cor. 8th and Duquensway, of mottle brick, and Solomon & Rubens' mammoth clothing

house, on Smithfield St., of buff brick; Kauffman's also have built a large addition to their already large establishment, using red brick and terra cotta.

Pittsburgh is "right in it," it seems, as those hills can all be ground into brick. Some excellent samples of dry press brick were found at the Kensington Improvement Office, both red and buff. I am told a pretty tough yarn about some of the material at this plant. It is this, that while the kiln is still red hot, the door can be taken down and water thrown into the kiln by a hose until the brick are cold, when the brick still retain their jingle like gold. Is this true, I wonder? If so, they have a banana. Lack of time prevented a visit to the works, which, I am informed, is a very complete one.

W. R. O.

#### Philadelphia News.

*Editor Clay-Worker:*

The close working of the money market has served to keep a number of new contracts back. In fact, builders find great difficulty in securing funds from banks and trust companies so that many buildings contemplated have been postponed, and in some places where work had already been begun, such as digging foundations, has been stopped after the hole in the ground had been made.

The fourth week of the plasterers' strike has ended, and the situation appears to be but little better. A few contractors who were forced to accede to a higher rate, such as the Reading Terminal and a few other pushing jobs. The other bosses appear to be holding out stubbornly.

Manufacturers of bricks have been unusually busy so far this season, but if the money stringency continues, they fear a general reduction of fall business, possibilities not likely to occur.

The Lewis Run Pressed Brick Company, McKean County, Pa., has been chartered. Capital \$30,000.

In the building of the Niagara Falls Paper Company's plant 4,612,000 bricks were used. The smoke chimney alone consumed 316,835 bricks.

The contract for the erection of the new Bourse will shortly be under way. It will be one of the largest buildings to be erected this year, so far, and will eat up several millions of brick and about 3,000 tons of structural iron.

There will probably be more asphaltum and vitrified brick used for street paving purposes than in any one previous year. The trouble about the matter is



the brick used by the contractors are not vitrified at all, but are the cast off bricks of the kiln and the most deplorable substitute for the Cumberland or Ohio brick, used for street paving purposes. In West Philadelphia, in localities where the West Virginia vitrified brick was laid four years ago, the streets are in as good condition as when first laid; but of late years contractors have adopted the most miserable substitute for a street brick, and in consequence of which, the Director of Public Works has become somewhat prejudiced against a brick pavement.

Trade conditions at present are at a very low ebb and the building interest more or less sympathetic with the dullness. Borrowers are everywhere clamorous, and lenders are extremely careful who they lend to. Margins are lower than they ever were, but production appears to drive ahead, distributors are moderately busy and stocks, as a rule, are low. It looks, however, as if the present stringency in the money market is but short lived, and when that is once settled, production will go forward and general business will resume its normal condition. One troublesome factor, however, is low margins, and they are more dangerous than any of the other conditions, as it is an easy matter to lower quotations, but the more difficult to advance them.

As to the brick business, manufacturers have had an unusual busy season, but the present dullness appears to suggest a few weeks shut down.

#### Well Fixed for Material.

*Editor Clay-Worker:*

We herewith mail you a check for \$2.00 for CLAY-WORKER to April 1894. In regard to what we are doing, will say: Our plant is situated in the centre of the fast growing city of Beatrice, Neb. We have four acres of land adjacent to the B. & M. and U. P. R. R. yards, on which our yard stands and plant is built. It is a very valuable plat of ground, being in the centre of the city of 15,000, most convenient for shipping to all parts, as we have tracks running through one yard. Our full capacity is 50 M per day. We have the Penfield outfit, patent dryer, containing five and one-half miles of steam pipe, and holds 95 M brick and dry them in 36 hours. We have a 14 chamber Radford improved continuous kiln which burns 350,000 per round. We have a very superior bank of clay at Ludicott, Neb., forty

miles out, consisting of ten acres, 60 feet deep. The clay is suitable to make any kind of clay goods, from which we ship. In one clay, the analysis being silica 55, alumina 38, oxide of iron, etc., 7 per cent. We have a great quantity of kaolin or fire clay in our clay bank. We make paving, building and fire brick, fire proof tiling, side walk squares, etc. We propose to make roofing tile and other clay goods shortly. We have been running since Sept. '89. We have not stopped a day—Sunday excepted—since '92. Sales are dull just at present. The outlook for the season is very fair. We have nearly two million brick on hand ready for delivery, besides fire proof tiling, etc., and we are still running.

Beatrice has five miles of as good brick pavement as there is anywhere, of which the greater part was laid in '89 and '90, and is giving the best of satisfaction, and no repairs are likely to be needed for years to come.

The foundation of a new hotel—the Blakely, took 400,000 of our hard brick. The superstructure will take 1½ million of our building brick. The hotel will cost from \$80,000 to \$100,000. New post-office nearly finished. New Presbyterian church and many business blocks and dwelling houses are now being built.

Beatrice, Neb. W. H. DUFFETT.

#### Ohio Valley News.

*Editor Clay-Worker:*

The sewer pipe men report a good demand for pipe, but at the same time, very low figures, that so long have been prevalent.

The paving brick manufacturers complain of extreme dullness. The financial troubles of our country have had the effect of checking contemplated paving in many cities. There are eleven paving brick works on the New Cumberland side of the river. The Clifton and Sligo Works of the John Porter Co., and E. A. Freshwater's Lone Star Yard, are idle. Three of the others are running only half time, and the balance are running to their full capacity.

The John Porter Co., of New Cumberland, W. Va., are building a mammoth brick kiln at their Clifton Works, known as the Centinela Patent Continuous Brick Kiln, the right being controlled by a company of Centinela (California) capitalists.

The Ohio Paving Company of Columbus, O., found it necessary to place its business in the hands of a receiver.

This is caused by parties failing to pay notes for material furnished, and their inability to secure money for accruing indebtedness; the stringency in money matters affecting them seriously. Their assets are about \$350,000, and liabilities about \$196,000. The principal stockholders are N. B. Abbott and H. S. Hallwood. Mr. Abbott was appointed receiver July 7th, he being the largest creditor, with a bond of \$30,000.

Cunningham & James, of New Cumberland, W. Va., will supply the city of Wheeling, W. Va., with her paving brick this summer, and the Excelsior Sewer Pipe Works, of Toronto, O., the sewer pipe; both very large and desirable contracts.

The pipe kiln setters at the sewer pipe works of the Great Western Fire Clay Co., and John Francy's Sons & Co., went out on a strike on July 5th against a reduction in their wages, which was to take effect on that date. The companies claim the reduction is to correspond to prices paid by the other manufacturers.

The largest and most expensive lawsuit ever tried in Belmont County, was brought to an end late Saturday night, July 8th, having occupied the court's time for four days, and over one hundred witnesses were examined. Charles Rosser, the well-known paving contractor, who paved Main Street of Barnesville, Ohio, sued said town for compensation, for extra foundation, and also for the profits of a job which he contracted for, but which was declared forfeited by reason of Rosser not having commenced work on the specified time. It was a matter of several thousand dollars to the parties, and was practically a victory for the plaintiff, the jury, after being out seven hours, finding that Rosser should recover \$10,168, he having sued for \$12,000, and the defendant to pay costs, which will exceed \$1,000.

BUCKEYE.

The Blow Brick Company, who recently bought the old Ruprecht yard at St. Louis, are making an excellent quality of goods, and say they are selling all the brick they can make. Their yard is located in Carondelet, and they have an exceedingly fine body of clay, about the best around St. Louis, which is famous all over the country for its clay-beds. They have a 4-mold Boyd Press of the latest pattern, and are turning out about twenty thousand brick per day. This is an enterprising, pushing company, and deserve the success they are meeting with.



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MANUFACTURERS' ASSOCIATION OF THE  
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T. A. RANDALL &amp; CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

**THE COMMERCIAL SQUEEZE.**

It has been a case of commercial grippé—an epidemic, a bankers' panic, a squeeze during a season of plenty. It is natural for us to look for reasons for all of our troubles. Those of us who have read most of the journals, financial and otherwise, have seen many causes assigned for the stringency. All unite in the idea that we are operating under a bad financial plan, but the collateral causes assigned are as numerous as the writers of opinions. All unite in the idea that prosperity is due to us. There is plenty of idle capital, and, generally speaking, the country is free from debt. We woke up to find that we were badly scared. In concert we reached out to pull in that which we regarded as our own. The bankers wanted their money, the jobbers shortened their lines of trade and the retailers urged their customers to pay their bills and the result is, a squeeze. At this time bankers and merchants are engaged in counting their money, and all agree that it is a very unprofitable sort of an occupation. It is pleasant enough for a time, but soon grows wearisome. No money is made by counting money. It is all well enough to know what we have, but farther than that the operation is barren of results. The banks and merchants are beginning to realize that money in the vaults does not bring interest. For that reason there is at this time an evidence

of a softening of the situation, a disposition to let go. The banker feels that the government wants to do the right thing and that everything is not going to the demnition bow wows at once, and he lets himself out. The merchant, ever ready to respond, and anxious to do business, offers his goods for sale on safe terms, and the business world is beginning to move again.

**CONSOLIDATION.**

The combination of the three principle brick concerns in Massachusetts emphasizes a controlling principle in connection with the movement of business affairs in this country at this time. This is consolidation. In one sense this is not pleasant to contemplate. One of the pleasant things about business life is personal ambition, personal contact with one's business, and a freedom from general responsibility. This does not come in the same way, certainly not in the same satisfactory way, in one's business connection with a large combination or pool. One loses his identity. While his personal responsibility in one sense is enlarged, he does not feel the same direct and individual satisfaction in connection with his work. There is not the same opportunity for feeling and displaying personal pride in one's business, that there is in connection with individual or partnership relations. However, this is a period of combinations. The combination is logical. It reduces the cost of production. Anything in business experience which does this is sure to progress. This is a natural business law, and while the brick business, for instance, of some of our western cities may at this time appear to be far removed from consolidation, it is nevertheless true that the tendency is in this direction. It is sure to come about to a greater or less extent. Times of business depression set people to thinking. They cut their expenses wherever it is possible. The ultimate result is consolidation. A prophet can enunciate a principle, but he cannot fix a time for its consummation.

**GOOD WORK AND BAD.**

The manufacture of colored brick in large quantities and of varying shades, texture and form is relatively a new industry in this country. In this city there has recently been constructed a large building by the proprietors of the Surgical Institute. They used a pitched

faced, light gray, enameled brick. This product was well handled and the result is satisfactory from an architectural standpoint. In another case a three-story store building has been erected wherein colored brick of three or four different shades were used. The colors were handled in an unfortunate manner. This building will not be imitated. It is a discredit to all who are connected with it. Now in these two illustrations we can see the movement of new products. In the case of the Surgical Institute the material might have been handled in an unfortunate way, and the people would have said: "What ugly brick. We will have none of it in ours." Again, in the case of the three story store building the colors might have been properly harmonized, the public would have been pleased and there would have been quite a demand for colored brick. But in each instance this is exactly what did not happen. People are buying the brick out of which the first building was constructed, using them for porch foundations, chimneys, for decorating their doorways and for general building purposes. They see how well it looks in the first building in which it is used, its reputation is thereby made and the market is largely increased in this locality. In the case of the business building the reputation of the material used has been made by unfortunate handling, and the market for this product is practically cut off for a long time. Even the reputation of the bricklayer who had nothing to do with the matter is in a degree effected. The lesson of this is plain enough.

**THE SHORT ROUTE TO WEALTH.**

The real results of advertising are not universally appreciated. Let a man invent the best brick-machine the world has known and fail to properly advertise it and he can hardly live long enough to realize the results of his genius. However, if he proclaims to the world, through the means of good, black type and vigorous, honest statements, just what he has, a few years will suffice to bring to him a rich reward. One can thus accomplish a business result within a few years that would otherwise take one or more generations to reach. The man who invents a good machine must go farther to reap the benefits hoped for. He must let the world know what he has—MUST ADVERTISE. Thos. A. Edison has said that it takes as much brain to get money out of an invention as it does



to invent. Mr. Edison ought to know. He is a great inventor and at the same time he gets more free advertising than all the men in any ten states in this Union. Columns of matter are published about him in the great journals and magazines of this country. It is cut up and rehashed by the smaller lights. It gets the circulation; and the volume and character of circulation make advertising value. The most successful manufacturers in the field of the clayworkers are the heavy advertisers. They tell the world what they have to sell and the world goes to them to buy. The man who has a good article to sell can reap the reward of a half dozen lifetimes by judicious advertising. He can carry his goods to the markets of the world rather than to that of a neighborhood.

#### EARLY FRENCH BRICK WORK.

It is our purpose, beginning with the next number of the CLAY-WORKER, to give a series of illustrated articles which will show examples of French brick work of the period dating from the XIII to the XVI centuries inclusive. We wish to be understood that these illustrations are not given because of any historic interest, either in connection with the part of the world in which they are located, or in connection with the history of brick work. The matter is presented because of its intrinsic value, because of its beauty and as work from which we may profit in our present construction. The present period has nothing more beautiful to offer than some of the illustrations which we will present.

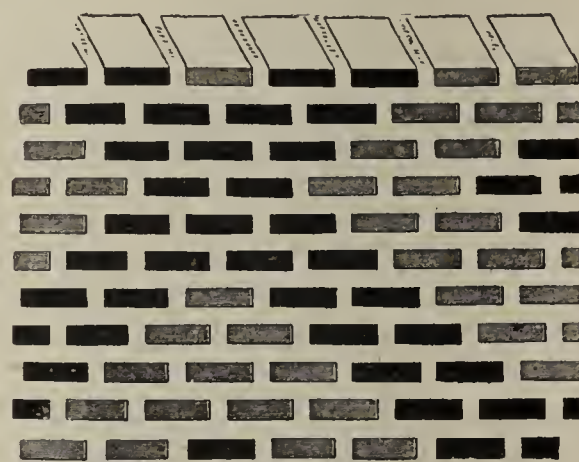
Generally speaking, the constructors of the period of which we speak, were not great users of brick. However, they used it logically, intelligently and hence successfully. In the very early period, structures were put up with exterior facings of cut stone and fillings of debris, stone and mortar, which alternated with layers of brick laid flatwise. This was the old Roman method, and had its effect upon the early constructions of France. From the beginning of the ninth century brick used with other material is rarely found. Brick is either not used or used alone. We must except certain constructions in the south of France where brick was used for fillings, vaulting and uniform exterior facings, and stone for piers, corners, frames for windows, arches, bands and cornices.

There is a church in Toulouse, of which we shall give an illustration, in which brick and stone are used in this way, because it is located in a section where stone is largely wanting. In that section the architects of the thirteenth and fourteenth centuries freely used brick, employing stone only for the mullions of windows, columns, and isolated points of support of small diameter. In regard to the stone used in this way, we wish to call attention to a matter which we shall endeavor to firmly and repeatedly impress upon the clayworkers of America; which is, that this construction was not stone construction as we understand it, that as far as structural forms are concerned, it was terra cotta construction. The stone was, for the most part, soft, and of a character which led to uses such as we find suited to terra cotta only. If a straight lintel was to be employed, it was rarely or never done by a single piece of stone, but was arranged in the form of a straight arch, exactly in the way we would do it if we were using terra cotta. The same may be said of the trimmings around windows, piers, isolated points of support and even plain wall surfaces. There is no place where the clayworkers and the terra cotta constructors can go to secure better instruction than to the stone work of this early period in France. It is for that reason that we shall give the illustrations mentioned above. We shall repeatedly call attention to the stone forms and to the way in which they can be used in terra cotta and in building block constructions. We have called attention to this fact before in some letters which were written from France for this Journal, and we are now prepared to make it practical, to place it before our readers in a useful way in order that it may take a commercial, practical money form.

The brick used in the XIII century in France were of large size; 13-inch by 10-inch by 2½-inch, being quite usual. The joints were frequently 1¾ to 2 inches thick. The reason for this great thickness was, that the water from the mortar was absorbed by the brick in a way to effect its character. This is an interesting fact for two reasons; first, it shows that mortar of good character was made. Results have shown that the mortar was as permanent as the brick; and second, it shows that they were not up to the tricks of wetting the brick, which is common with our people who are fond of a very small joint.

Molded brick were not common in France during the middle ages, but were so in Italy and Germany. Small modillions and simple moldings are there everywhere found. In Southern France the constructors preferred to cut or carve the brick in preference to molding it. At other times they obtained their ornamentation by placing them diagonally and in various pattern forms.

Brick was often employed during the middle ages for interior floor paving. It was then enameled over incrustations of colors, and the result was quite beautiful. In the half timber constructions of the north of France, brick was used for filling in between the posts, sills and braces, during the fifteenth and sixteenth centuries. In such ways, various designs were formed, it being common to use colored enameled brick in this connection.



The illustration which is given is from a chateau of the XV century, which will be subsequently illustrated by a photographic print. The patterns were secured by the alternate use of red and dark brick. This cut in itself is not particularly interesting, excepting that it shows the arrangement of the bond, the relative size of the joints and the way in which the results, which will be indicated by our future illustrations, were secured. The large joints were not universal, as may be recalled by reference to illustrations which we have previously given in this Journal. We have in mind at this time the Louis XII wing of the chateau of Blois, which we gave several months ago. It is interesting to bear in mind, in this connection, that this part of the chateau built in brick is in a better state of preservation than that built by Francis I, which was necessarily at a later period, and which was constructed entirely in stone. The latter king, by the way, built a chateau at Madrid, in which he used enameled terra cotta in combination with stone. The exterior is spoken



of as presenting "An inalterable and splendid picture." About this time enameled terra cotta was largely used in the decoration and construction of splendid palaces and mansions. It was used not for the exterior alone, but for interior casings, mantels and sideboards, and various forms of panel decorations.

We present this short outline, indicating the general character of the work which we have in store for the readers of the CLAY-WORKER, in order that its general purpose and utility may be more fully understood and appreciated.

#### TRADE LITERATURE.

"BUILDING," is the name of a new journal devoted to the building, and kindred trades. It is issued from Louisville, Ky.; the first two numbers are at hand. It has an all round healthy look, and its managers have taken hold in a way, to indicate that they mean business. There is a great work which a building journal may do, and we are disposed to believe, from our knowledge of the gentlemen at the head of this undertaking, that they appreciate the seriousness of the work before them. The illustrations which have been selected are creditable to all concerned, and the matter is of a practical character, that can but prove helpful to its readers. No builder or architect can subscribe for this publication without materially benefitting himself. No one practically engaged in any of the departments of building work, can afford not to avail himself of just such information, as we find in the two numbers of this journal, which are before us. We cheerfully commend it to all interested. In this journal we have another apostle of better building. It is published by Leo. P. Kaufman, who is well known to builders throughout the country as secretary of the Louisville Builders' and Trader's Association.

"THE MANUFACTURER," is a new journal for manufacturers, merchants and investors, published at 200 West Main street, Louisville, Ky. It belongs to a class of journals which is now doing good work, in calling attention to the commercial advantages of a particular locality. In this instance it is the purpose of *The Manufacturer*, to place the light of Louisville on a hill, that all the world may see and know its many advantages. This is certainly a good thing for Louisville and the country which surrounds it. This field in jour-

nalism is a good one, and in this case is vigorously occupied by the proprietors of this publication. It will make itself felt. It deserves substantial patronage.

CLAY TESTING, is the title of an interesting little pamphlet, issued by J. W. Penfield & Son, Willoughby, Ohio, in which they tell why and how, clay should be tested, to determine whether it is suitable for the manufacture of brick, and the process by which it may best be worked. The pamphlet is intended for prospective brickmakers, or those who are thinking of changing from one process of manufacture to another. A copy will be mailed to anyone writing them for it.

STANDARD BOND BRICK, something new, according to a circular devoted to it, issued by the Standard Brick Co., 60 Fourth avenue, Pittsburgh, Pa. The form of the brick is peculiar, and they claim that with it, an interlocking bond is formed which permits the building of lighter walls, thus lessening the cost of building and diminishing the fire hazard. In shape the brick is like a capital E without the middle projection. It has a recess or inset in one edge, at the centre point from end to end, the recess being in depth half the width of the brick, and in length half the length of the brick. Those desiring full particulars, can send and get the circular which contains cuts showing the method of laying.

CLAY PULVERIZERS AND CRUSHERS is the title of a new pamphlet received from The Newell Universal Mill Co., 710 Havermeier Building, New York City. Its mission is to tell those who want to know, how to pulverize either wet or dry clay. The Newell mill is fully described and illustrated, and a large number of testimonial letters from those who are using their machinery, are published from which it appears that the Newell Mill is in successful operation in all portions of the country, from Nova Scotia and Ontario, to the Gulf, and from Maine to California. Write them for a copy.

THE TURNER, VAUGHN & TAYLOR Co., Cuyahoga Falls, Ohio, have favored us with a copy of their 1893 Catalogue of Clayworking Machinery, such as sewer pipe presses, dry and wet pans, press feeders, auger brick machines, pug mills, brick yard supplies, potter's wheels, etc., etc. It is a large book and contains much information of value to brickmakers, such as rules for deter-

mining size and speed of pulleys or gears. A copy will be mailed free to any of our subscribers on application.

THE JEFFREY MANUFACTURING Co., Columbus, Ohio, are sending out a handsome catalogue of their elevating and conveying machinery. Those of our readers wanting anything in that line, should address them for a copy.

WITH THE BRICKMAKERS is the title, beautifully embossed in gold and brown of a new pamphlet being sent out by J. W. Penfield & Son, Willoughby, Ohio. It is devoted to their auger brick machinery, and is made up almost entirely of testimonial letters from customers, which are reproduced artistically in two colors, making a very pretty book. Write for a copy.

WE ARE INDEBTED to the Canton (O.) Brick Company, for a copy of a neat little circular devoted to their red granite street pavers, sidewalk and building brick. Though organized in 1888, and having an annual capacity of 12,000,000 brick, they state that "Not one dollar has been expended to repair or replace a single yard of pavement, laid with red granite shale pavers, although in many places subjected to the heaviest city traffic, and the brick are to all appearances as perfect, except slightly rounded edges, as when first laid." And ask, "What other material can show as good a record or gives better promise for the future." Another feature of the circular that is worthy of special notice is the graphic illustration of the relative crushing strength of shale brick, granite and common brick taken from the Special Convention Number of the CLAY-WORKER, page 181d — without credit.

THE LINK BELT COMPANY, Chicago Philadelphia and New York, have issued a beautifully illustrated circular showing the workings of their hoisting and conveying appliances, by photos. of plants in operation. They make a specialty of brick and tile elevators, and have special catalogues devoted to that branch of their business, which they will mail to any of our subscribers applying for them.

STREET PAVING BRICK. In the next (August) CLAY-WORKER we will publish the first of a series of valuable papers on "Street Paving Brick from the able pen of our well-known contributor, Mr. Alfred Crossley, which our readers will find both interesting and instructive.



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## BOOKS FOR BRICKMAKERS.

### "BRICKMAKER'S MANUAL,"

Morrison and Reep, \$3.00

### "BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

### "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

### "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.



### Circular of

## ELEVATORS AND CONVEYORS

FOR HANDLING

Clay, Tile, Etc.,

Adapting the

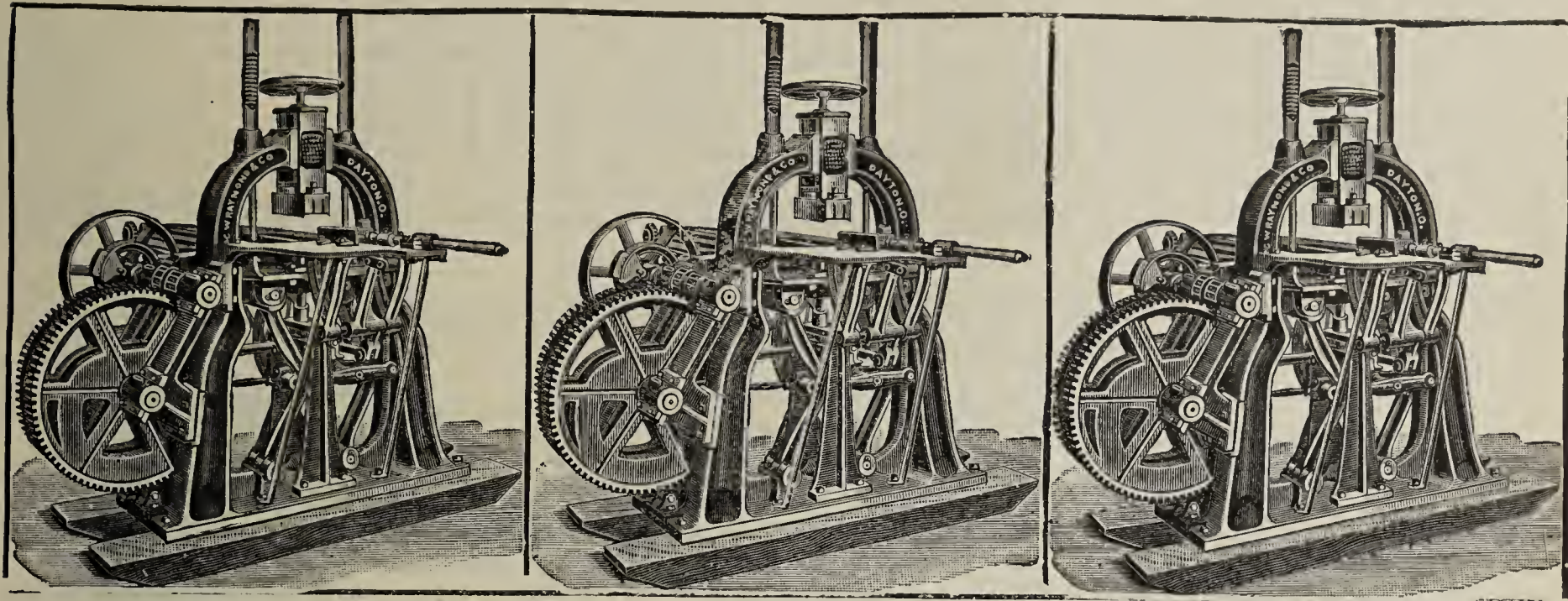
**CURVED SLAT,  
CONTINUOUS PAN,  
LINK BELTING and..  
SPECIAL CHAINS,**

Mailed upon application.

**LINK-BELT MACHINERY COMPANY,**  
CHICAGO, ILL.

LINK-BELT ENGINEERING CO.,  
Philadelphia and New York.





THE  
RECORDS  
OF  
TODAY  
ARE  
WHAT  
COUNT.

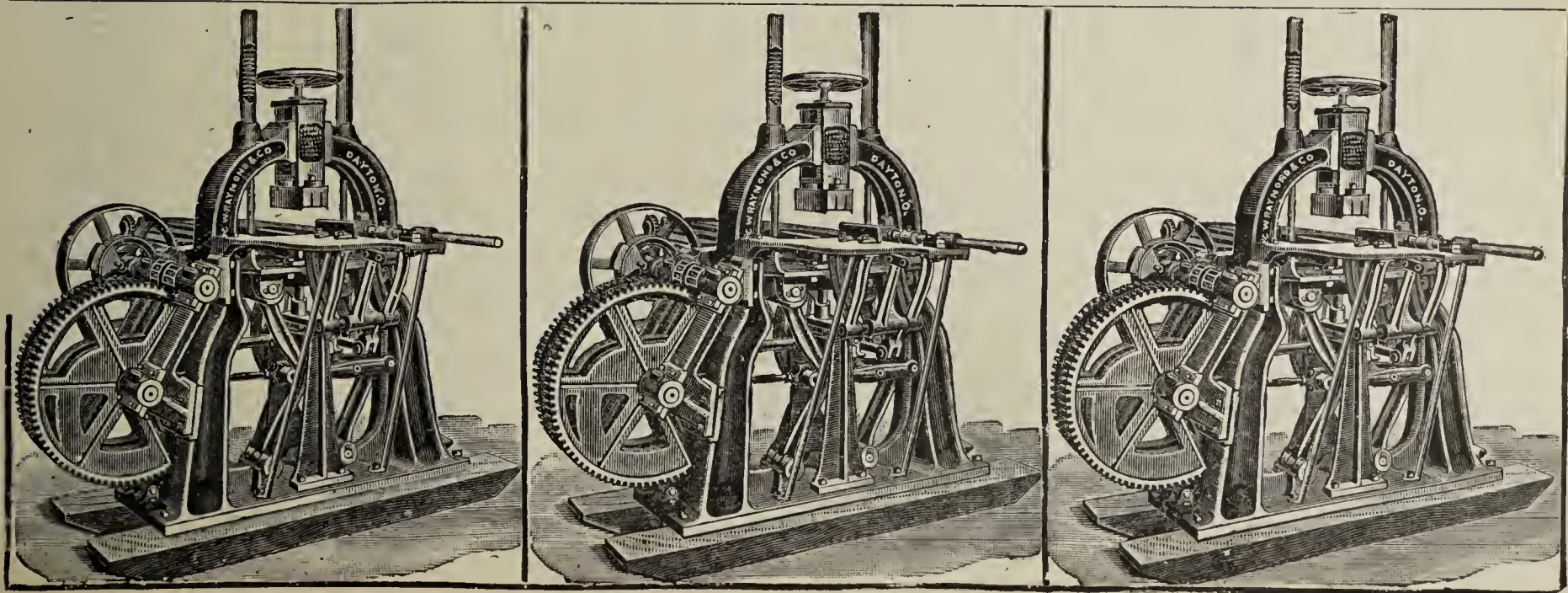
SARGEANT BLUFFS, IA., June 23rd, 1893.  
C. W. RAYMOND & Co.,  
DAYTON, OHIO.

GENTS:—After a careful examination of other represses and an actual trial of them on our yards in competition with The Columbian Special, we selected the latter and after three months use can state we are well pleased with our choice. Your press is deserving of all the good things that can be said of it. We are repressing upon it daily from 22,000 to 24,000 brick, all of which are of first quality.

Yours truly,  
(Signed) C. J. HOLMAN & BRO.

THE  
RECORDS  
OF  
TODAY  
ARE  
WHAT  
COUNT.

C. W. RAYMOND & CO.,  
DAYTON, OHIO.



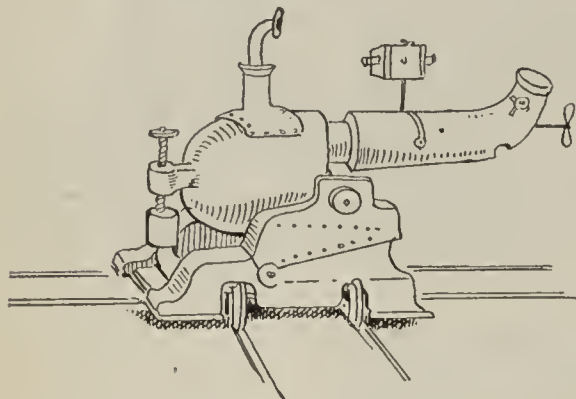


Written for the Clay-Worker.

### WHERE GREATNESS CONGREGATES

Celebrities who are on Free Exhibition at the Big Chicago Show.

HERE was never such a time as this for seeing great men. Of course I write of Chicago. At present Chicago is simply reeking with great men. There is simply an epidemic of dukes, marquises,



THE BOOMAGRAPHOID.

barons, with a full, very full, line of lords and dukesses on the side. And not alone is the nobility from across the brine here, but we fortunate Chicagoans trot in the same street if not in the same class with the world's most eminent literati and famed artists, sculptors, chiropodists and patronomatologists. It is not an exaggeration to say that a perfect Euroclydon of human superlativeness has crossed the broad Atlantic and invaded the welcoming shores of our inland sea. Of course it is our World's Fair that attracts this Barnum-like aggregation of the oddities and greatities of the inhabited globe.

In speaking of the great men who are here one should not overlook the men



A BOY PULLED THE TRIGGER.

of science who have in their particular fields revolutionized the world. There is Professor McPhelix, for instance, who

came here with his boomagraphoid, an implement for firing a bomb with a camera attached to an improved boomerang. The purpose of the invention being in case of war to fire the bomb at the enemy. The bomb on exploding exposed to the sensitized films of the camera a view of the enemy's camp. The camera-boomerang then returned to the place of firing. It was a great invention and would have been a great addition to the science of modern warfare; but, alas! the first day when it was tried on the Fair grounds, while the professor was adjusting one of the guages, a mischievous small boy touched the trigger and the camera-boomerang went off into space with the professor clinging to it. In an hour the outfit returned but the professor was quite dead. The machine is still on exhibition. The professor is still, too, in Graceland Cemetery.

Among other world-renowned characters here are Captain Molcule Swat, the intrepid war correspondent, and the



CAPTOR AND CAPTURED NOW AT THE EXPO.

Khan of Kwashephat who during the Klostoogwantjii war in Africa held the redoubtable captain prisoner on a charge of criminal libel published in the *London Times*. Captain Swat is accompanied by Grayt-gosh Jenkins special artist of the Athens (Greece) *Illustrated Gem*, who has come to this country for the purposes of attending a large number of complimentary banquets to visiting journalists and making a few sketches if they can spare the time. Mr. Grayt-gosh Jenkins is a notable figure, personally, and attracts considerable attention when he promenades Michigan avenue on Thursdays and Saturdays.

It would not be amiss in speaking of great artists to allude to Herr Sprudel Schwartzwollf, the great portrait painter who is visiting America to see that his

pictures in the Schleswig Holstein section of the World's Columbian Exposition Art Gallery are being hung proper-



GRAYT-GOSH JENKINS.

ly. While here Herr S. will accept a few commissions to paint the portraits of a few of our prominent citizens. He makes no charge whatever for the portraits but exacts \$8.75 for the frame to cover canvas, postage, etc.

The duke of Newcastle is still in town—where he will probably remain until the railroads lower their rates to and from the World's Fair.

CHARLES LEDERER.

### OUR CREED.

There is no forcing process for building up a circulation that can be permanently depended on. All temporary expedients based on this principle are, sooner or later, apt to react at a loss. The first and paramount thing is to print a steadily progressive and reliable



HERR SPRUDEL SCHWARTZWOLFF.

journal, of such merit, that being once seen and read, it will create a demand for the next number.—*Art in Advertising.*



THE  
BEST

AFTER HALF A CENTURY

THE  
BESTESTABLISHED 1848.  
INCORPORATED 1892.Office of **Zeeland Brick Co.**

YARDS AT

ZEELAND, OTTAWA CO.  
HAMILTON, ALLEGAN CO.  
CLOVERDALE, BARRY CO.

MANUFACTURERS OF

**WHITE  
& RED BRICK.**

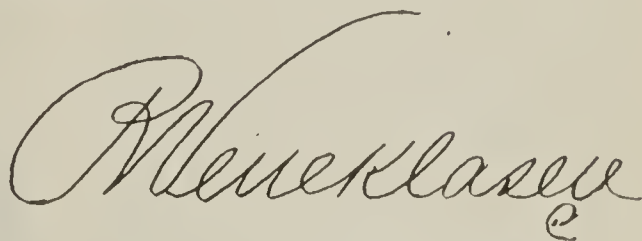
H. J. VENKLASSEN 1848 50 000 ANNUALLY.  
H. J. VENKLASSEN & SONS 1853 100 000 ANNUALLY.  
B. J. VENKLASSEN & BRO. 1860 400 000 ANNUALLY.  
B. J. VENKLASSEN 1865 800 000 ANNUALLY.  
B. J. VENKLASSEN & CO 1872 1 000 000 ANNUALLY.  
VENKLASSEN & SONS 1877 4 000 000 ANNUALLY.  
VENKLASSEN & SONS 1890 8 000 000 ANNUALLY.  
VENKLASSEN SONS 1891 12 000 000 ANNUALLY.  
ZEELAND BRICK CO 1892 20 000 000 ANNUALLY.

Address all communications to *Zeeland, Mich.* June 13, '93.

The Wallace Manufacturing Co.,  
Frankfort, Ind.

Gents:—We have now used our "Big Wonder" about six weeks in our new plant, which we finished this spring, and are more than pleased with it. The grinding part of it works very good, and the Automatic Cutting Table to perfection, the quality and compactness of the product turned out being such that almost every brick which comes out of the Dryer is perfect shape. We have already run the Machine at the rate of 100 M. brick per day and can turn out 80 M. with ease. We pronounce it a machine of great strength and durability, which will come rapidly to the front, if its merits are known, and can cheerfully recommend it to our brother brickmakers. We have been in the brick business now for nearly one half century and have tried and used different machines, but we can safely say that this is the best we have ever used.

Very truly yours,  
ZEELAND BRICK CO.,



SECY AND TREAS.

In times of depression prudent men buy machinery to improve the quality of their product.

Our **BIG and LITTLE WONDER** brick machine, Cunningham's Automatic Cutter, Pug Mills, Clay Crushers, Etc., Etc., are what you want for this purpose.

**THE WALLACE MFG. CO.,****FRANKFORT, IND.**

See ad. on page



## EDITORIAL NOTES and CLIPPINGS.

Joe Waite will establish a brick plant at Tipton, Kansas.

Aeme Brick Co., Denver, Colo., has made an assignment.

Monerlef & McDade will establish terra cotta works at McDade, Texas.

Hilleary Brant has established a brick factory at Cumberland, West Va.

Read the For Sale, Wanted, Etc., Columns for bargains in second-hand machinery, etc.

W. R. Bartlett, Ashland Centre, Mich., will erect a plant for the manufacture of brick and tile.

Louis Welton, a brickmaker, was killed by a fall of clay at Weist's brickyard, in Belle Plain, Minn.

Efforts are to be made to establish a brick plant at Sedalia, Mo. R. D. Thatcher is interested.

The Uhl Pottery at Evansville, Ind., was burned the 6th inst. Loss, \$25,000; insurance, \$14,000.

O. K. Olmstead, Orleans, Neb., is in the market for machinery for manufacturing vitrified brick.

J. M. Bower, Decatur, Ill., is interested in establishing a new pressed brick plant at Urbana, Illinois.

Those of our readers who want experienced help are respectfully referred to our Wanted Columns.

Fire at the Diamond Brick and Tile works destroyed the entire plant July 1st. Loss \$25,000, covered by insurance.

The Tiltonville, Ohio, pottery recently destroyed by fire, will be rebuilt either at Zanesville or Tiltonville.

The Flint Brick Co., Des Moines, Iowa, commenced making brick last week with a daily capacity of 50,000 brick.

Jacob Spyker & Co., have leased Chas. Gottfried's brick yard at Lima, Ohio, and the plant will hereafter be run by them.

J. J. Irwin is contemplating putting in new machinery and resuming the operation of his brick plant at Cameron, Texas.

Jno. F. Mahanna will erect an extensive brick plant at Pittsfield, Mass. He will furnish the plant with improved machinery, kilns, etc.

The Wayland (N. Y.) Portland Cement Works were burned on the 5th inst. Loss, \$30,000; covered by insurance. The works will be rebuilt at once.

Gottlieb Schaeffer, A. Hardy and W. A. Osmen, of Logansport, Ind., have formed a company for the purpose of manufacturing sand brick.

Stoffer & Bartleson, Topeka, Kans., have commenced the manufacture of pottery. Among other articles manufactured by them, they turn out flower pots.

The Jno. Miller heirs, of Sandy Ridge, Pa., purchased the Sandy Ridge Fire Brick Works recently. It is expected they will resume operations at once.

N. Mackey, of San Antonio, Texas, would like to correspond with an experienced sewer pipe manufacturer desirous of assuming control of a new plant.

Fire clay has been discovered at Cannelton, Ind., that is claimed to be the best clay in the United States for paving and building brick and terra cotta.

Samuel Shannon, of Shellsburg, Iowa, writes that he is starting up a new four-mold brick press and is very much pleased with the work accomplished so far.

Chas. Dunn, Auburn, Me., has arranged an electric motor to do the work of the horses in grinding clay. The arrangement seems to be quite novel in that section.

The J. M. Rumbaugh Brick Co., Wall Station, Pa., is just starting a new dry press brick manufactory. They are using a four-mold press and are much pleased with it.

The Branchville Clay Co., Washington, D. C., has been incorporated to mine and manufacture clay, etc. Its capital stock is \$100,000, and Walter H. Webb, of New York, is president.

Law Brothers whose brick works at East Toledo, O., which were destroyed by fire in April, have rebuilt the works and resumed operation with a capacity of 10,000,000 brick each year.

A disastrous fire at A. L. Hawks' brickyard, Westbrook, Me., destroyed the entire plant, with the exception of the boiler and engine room. Loss about \$15,000 with \$6,000 insurance.

The American Enameled Fire Brick Co., of Allegheny, Pa., has been incorporated, with H. L. Dixon, R. E. Woods, H. F. Dorris, J. B. Dorris and J. C. Woods, of Pittsburg as directors.

Daniel Easton has been awarded a large contract for paving in Elyria, O. The vitrified shale brick from the Buckeye Brick Co., Cleveland, O., works at Wilekliffe, are to be used.

The entire brick plant of Mr. Michael Clohessy, Greensburg, Pa., was destroyed by fire a week or so ago. The cause of the fire is unknown. Loss from \$7,000 to \$10,000. Insurance, \$5,700.

Henry L. Brenner, Greenock, Pa., has purchased the Challenge Brick Works of that place and will change the name of the company to the Columbian Brick Co., with office at McKeesport, Pa.

Harvey T. D. Wilson writes that he has a valuable tract of clay land that he will lease on favorable terms and will contract for six million brick. There is an abundance of fuel and water and excellent railroad facilities.

The Climax Brick and Tile Co., Short Creek, W. Va., has been incorporated, with the following directors: Robert A. Armstrong, C. K. Curtis, C. W. Curtis and Henry Stolze, of Wheeling, and T. W. Carmichael, of Wellsburg.

The Glen Falls (N. Y.) Portland and Cement Co., has been incorporated with a capital stock of \$18,000. The incorporators are S. L. Goodman, Joseph Fowler, B. B. Fowler, T. S. Coolidge, F. W. Wait, S. B. Goodman, A. W. Sherman and others.

The works of the Furnace Fire Clay Co., Salineville, Ohio, were destroyed by fire on the 5th inst. The loss is about \$21,000. The firm had been running part of the time at night to fill orders. They will rebuild at once with increased capacity.

O. W. Bentley, Sec'y. The Southern Brick Co., Atlanta, Ga., writes to know "The very best and most economical kiln for burning building brick, made of settlings of clay." Those of our readers or advertisers who can give the desired information are requested to do so.

E. M. Freeze & Co., Gallon, O., write that their business continues good. They say they expected the stringency in the money market would effect their trade somewhat, but so far, it has not done so. Their sales for June were equal to those of any month for the past twelve years.

The Columbia Mfg. Co., St. Louis, whose ad. appears on page 6, claim special advantages for their improved dry press. Their interchangeable mold box and liners is a feature peculiar to this machine. Those interested can obtain full particulars of this valuable invention by sending them a postal card, asking for illustrated circular.

J. B. Macey, with J. W. Penfield & Son, Willoughby, Ohio, recently met with a painful accident resulting in the loss of the fingers of one of his hands. He was employed in the brick and tile manufacturing plant of that place and it is presumed that his hand was caught in the machinery. Mr. Macy is well known by the craft, being at one time connected with the Frey-Sheekler works.

The Fordham Brick Company is the name of a new firm recently organized for the purpose of manufacturing brick at Fordham, N. J. The members of the company are Dr. N. W. Patton, N. M. Dodd and William Tyrrell, of

.... SEND FOR CATALOGUE ....

OVER 20000 BEST AND CHEAPEST STEAM PUMP IN USE FOR ALL PURPOSES

PULSOMETER STEAM PUMP CO. SOLE OWNERS-NEW YORK.

(COPYRIGHTED 1891)

ESPECIALLY ADAPTED FOR UN-WATERING CLAY PITS.

POWER

.... FROM ....  
GASOLINE

Direct From the Tank.

Cheaper THAN Steam.

No Boiler. No Steam. No Engineer.

BEST POWER FOR BRICK YARDS.

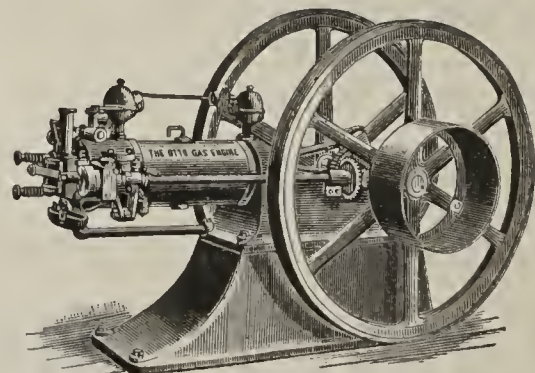
Otto Gasoline Engines,

STATIONARY OR PORTABLE.

1 to 50 H. P.

8 to 20 H. P.

Send for Catalogue, Prices, etc., describing work to be done.



OTTO GAS ENGINE WORKS, 33d and Walnut St., PHILADELPHIA, PA.

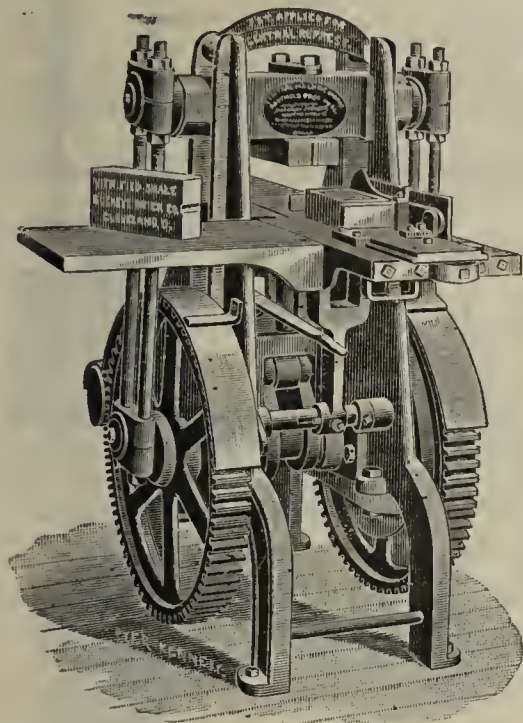


# CENTRAL MACHINE WORKS,

226-236 Abbey St., CLEVELAND, OHIO.

—MANUFACTURERS OF—

## The CENTRAL Power Repress.



It is the most complete ever offered to Brickmakers.

The capacity is from 12,000 to 15,000 brick per day.

It does the same work as others of two and three times the weight.

●●●●●

ALSO MANUFACTURERS OF

### Brick Machinery of all Kinds.

Write for Descriptions.

## FIRE BRICK.

Below are analyses of the PLATT BRICK & FIRE PROOFING CO.'S  
Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

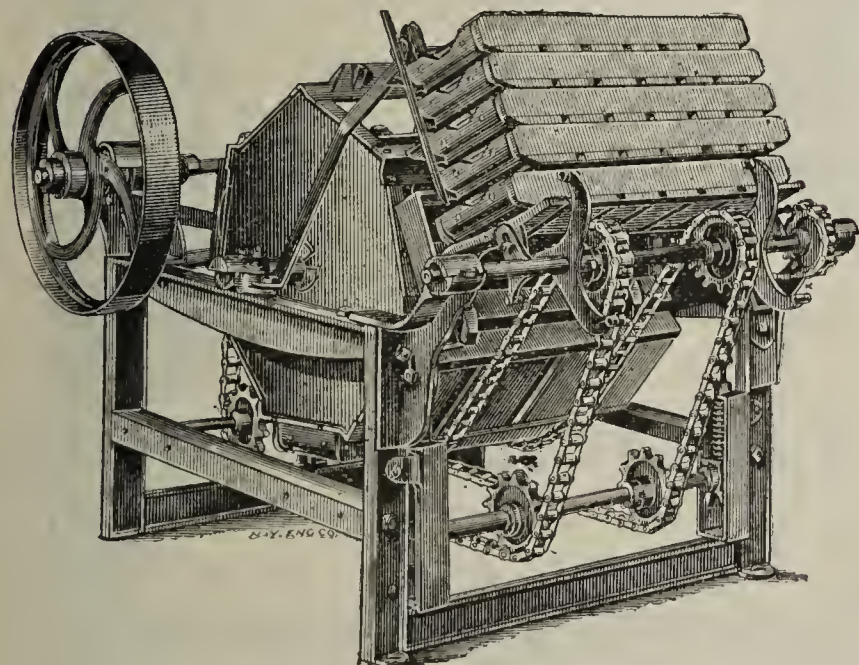
Analyses by W. S. Robinson, Chemist, Omaha, Neb.

Brick are manufactured carefully on the best of machinery. Large capacity.  
Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick.  
Address

PLATT BRICK & FIRE PROOFING CO.,  
706 Youngerman Block, Des Moines, Iowa.

## J. A. BUCK'S NEW CHAMPION BRICK MOULD

### SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine—having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letter patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications to

J. A. BUCK, No. 76 Oneida St., COHOES, N. Y.

[Mention the Clay-Worker.]

this place. Mr. Tyrrell, who is a practical brick manufacturer, will have charge of the plant, which is a guarantee that a superior quality of brick will be made. The plant will have a daily capacity of 40,000 brick.

Chapman & Satterfield, Concord, N. C., in renewing their subscription says: "It is very hard to get any improvements started here in the brick line, so many think anything in the shape of a brick will do, no matter whether it is rightly proportioned or not. Our clay is mostly of upland red, mixed some with yellow or pipe clay, conveyed to machine from bank by a dump car on an elevated railroad, pushed by men. Machine, a Brewer No. 7, from which the brick are conveyed out to dry on the open yard on hacks by the steel track. We burn in the open kiln."

Mrs. Bertha Mish has brought suit against the Imperial Shale Brick Company, of Canton, O., for \$10,000 damages for the death of her husband, John Mish. He was working for the company last December when he was ordered to go into the crushing pan and clean it out, the machinery being stopped for such purpose. While he was thus engaged another employee started the engine and Mish had one foot ground off and the other leg was so badly broken and crushed that amputation was necessary. He suffered for some time and finally died from the effects of his injuries. The case will be hotly contested.

F. E. Frey & Son, Willoughby, O., is the address of a new firm of Clayworking Machinery Manufacturers, that will ere long become very familiar to American brickmakers. They now offer a new repress for which many improvements and advantages are claimed and will soon have on the market a full line of clayworking machinery. Mr. F. E. Frey, the senior member of the firm, is one of the best known machinery men in this country, being one of the founders of the Frey-Sheckler Co., Bucyrus, O., and is well equipped, both as to ability and experience for the business. We wish the new firm long life and prosperity.

### MORE POWER,—A TIMELY HINT.

This is the season of the year when some misguided advertisers cut down their space because business is dull. If advertisements are business-bringers, and they must be or manufacturers would not pay for them, the dull season is a good time to double the space. It would be a poor locomotive engineer who let the steam pressure run down on up-grades. Shrewd manufacturers are coming to see this, and when the people seem reluctant to buy, simply give them a double dose of urging.—*Ex.*

### A Delightful Trip to the World's Fair.

The Cincinnati, Hamilton and Dayton R. R., have placed on sale, excursion tickets from Indianapolis to Chicago and return at rate of \$19.25, via the following route, C. H. & D. R. R., to Toledo steamers of D. & C. S. N. Co., to Mackinac Island Steamers of L. M. & L. S. T. Co., to Chicago, Monon Route Chicago to Indianapolis. The Steamers used on this trip are the regular boats of above named companies and are the finest run on fresh water. Meals and berths between Mackinac Island and Chicago included in above rate. This is really the nicest trip ever gotten up by a Railroad Company. For further particulars call on or address H. J. Rhein, General Agent, C. H. & D. R. R., Indianapolis, Ind. City Ticket Office, corner Illinois street and Kentucky avenue.



## FOR SALE, WANTED, ETC.

**W**ANTED. A manager for our yards—who is what he represents himself.  
KEOKUK BRICK CO.,  
71 d. Keokuk, Ia.

**F**OR SALE—The largest and most complete vitrified brick plant in Kansas, at a bargain.  
R. B. DRURY,  
72 c Atchison, Kan.

**W**ANTED—About an 8-foot dry pan, new or second hand, in good condition. Give maker. Address "Box 901,"  
71 d Pittsburg, Pa.

**W**ANTED—For cash, four mould dry clay brick press. State price and condition. Address McCay & Co.,  
713 Oxford Pike, Frankford, Philadelphia, Pa.

**F**OR SALE—One Brewer Stone Extracting Clay Crusher, one Drake repress and a lot of wooden pallets. Address  
71 d CENTRAL CITY BRICK AND TILE CO., Peoria, Ill.

**W**ANTED. An experienced and thoroughly competent sewer pipe man to take position as superintendent in a factory West. Must understand the business from top to bottom. Address with reference,  
72 d SEWER PIPE, Care "Clay-Worker."

**F**OR SALE. One soft mud brick machine and one Penfield Plunger Tile and Brick Machine with Cut-off Tables and full set of dies. All in good condition and will be sold cheap.  
MICHAEL RUTLEDGE,  
71 d Sorento, Ill.

**F**OR SALE. A Chambers Brick Machine, style C. C. D., has a capacity of 30,000 daily; been in use one season; parts nearly all new. Will be sold on advantageous terms to responsible parties. Address,  
71 d QUAKER Care "Clay-Worker."

**W**ANTED. A situation as superintendent, either dry process or stiff mud process or both. Good manager of men and machinery. At present operating a plant of 80,000 capacity. Best of references. Address,  
72 d CHASE, care Clay-Worker

**F**OR SALE. At a bargain, A newly invented and serviceable Automatic Cutting Machine, belt delivery; fully guaranteed. Parties requiring a perfect machine that will save them money, please address at once for particulars,  
71 c H. A. RIGGS, Plymouth, Ohio.

**W**ANTED. Situation as foreman or superintendent by a practical terra cotta and roofing tile worker, who thoroughly understands the manufacture, glazing and burning of terra cotta and roofing tile. Sixteen years' experience.  
71 c TILE, care "Clay-Worker."

**A** BRICK PLANT FOR SALE, OR FOR RENT, OR TO BE WORKED ON SHARES. Machinery all new, of the latest improved makes, and in first-class condition. Capacity 100,000 brick per day. Plant cost \$135,000. Clay in abundance for making all kinds of brick. Reason for making above offers, the owner is not a brickmaker and has too much other business to give it his personal attention. The plant has all the facilities for shipping by rail and water, and at present has more orders than it can fill. Address, J. C. H.,  
71 d care Clay-Worker.

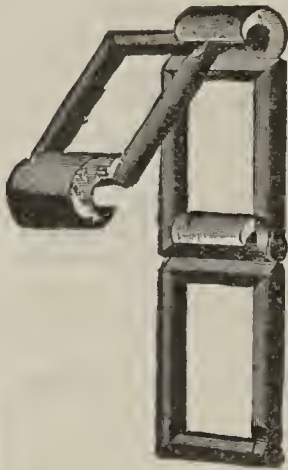
**W**ANTED. Situation as yard foreman of machine yard. Understand burning, management of men and keeping machinery in repair, etc. Can give reference. Address,  
6. 1. c. C. SCOTTON, Elwood, Ind.

**F**OR SALE. One 12x16 plain, slide valve engine, including bed stone, Gardner governor, fly-wheel and pulley 72-inch, 18-inch face; has been run for two years, and is offered for sale, as present owners must replace with larger engine. Could be delivered about July 1st. Address,  
6. 1. d. EASTERN HYDRAULIC PRESS BRICK CO., 407 Builders' Exchange, Philadelphia, Pa.

## ELEVATORS

..FOR..

Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.



## JEFFREY CHAIN BELTING,

—ALSO—

Malleable, Steel, Cable and Special Chains,

DESIGNED FOR.....

Elevators, Conveyors, Drive Belts,

FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc.,

Send for REDUCED PRICE LIST. Address

THE JEFFREY M'F'G CO.,

Chicago Office & Salesroom: 48 S. Canal Street  
New York Branch: 163 Washington Street.

Columbus, Ohio.



## NEW DISCOVERY KILN.

It Heads the Procession!

Patented April 13, 1866.  
Nov. 17, 1891.

The New Discovery is THE KILN you are looking for if you want THE BEST KILN EXTANT for burning ALL KINDS of clay products.

ITS SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES AND SYSTEM IN USE. Those who are using it, and they are many, THINK SO TOO.

If you will investigate and learn what the NEW DISCOVERY CAN DO you will be WITH US.

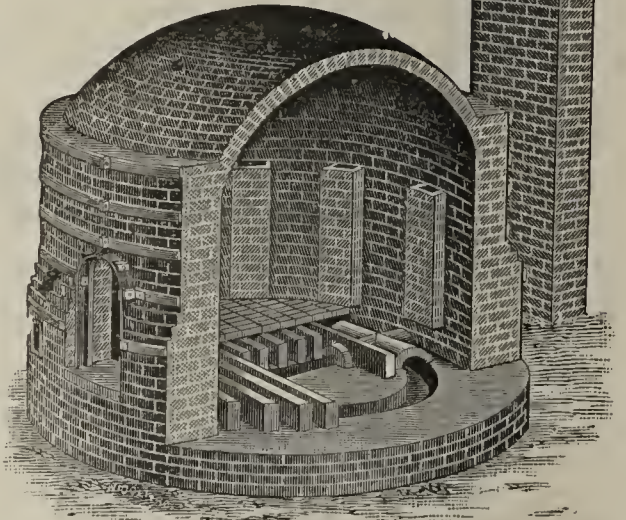
This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The NEW Discovery has PROGRESSED and is still at it.

I don't know IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

For circulars, address,

E. M. PIKE, Chenoa, Ills.

EAGLE IRON WORKS,  
DES MOINES, IOWA.

FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## IMPORTANT!

Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.





# ROOFING. VULCANIZED RUBBER ROOFING,



LIGHT, DURABLE  
and CHEAP.....

MUNCIE ROOFING WORKS,

Just the thing for—

MUNCIE, . . . . INDIANA.

FACTORY BUILDINGS

F. W. SILKMAN, 231 Pearl Street,  
NEW YORK.

IMPORTER AND DEALER IN

## CHEMICALS, MINERALS, CLAYS AND COLORS,

For Potters, Terra Cotta and Enamelled Brick  
Manufacturers.

Correspondence invited. . . .

### ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and  
Belleville, Ill.

ESTABLISHED 1859.

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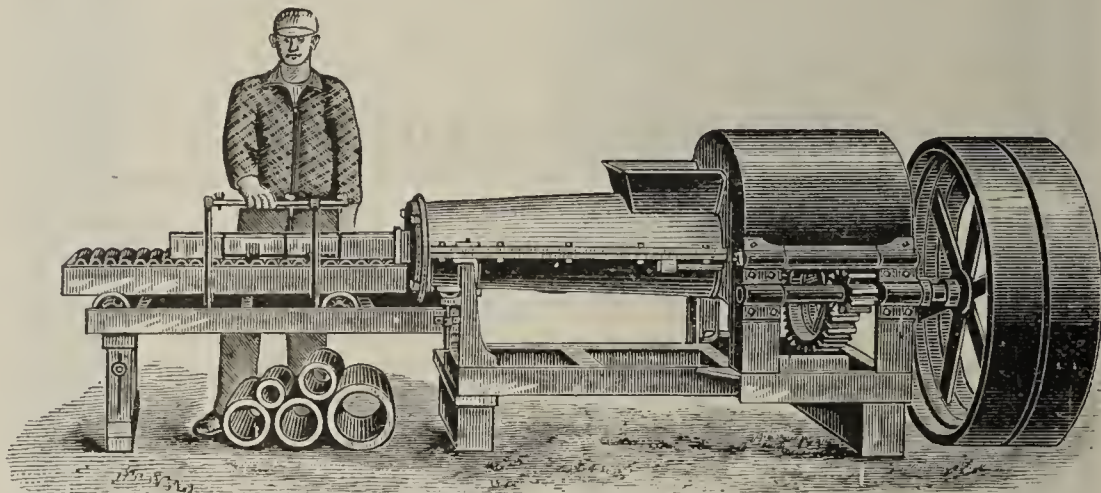
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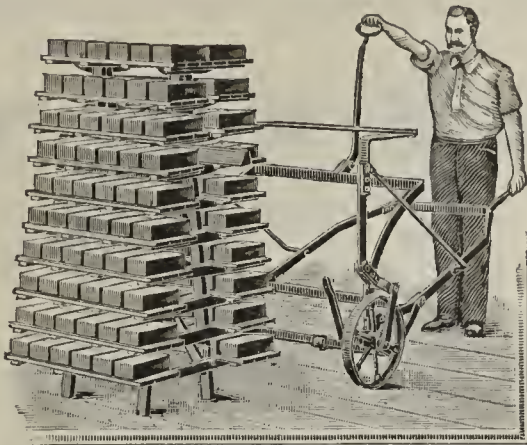
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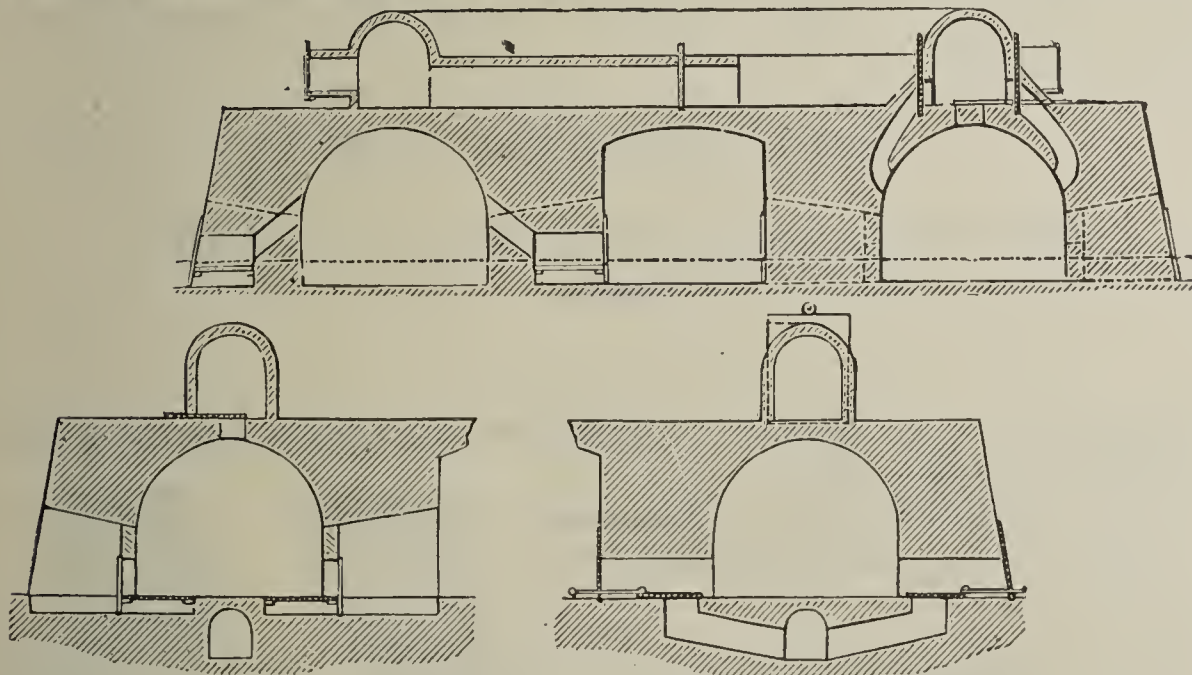
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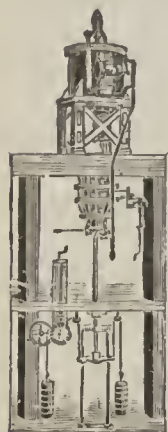
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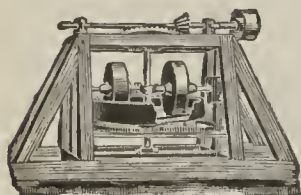
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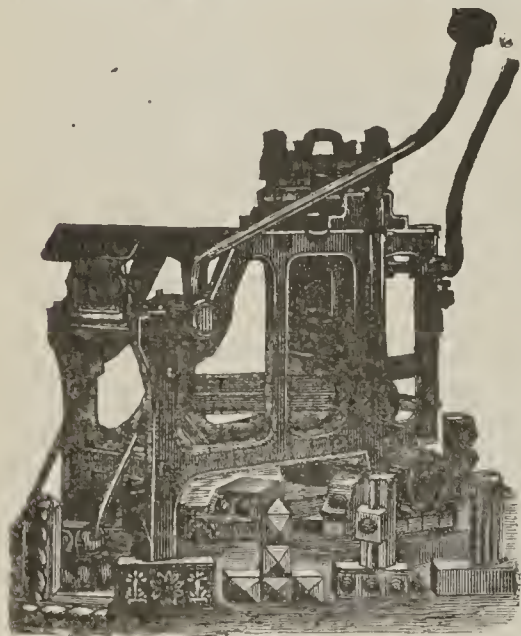
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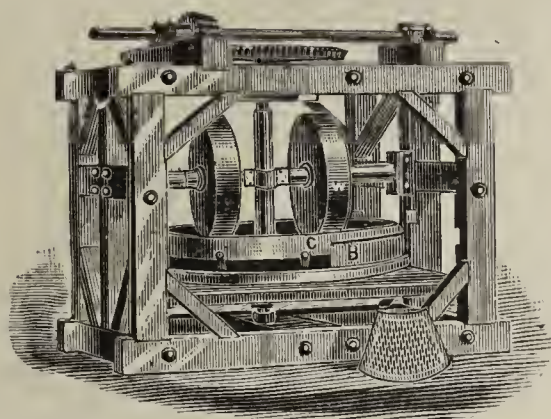
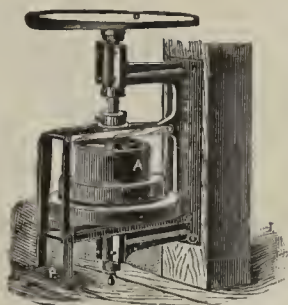
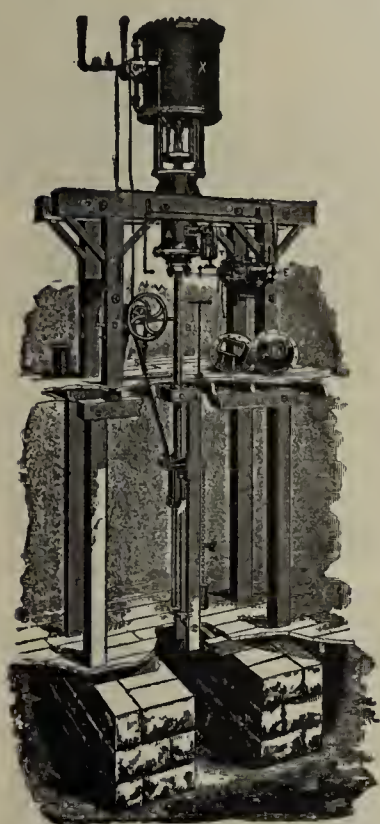


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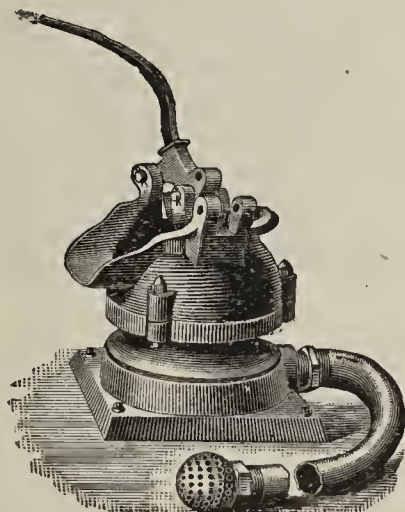
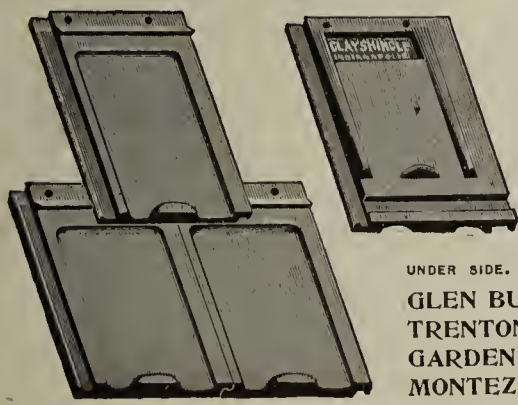
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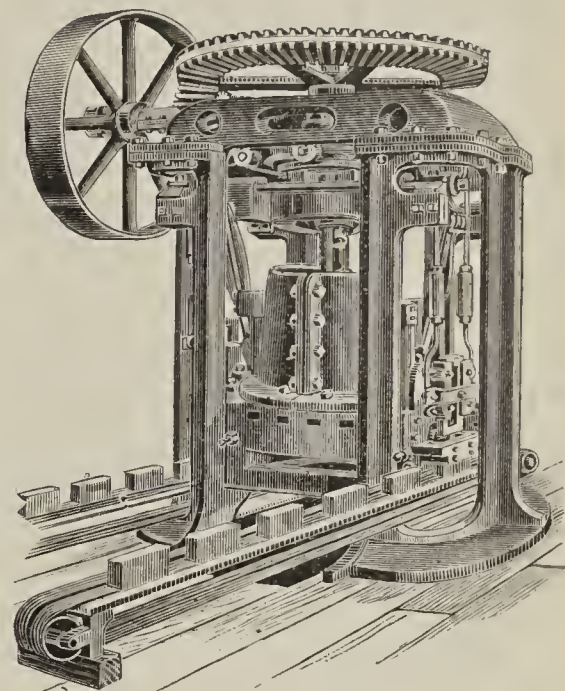
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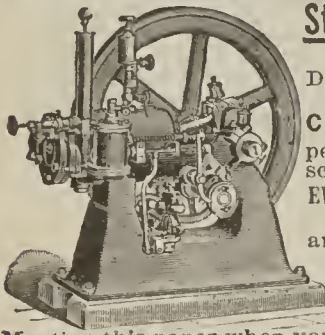


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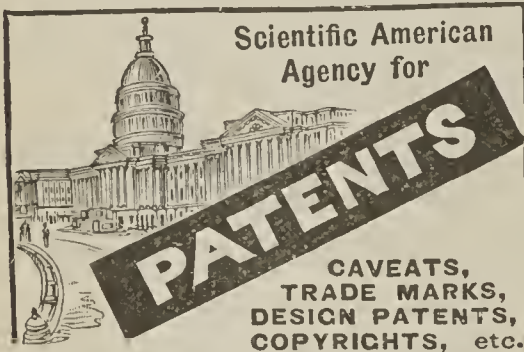
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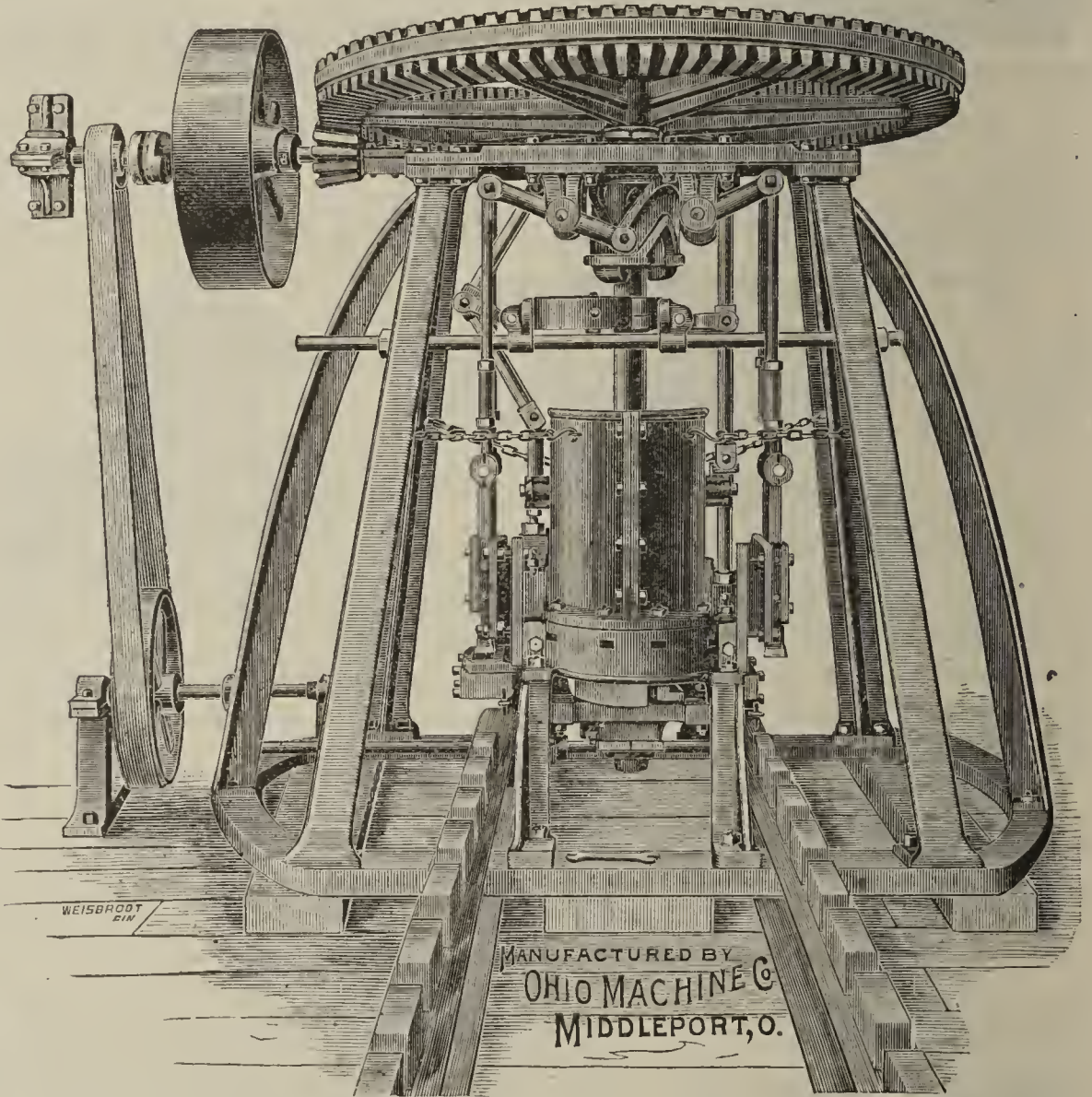
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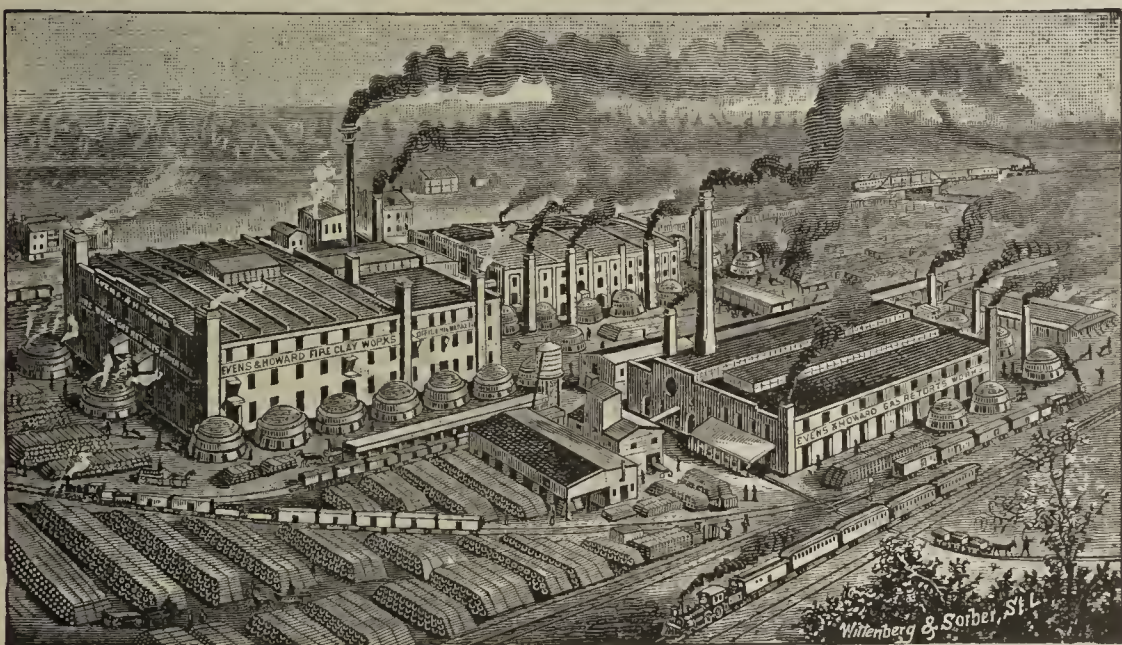




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SINGLE & DUPLEX PUMPS.  
HORIZONTAL AND VERTICAL PUMPS.  
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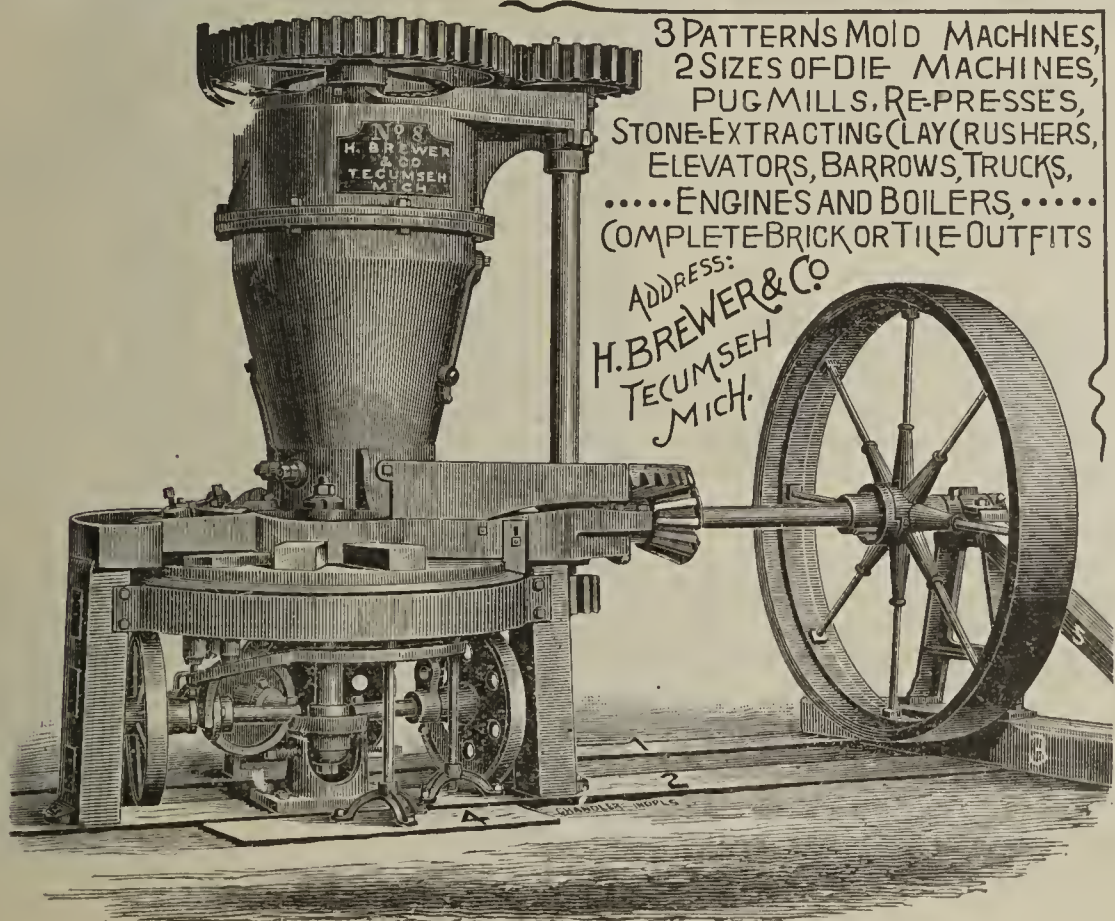
Our products have for more than thirty years been standard in all markets.



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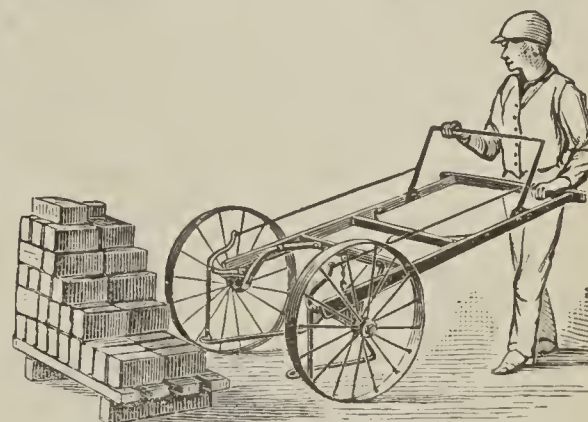


3 PATTERNS MOLD MACHINES,  
2 SIZES OF DIE MACHINES,  
PUG MILLS, RE-PRESSES,  
STONE-EXTRACTING (LAY) CRUSHERS,  
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SPECIAL ATTENTION GIVEN TO  
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Brick Truck & Portable Hack**



The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling and time in drying bricks. Can be used in any yard not too steep.

**Extracts from Letters to J. C. Steele.**

J. C. STEELE, ESQ.,      May 6, 1892.  
STATESVILLE, N. C.

DEAR SIR—We have now been using your Hack-trucks for the last month and we cannot speak too highly of them. They are perfect, and the greatest labor-saving machine ever put on a brick-yard. With one man, and one of your Trucks, we take from the machine and put on the yard 25,000 bricks already hacked and ready to cover in case of rain. This is a saving of three men over the old style of using wheelbarrows. One man will also keep two setters and two tossers going with one truck. But the main thing is that the bricks do not have to be handled so much and they retain their shape so much better. We will gladly answer any enquiries concerning your Trucks who may refer to us. Respectfully Yours,  
Florence, S. C.      COFFIN & PERRY.

MR. J. C. STEELE,  
STATESVILLE, N. C.

DEAR SIR—I agree with your many subscribing testimonials as to the merits of your Improved Brick Trucks. They are indispensable helpers on a brickyard. Yours Truly,  
Monroe, N. C.      W. A. WATSON.

For further information address

**J. C. STEELE, Patentee,  
Statesville, N. C.**



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**SLIP CLAY** { For Glazing of Pottery } **WORKS**

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Clay in stock in any quantity, in barrels and bulk by the carload.

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Upon the lines of the Illinois Central Railroad Company and the Yazoo & Mississippi Valley Railroad Company, in the South, there are many

## LARGE DEPOSITS OF CLAY

Suitable for Fire Brick, Paving Brick, Drain Pipe, Tile, Terra Cotta and nearly every other manufacture of clay; some of these are being worked in a small way, but many of them have been untouched on account of lack of capital, knowledge and other reasons. It is desired to bring these fields to the attention of manufacturers and capitalists, and to that effect a pamphlet of 150 pages, entitled "Where to Locate New Factories," has been issued and will be sent free on application to the undersigned. Information will also be given upon application as to where the

## BEST SITES

are located, and as to

## INDUCEMENTS OFFERED

to those in the above lines of industry who propose seeking a location. For further information, and for the pamphlet mentioned, address GEO. C. POWER, Industrial Commissioner I. C. R. R., 58 Michigan Ave., Chicago, Ill.



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....OF....

# Burning Crude Petroleum.

The secret of burning oil successfully, lies in atomizing it and furnishing sufficient air at the right point to consume all the gases generated. The setting and equipping is therefore as important as the burner or the boiler.

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We cheerfully refer by permission to the following plants who are now using our burners to good advantage:

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Northwestern Brewing Co., Chicago, Ill.  
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We are prepared to equip plants of any character. Our burners have demonstrated their superiority over all others. Send for Circular telling of the ADVANTAGES OF OIL as a fuel.

**J. R. ARMSTRONG CO.,**  
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Steam and Horsepower.

THE BEST MACHINE IN  
THE MARKET.

The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

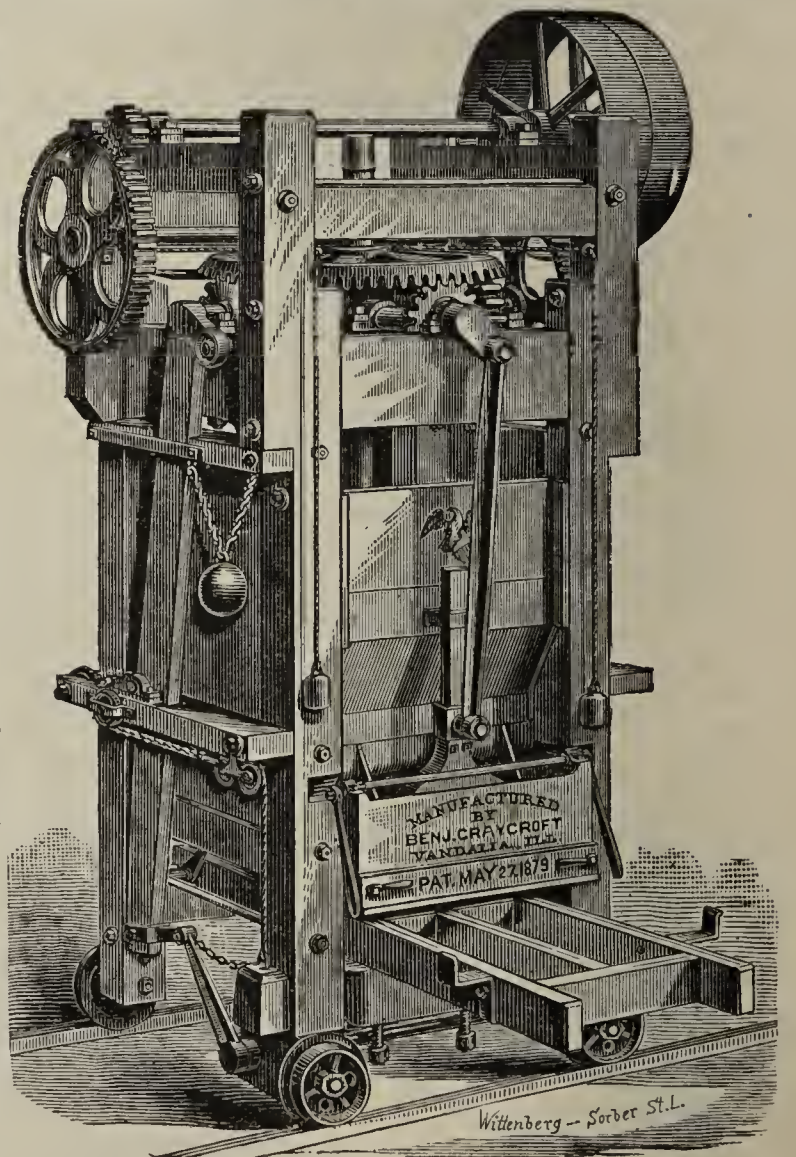
Send for Circular.

**BENJ. CRAYCROFT**

Manufacturer,

**Vandalia, Ills.**

C. J. CRAYCROFT, Fresno City, Cal., Gen'l Agent for Pacific Coast.





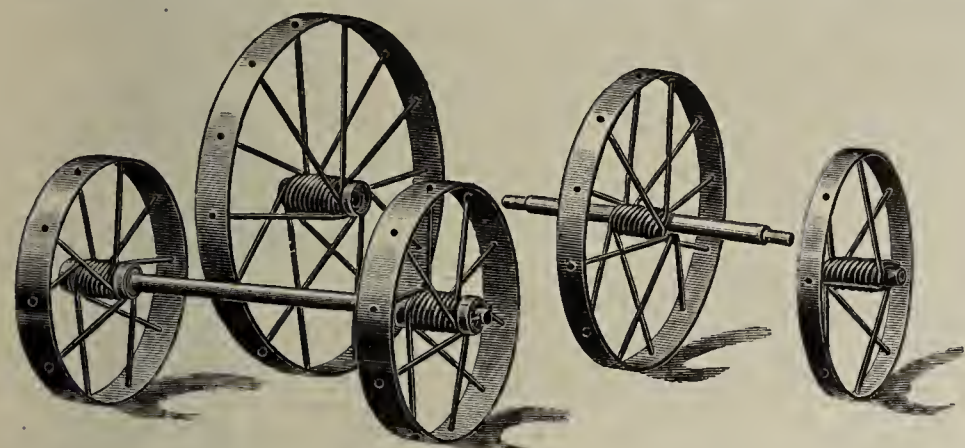
# THE MAN who put straw IN BRICKS

was an inventor. Were he living, I would procure a **PATENT** for him. As it is, I would be pleased to do your work. Write to me about your device and enclose stamp for reply.

EDWARD C. WEAVER,

900 F. St., N. W., Washington, D. C.

## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
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TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,

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New London, Ohio,  
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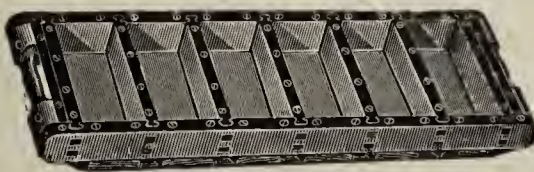
Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

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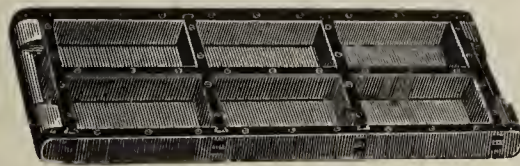
**See!** You can buy them for less money now than ever before. Prices reduced but the standard of quality is maintained. Order now for future delivery. Satisfaction guaranteed. Standard sizes carried in stock.

Some odd sizes at about half price. Send for list.

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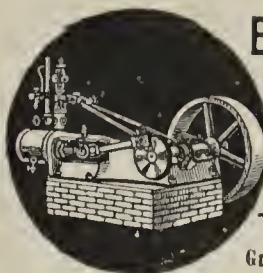
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Stationary & Semi-Portable.

8 to 25 HORSE-POWER.

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Low in Price.

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WILLIAM CLAYTON,

Potter's Chemist,

60 Butler Street, TRENTON, N. J.

GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between, New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

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WASHINGTON, D. C.



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In Effect April 15, 1893,  
Solid Train Between

Sandusky and Peoria

—AND—  
INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

### DEPART.

No. 10 Passenger..... 7:15 a. m.  
\*No. 12 Passenger..... 1:20 p. m.  
No. 14 Passenger..... 7:00 p. m.  
†No. 16 Express..... 11:10 p. m.

### ARRIVE.

\*No. 9 Passenger..... 10:30 a. m.  
No. 11 Passenger..... 2:50 p. m.  
No. 13 Passenger..... 6:20 p. m.  
†No. 17 Express..... 3:20 a. m.

Trains not marked run daily except Sunday, \*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west. Trains Nos. 16 and 17 have elegant free reclining chair cars to all passenger making direct connection at Peru with the Wabash fast trains for Fort Wayne, Toledo, Detroit and Chicago.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass. Agt. Traffic Manager, Indianapolis, Ind.





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Ask for tickets and see that they read via  
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Milwaukee, St. Paul, Minneapolis,  
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AND ALL POINTS IN

**WEST AND NORTHWEST.**

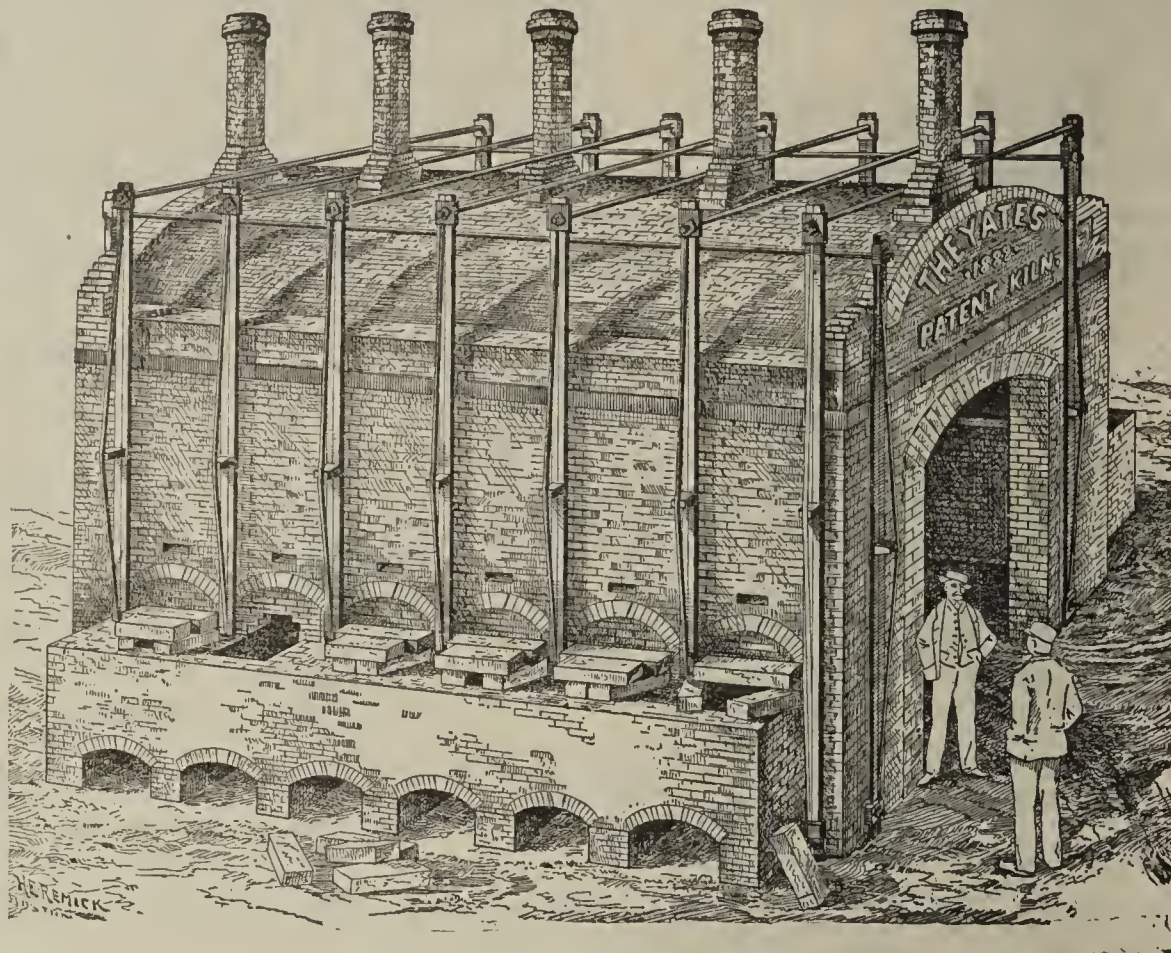
The only line running Solid Pullman Perfected  
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For rates, maps, time tables, etc., apply to

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No. 26 S. Illinois St., Indianapolis, Ind

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## THE YATES IMPROVED DOWN DRAFT KILN FOR BURNING BRICK OF ALL KINDS.

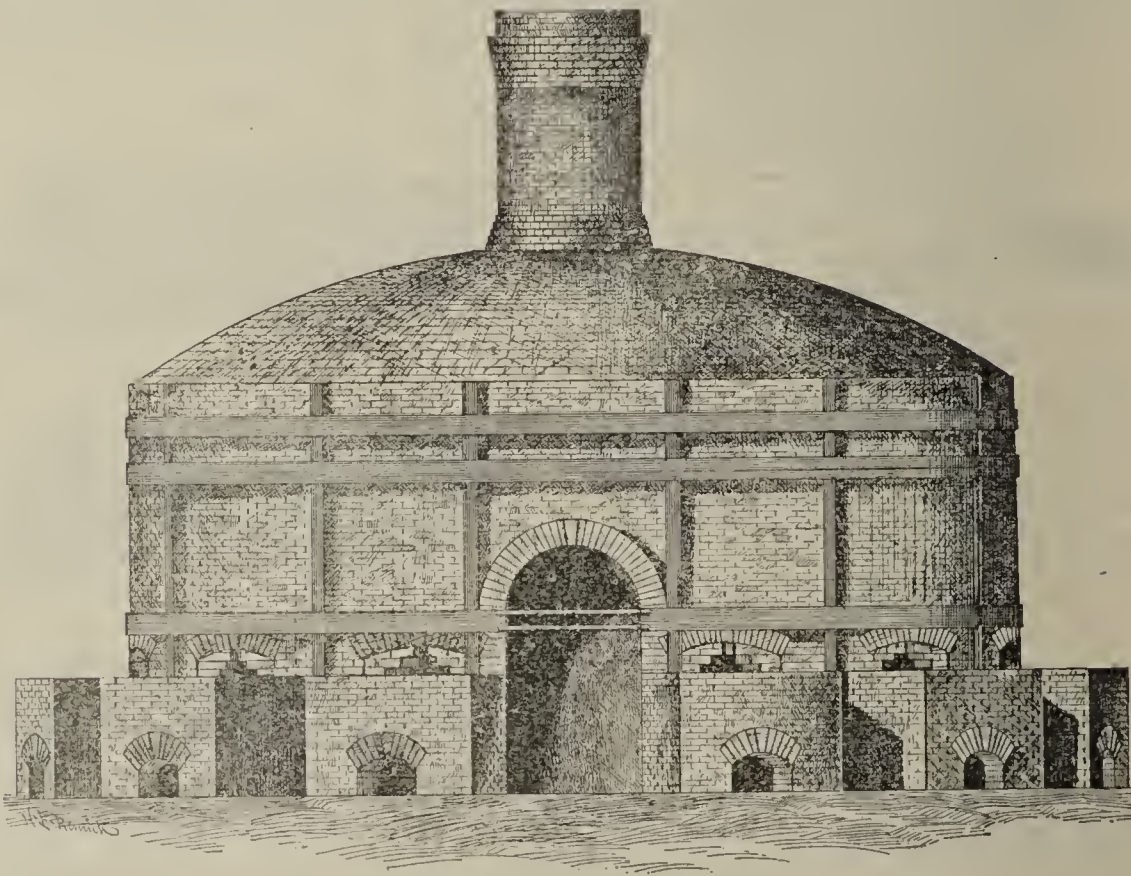


FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty. Waste heat utilized in watersmoking green kiln, and arranged to work continuous. Kilns built under guarantee at our own expense for responsible parties.

The YATES SAFETY and IMPROVED FURNACE DRYER in operation at the Anchor Tile and Clay Co., Sparta, Starke Co., Ohio.

❖ WE STAND ON OUR MERITS. ❖



**ALFRED YATES,**

Write for full description. **NORTH CAMBRIDGE, MASS**



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Have been successfully applied to Heating and Melting in Iron and Steel Works, to the burning of **Pottery and Fire Bricks**, to Steam Boilers, to Bone Kilns, in Glucose and Sugar Refineries, to Lime Burning, to Malt Drying and the Reduction of Metallic Ores.

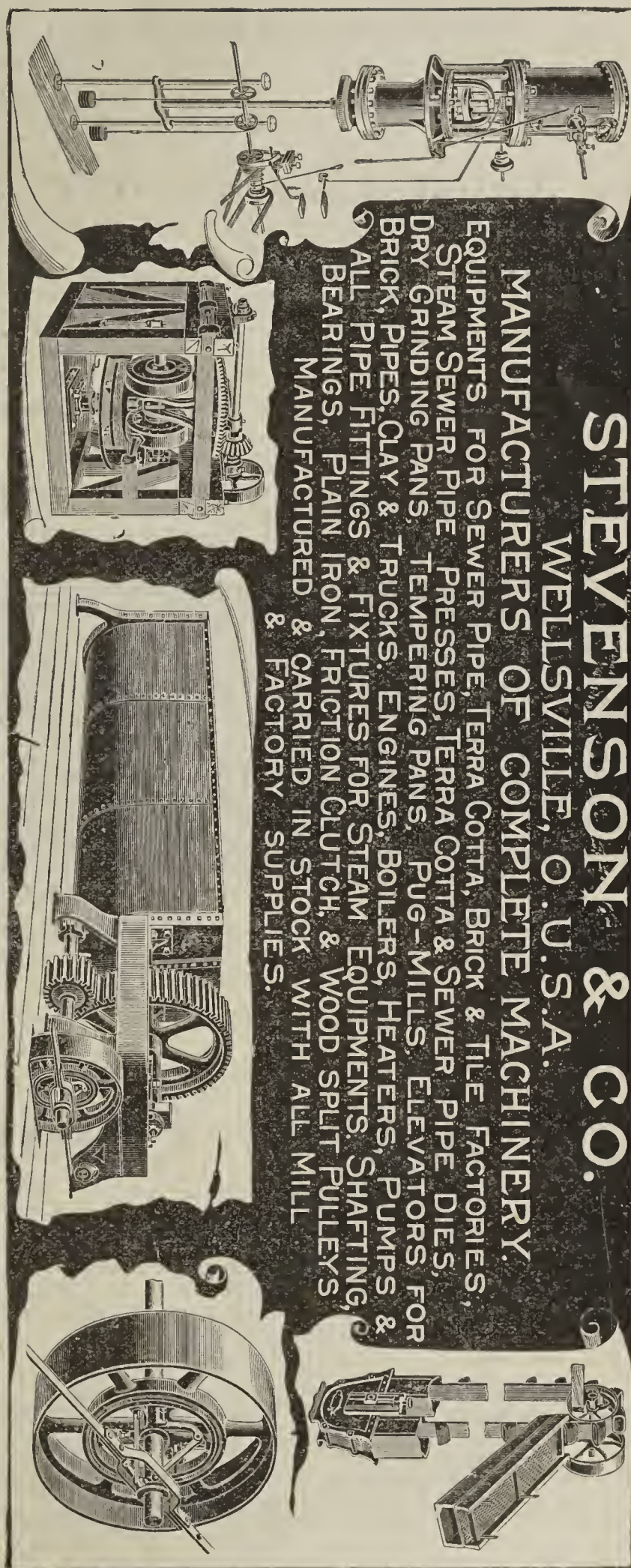
Estimates, specifications and plans on reasonable terms. Plants contracted for on approval to good, responsible parties. Sets of blue prints, 25 cents per set, showing the application of gas to any of the above mentioned purposes.

Send stamp for pamphlet "**Natural versus Artificial Gas.**"

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**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
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ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



# THE ARNOLD CLAY STEAMER.

==PREPARE YOUR CLAY PROPERLY.==

Do You use a Dry or Semi-Dry Press Brick Machine?

Are Your Results Entirely Satisfactory?

**The Arnold Clay Steamer** prepares the ground clay to any degree of moisture required, furnishes a regular, automatic feed to the machine, makes brick dense and compact, insures a perfect bond and smooth, unchecked surface, saves one-third in grinding, and results from kiln show the minimum per cent. in breakage.

THE ARNOLD CLAY STEAMER is in successful use in connection with the dry press machine.  
For particulars and terms address

*P. ARNOLD, Canal Dover, Ohio.*

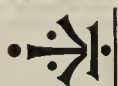
## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.



TOOLED FACE.



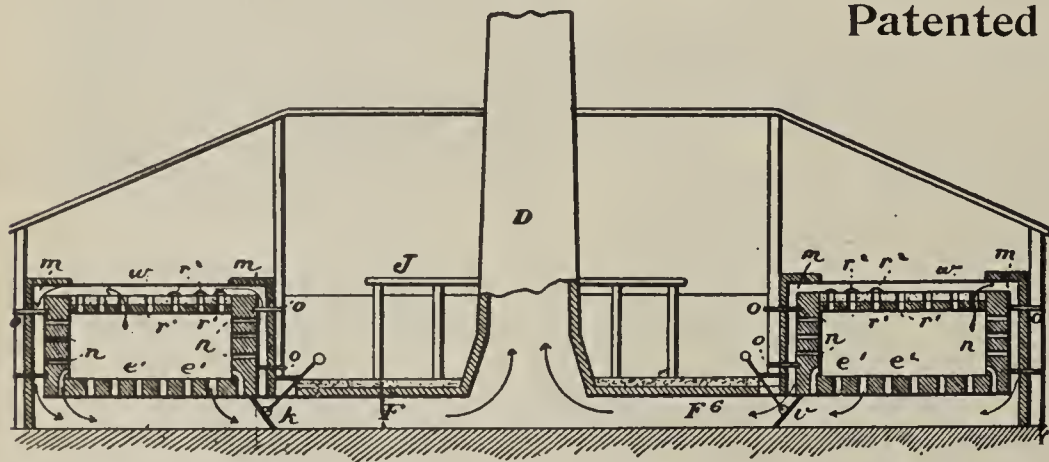
FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.

## The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

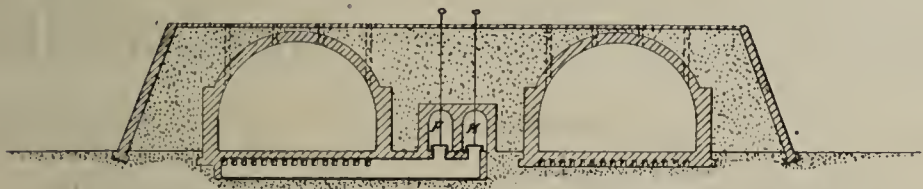
I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

**CARL F. KAUL, Madison, Neb.**

Mention the Clay-Worker.]



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



Office of SAN JOSE BRICK CO.

SAN JOSE, Cal., Feb. 11, 1893.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR: In reply to yours of the 13th inst. will say that the Continuous Kiln you erected for us last winter is giving us great satisfaction, having turned out all good brick on the first round, something we did not look for. We are now shutting down our B-ke kiln and contemplate applying your improvements on it. Please forward estimate cost of same if it can be done. We will give you statement in regard to fuel consumption of new kiln later.

Yours very truly,

D. CORKERY, Manager.

**SIMPLICITY, DURABILITY and the highest EFFICIENCY**  
Are the Characteristics of this Kiln.

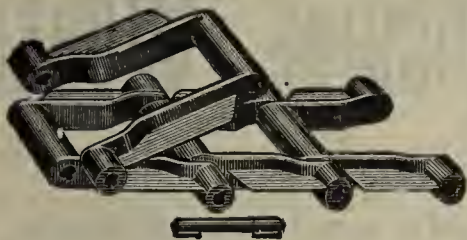
IT has taken the lead and will remain there. Burns all kinds of brick more uniform and economical than any other kiln. I mean what I say and am prepared to erect kilns under the highest guarantee, covering the entire cost of kiln. Its superior work is due to the peculiar features which are the result of a careful and systematic consideration of the continuous system of burning.

Competitors are warned from using my inventions as I will protect my claims at all hazards.

Applications for unpatented portions of my improvements now pending. All first-class plants will soon be compelled to adopt the continuous method of burning, so it is no use spending good money for poor kilns, but get the best at once. It does not require a millionaire to own one of my kilns as my large experience in building these kilns has enabled me to reduce the cost of same down to an exceedingly low figure.

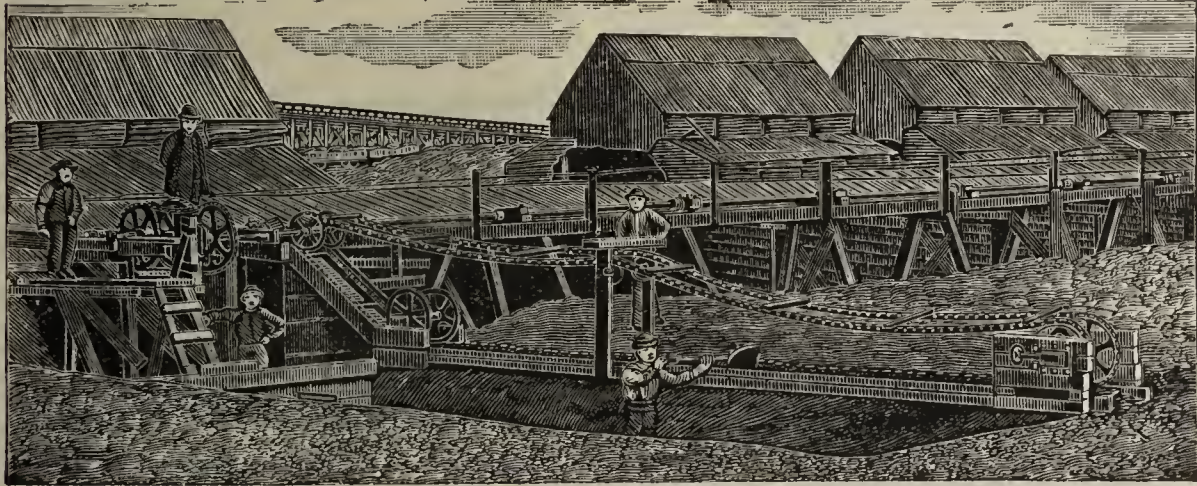
Write for description and estimate, cost of kilns for your capacity. Address communications to

P. L. YOUNGREN, Oakland, Cal.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

## F. H. C. MEY CHAIN BELTING ENGINEERING WORKS,

APPROVED APPLIANCES FOR

### Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

### Make Many More Thousands

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



## A LONG FELT WANT SUPPLIED.

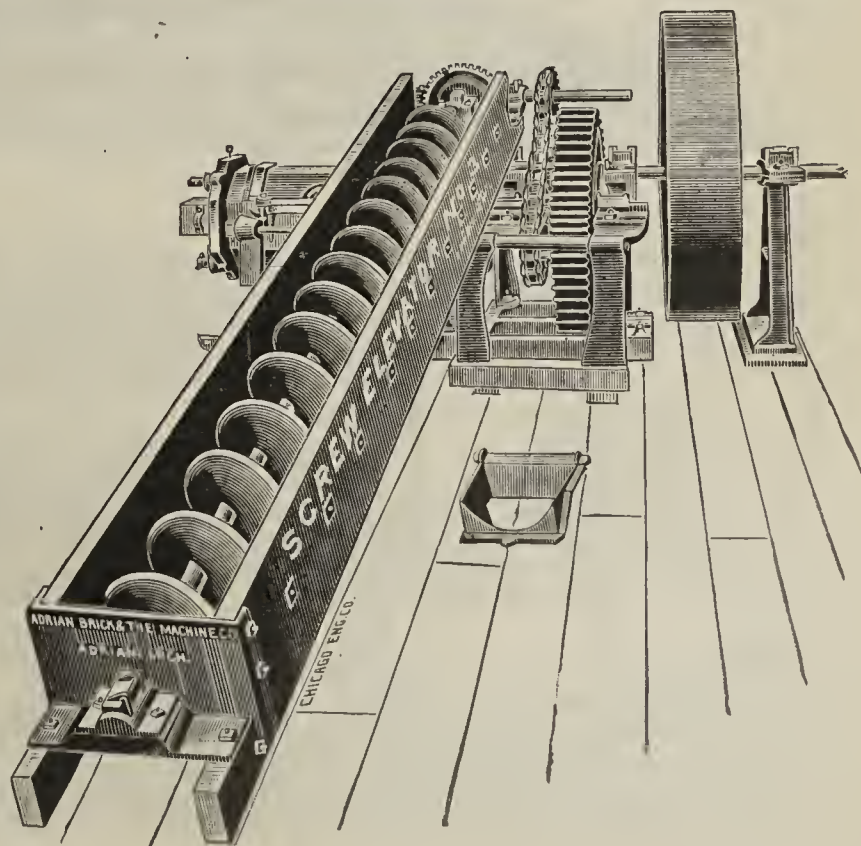
### A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

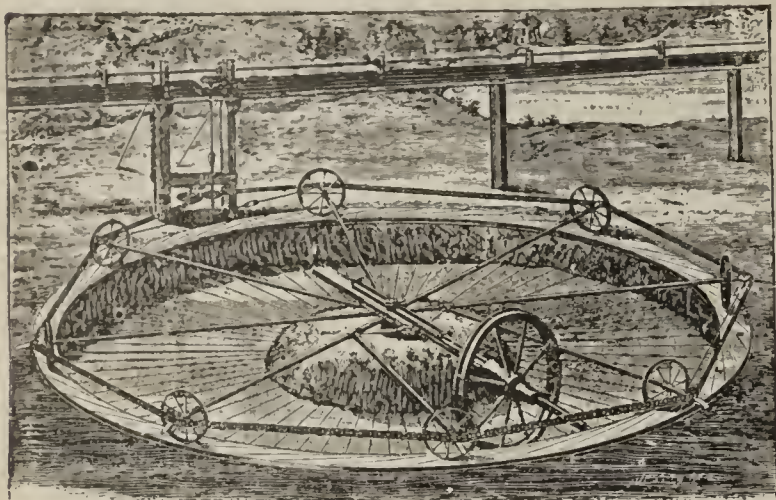
For Clayworking Machinery and Builders' Elevators, address the

### Adrian Brick & Tile Machine Co.,

ADRIAN, - - MICHIGAN.







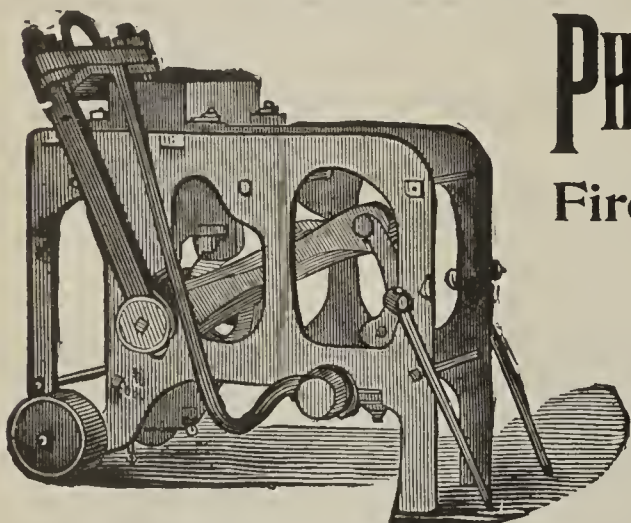
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

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Nos. 1,819, 1,821 and 1,823 Germantown  
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PHILADELPHIA, - - - PENN.

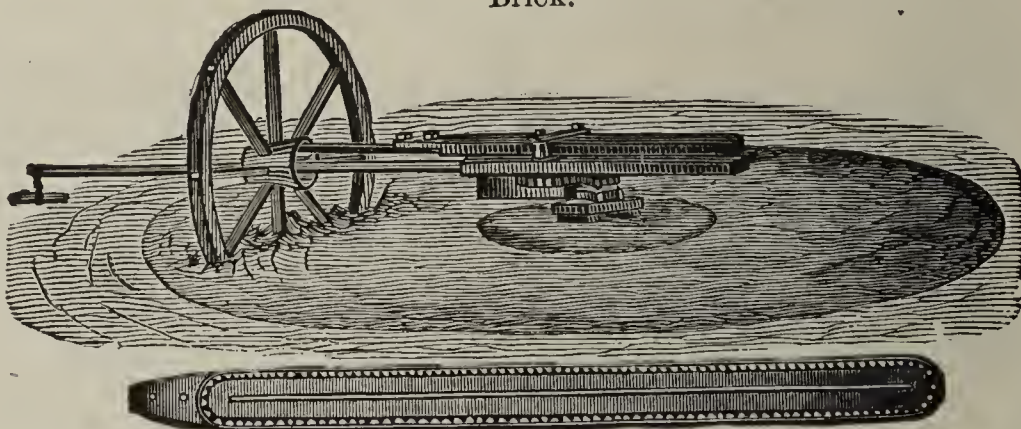
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

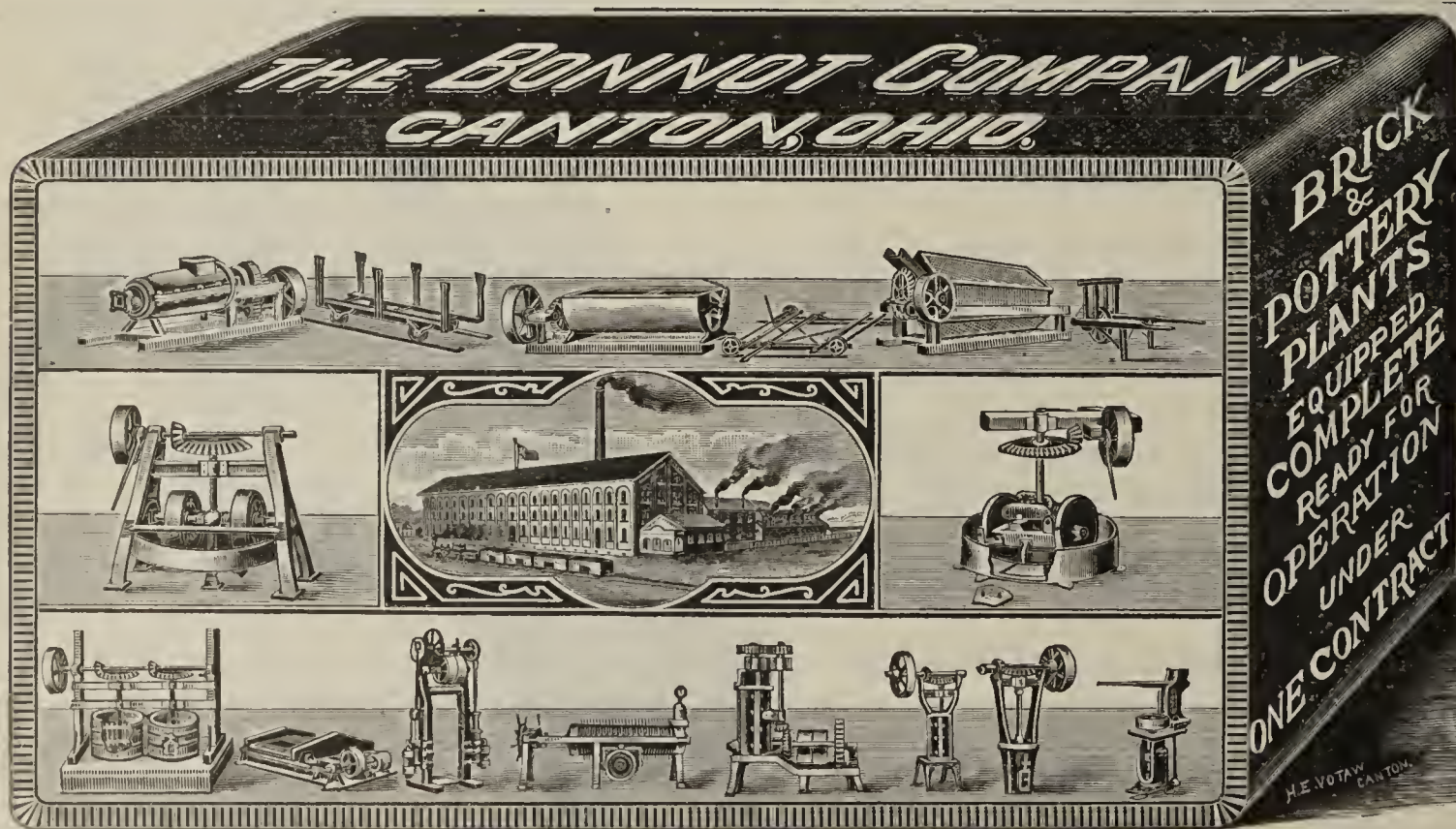
Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.

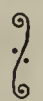


These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

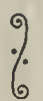




## WHEELING MOLD AND FOUNDRY CO.,

Dies of All Kinds  
and Glass House Molds.

WHEELING, W. VA.,

Models for all kinds of Inventions  
of small machinery a specialty.

.....MANUFACTURERS OF.....

**Brick Molds, Machinery Castings***And Machinery From Specifications.*

# 150 DOUBLE DECK BRICK DRYER CARS FOR SALE, CHEAP.

•➔• Ready For Shipment. ➔•

CLEVELAND WHEELBARROW &amp; MFG. CO.,

961-981 Hamilton St.,

-

-

Cleveland, Ohio.

If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

Jonathan Creager's Sons,

127 W. SECOND STREET,

Cincinnati, Ohio.

P. S. If you do not ask we cannot tell you of several very important improvements.



# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

48 Styles.

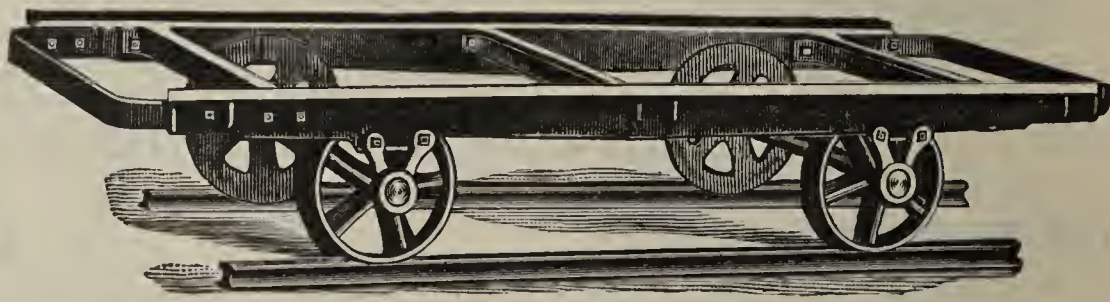
Also

Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



# ARS

Send For Price List.



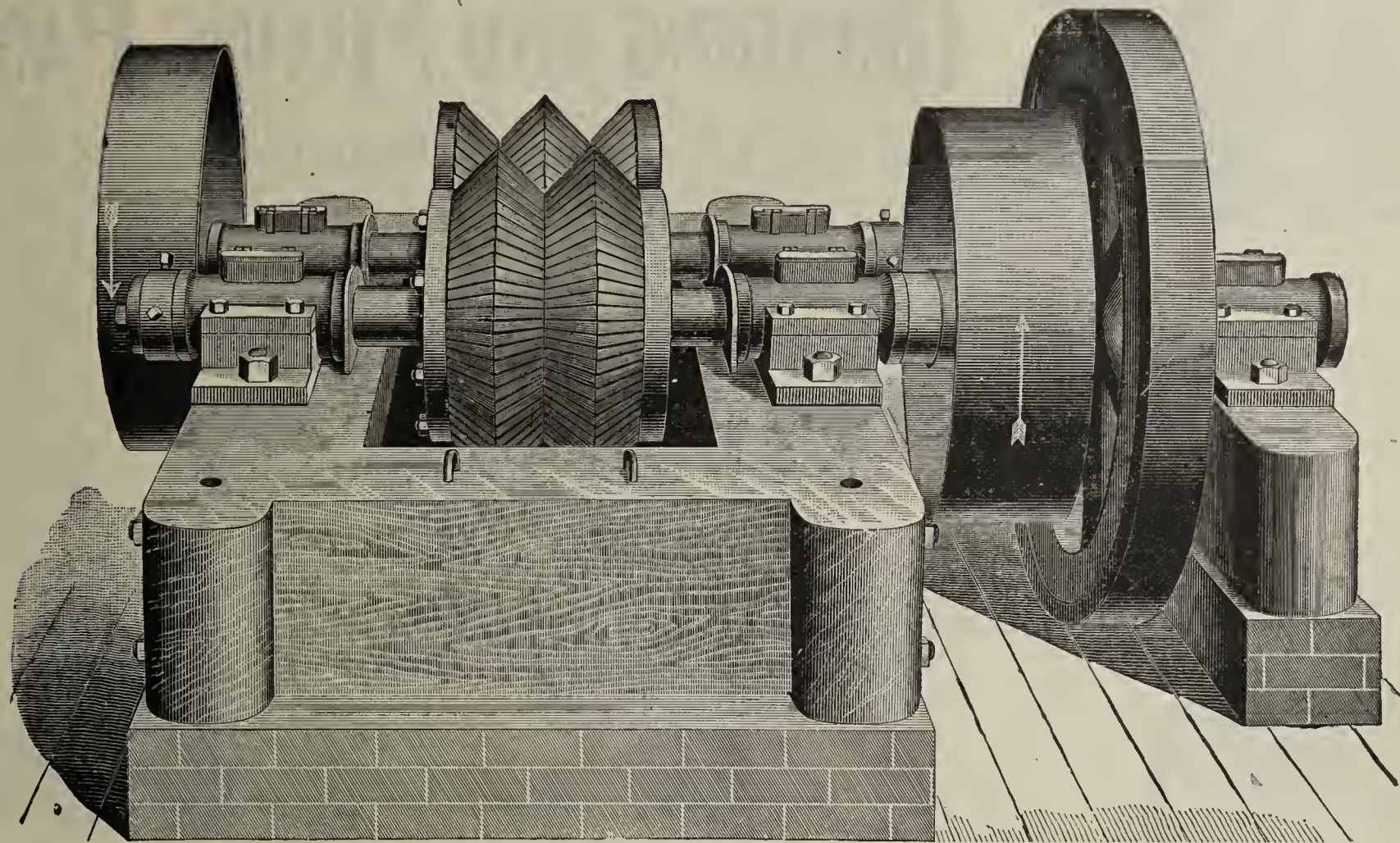
STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG CO.,  
Cleveland, O.



# NEWELL IMPROVED CLAY PULVERIZER

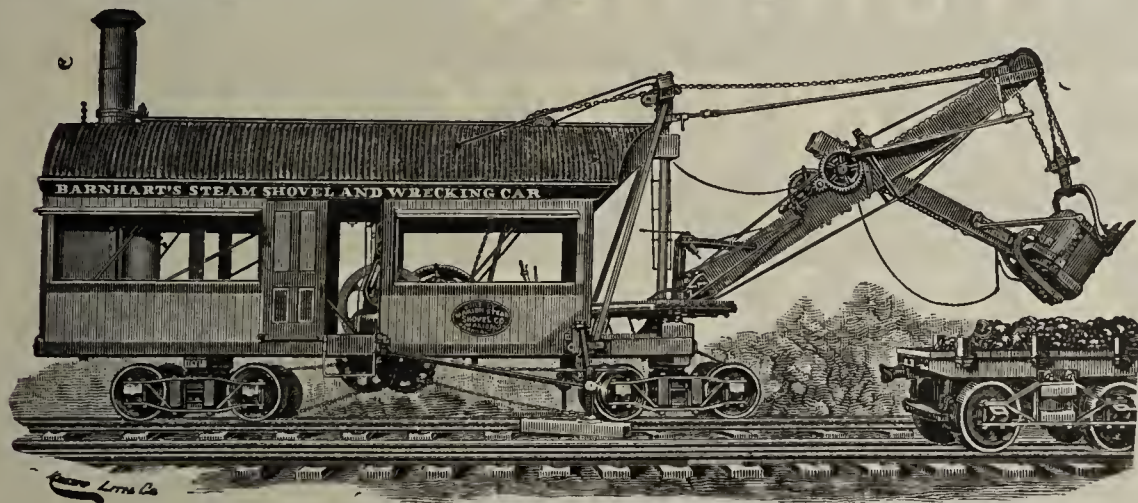
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, 26 Cortland and 21 Dey Streets, New York, U.S.A.

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

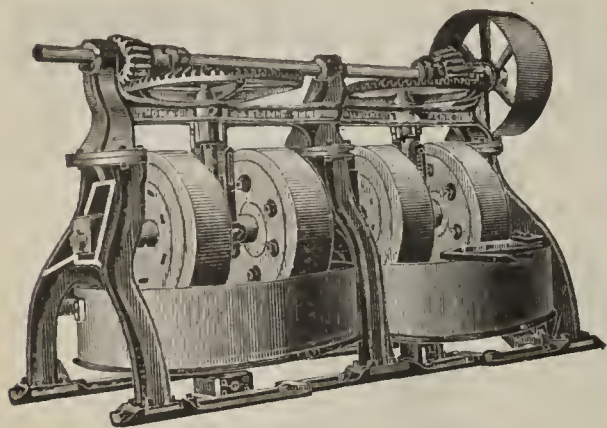
yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
**603 West Center Street,**  
**MARION. . . . . OHIO.**



STYLE C—¾ YD





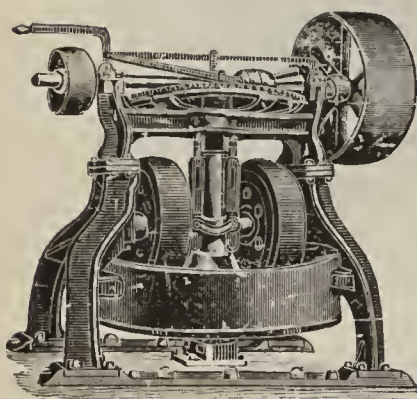
OUR SPECIALTY.

# GRINDING AND MIXING PANS

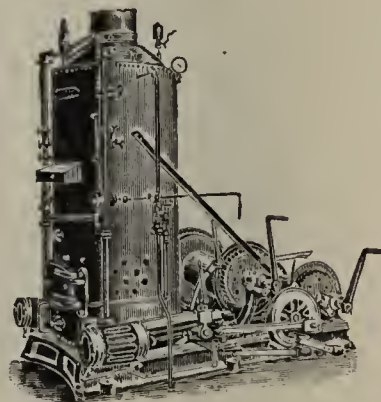
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



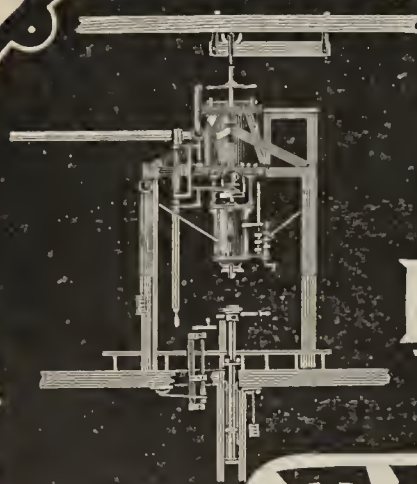
Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

} IN STOCK:

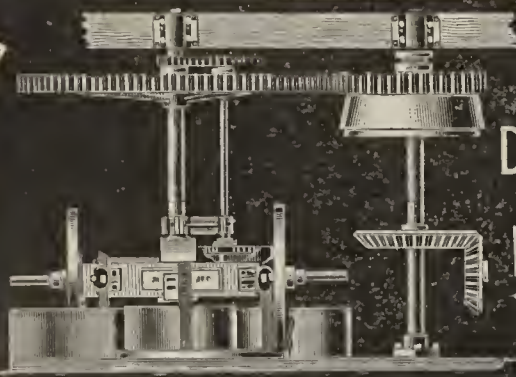
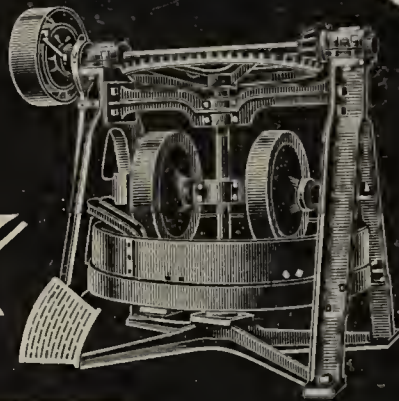
{ One 8 foot Wet Pan.  
 Eight 3 foot gauge Dump Cars.



MANUFACTURERS OF  
 IMPROVED  
**CLAY WORKING  
 MACHINERY**

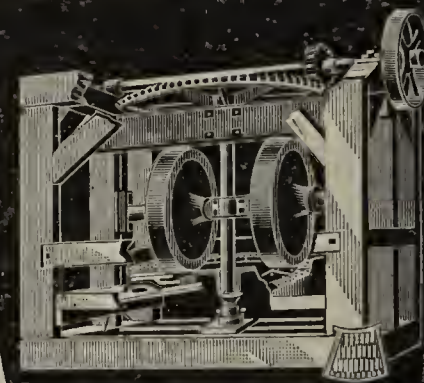
OF EVERY DESCRIPTION

**TAPLIN RICE & CO.**



CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

AKRON, OHIO, U.S.A.

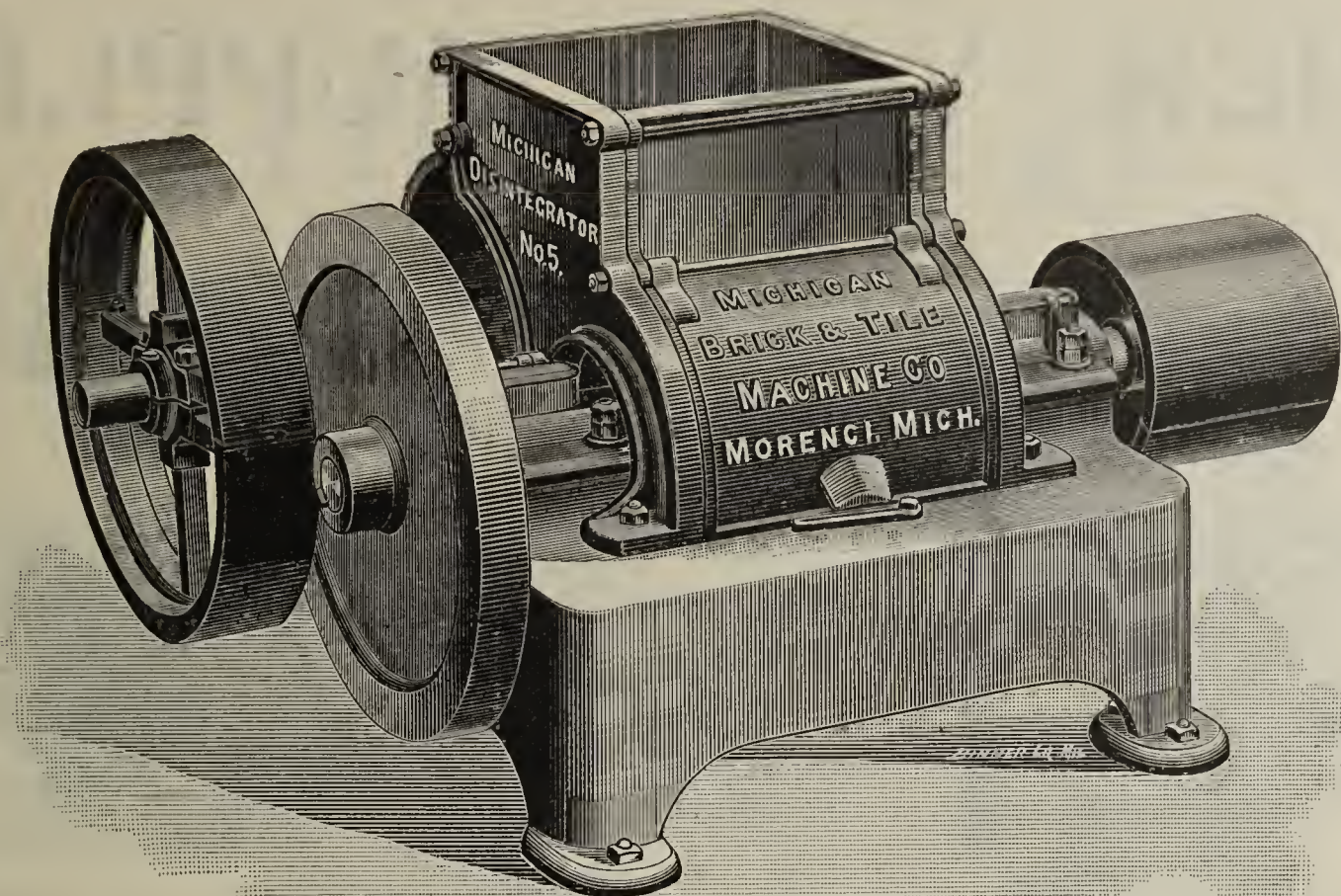


PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



MICHIGAN DISINTEGRATOR, No. 20  
is a Mammoth. It has a Capacity  
of 100,000 or Over a Day.



ALL DISINTEGRATORS Fully Guaranteed.  
Send for Catalogue and  
Testimonials.

## A MONEY MAKER. BRICK AND TILE MANUFACTURERS

Cannot afford to do without it. It reduces hard, stiff, lumpy clay and puts it in the best possible condition. "It increases the capacity and improves the quality sufficient to pay for itself once a month;" that is what users of it write us. Throw away your old Smoothe Rolls and put in a MICHIGAN DISINTEGRATOR. They are the strongest, have the largest knives, do the best work. The No. 5 has a Capacity up to 40,000 a day. Price, Capacity considered, the lowest on the market.

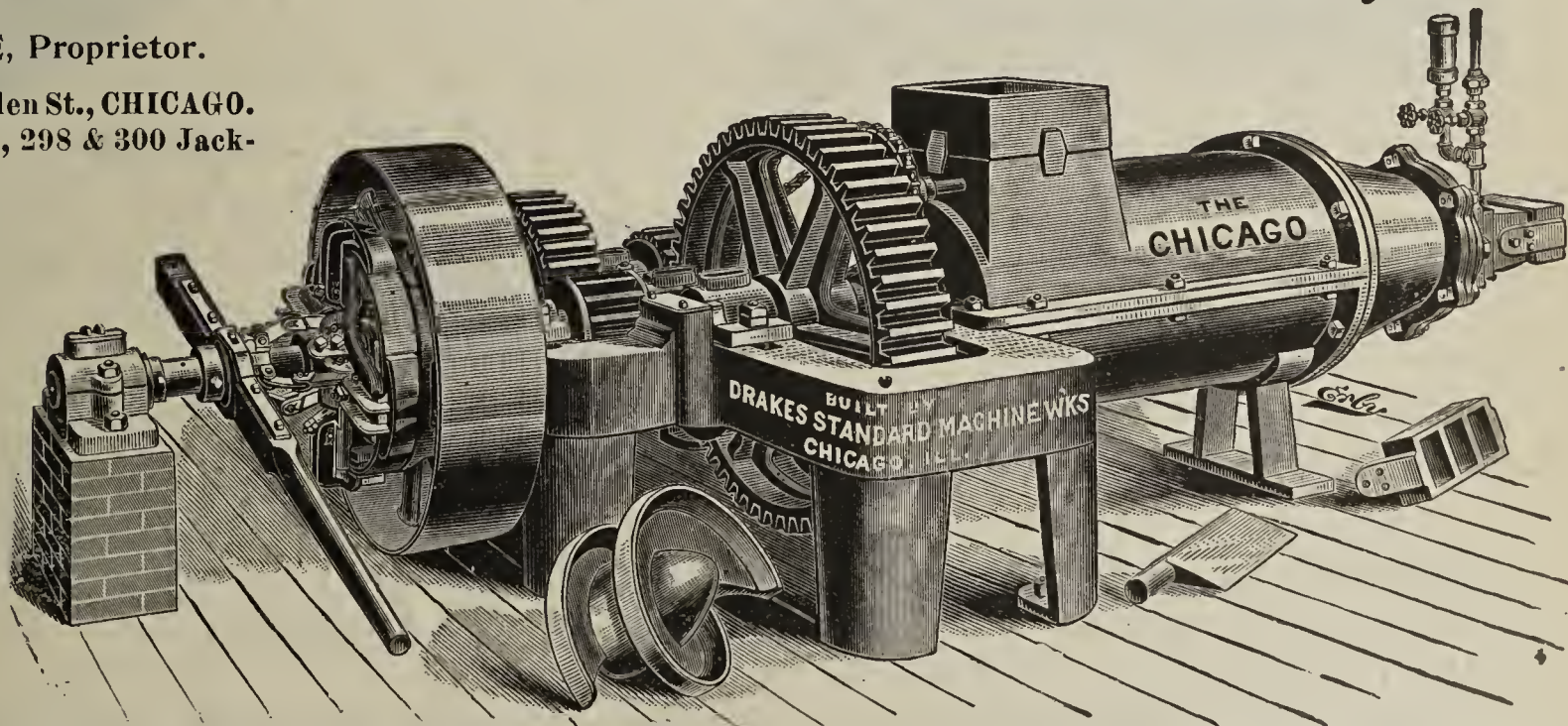
MICHIGAN BRICK & TILE MACHINE CO. - MORENCI, MICH.

# DRAKE'S STANDARD MACHINE WORKS,

Manufacturers of All Kinds of Brick Machinery.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.  
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

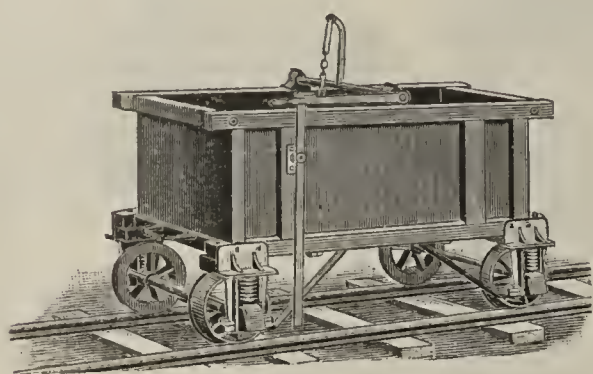
Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

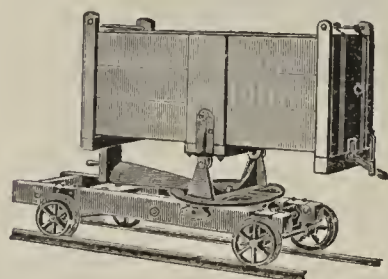
**CORRESPONDENCE SOLICITED**



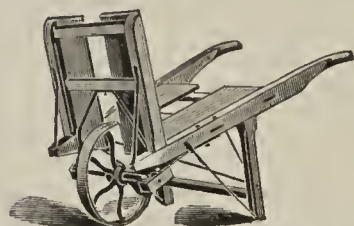
# BRICK YARD SUPPLIES.



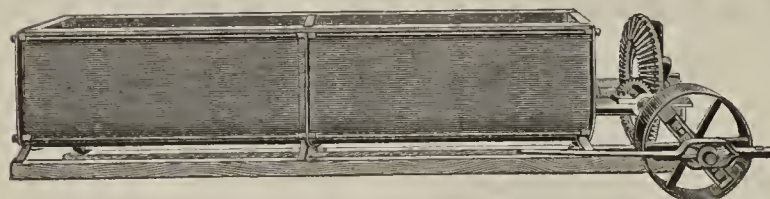
BOTTOM DUMP---Chilled Wheels.



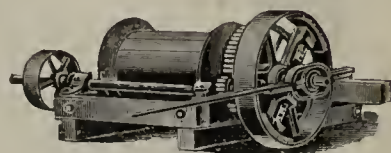
REVOLVING DUMP---Chilled Wheels.



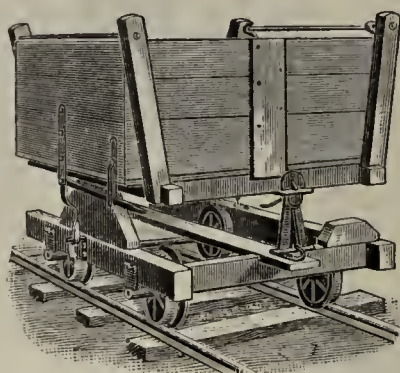
BARROWS.



PUG MILLS.



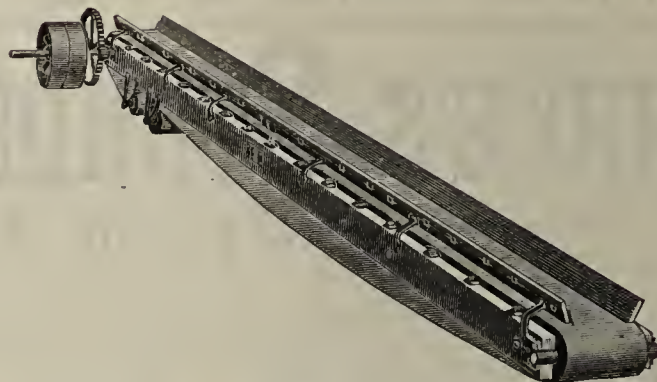
WINDING DRUM.



SIDE DUMP---Chilled Wheels.



TRUCKS.



ELEVATORS.



BRICK MOULDS.

We make the only clay car having chilled wheels.

If in need of supplies of any kind we can save you *money*.

We manufacture everything used on a Brickyard.

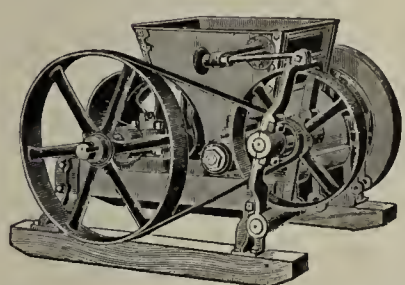
When you purchase from us you buy from manufacturers and save all commissions.

**C. & A. POTTS & CO.,**  
**INDIANAPOLIS, . . INDIANA.**

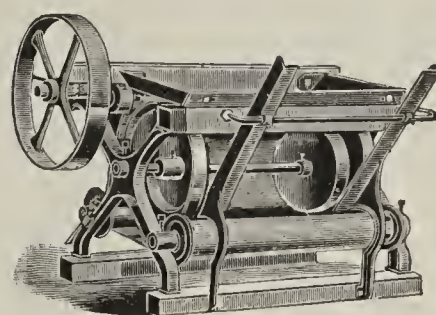
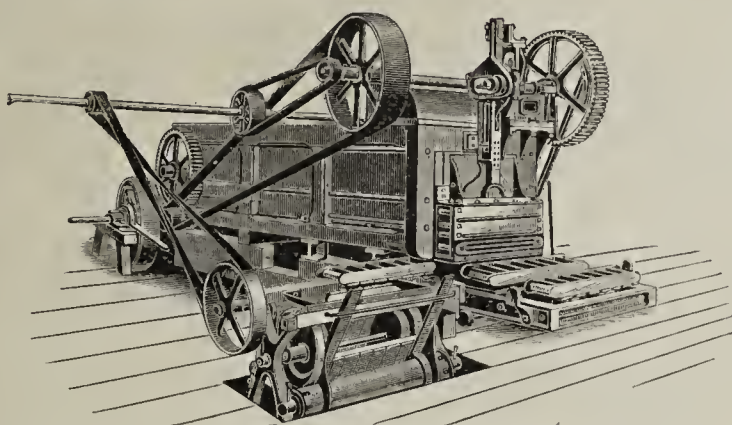


# THE BIG 3

## THE POTTS HORIZONTAL STOCK BRICK MACHINE, DISINTEGRATOR AND MOULD SANDER.



Having Chilled Rolls



Simple in Construction.  
Strong and Durable.

### A Disintegrator

Having Chilled Rolls. A machine that will grind hard, lumpy, or wet, sticky clays, and not choke or clog, that will separate or grind the stone. A machine that is simple, strong and durable.

### A Horizontal Stock Brick Machine

Which will work the clay direct from the bank without an extra Pug Mill. It will work the clay so stiff that the brick will not pitch in trucking or spread in drying. It will fill a six brick perfectly. The brick made will have *clean, sharp corners* and *smooth surfaces*. A machine which is *simple in construction, strong and durable*.

### A Mould Sander

Which will sand the Moulds better than can be done by hand, and will make a saving in labor and sand. It does not waste or spill the sand. It will make a saving of 75 cents to \$1.50 per day.

### With the Big 3

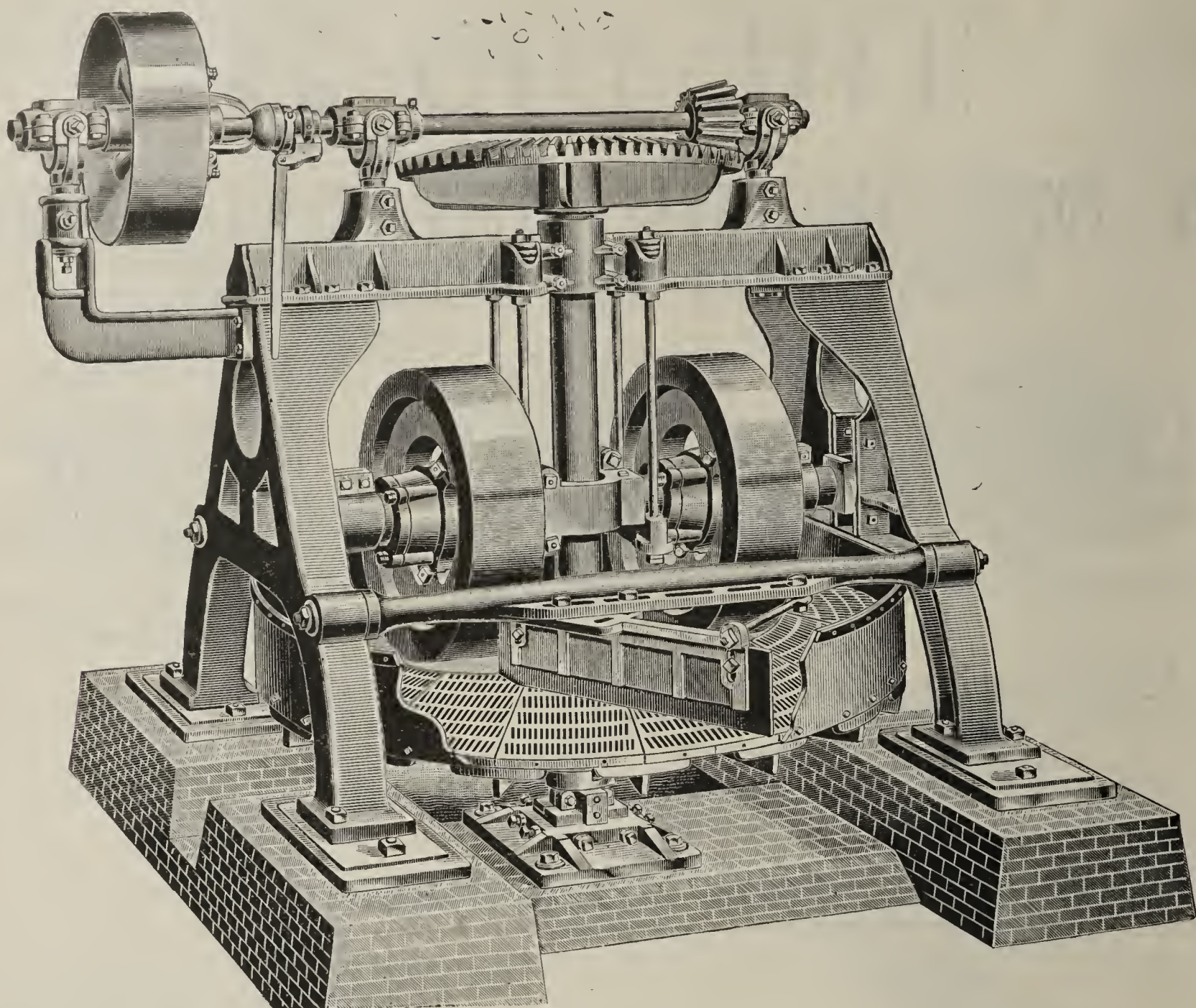
You can make brick which will always bring the highest market price. A brick which will always be in demand.

The above machinery is guaranteed to do the work and will be shipped on trial.  
For further information, address

**C. & A. POTTS & CO.,**

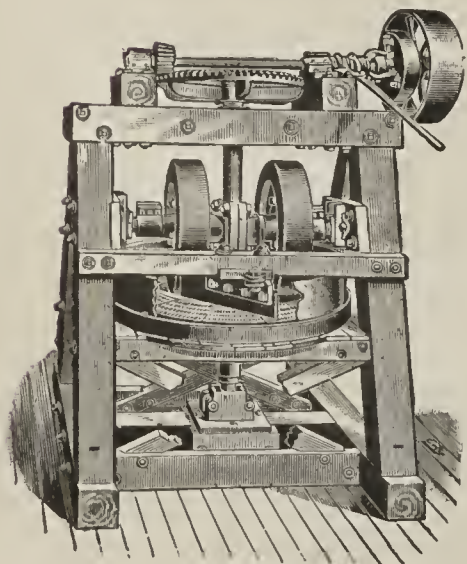
INDIANAPOLIS IND.





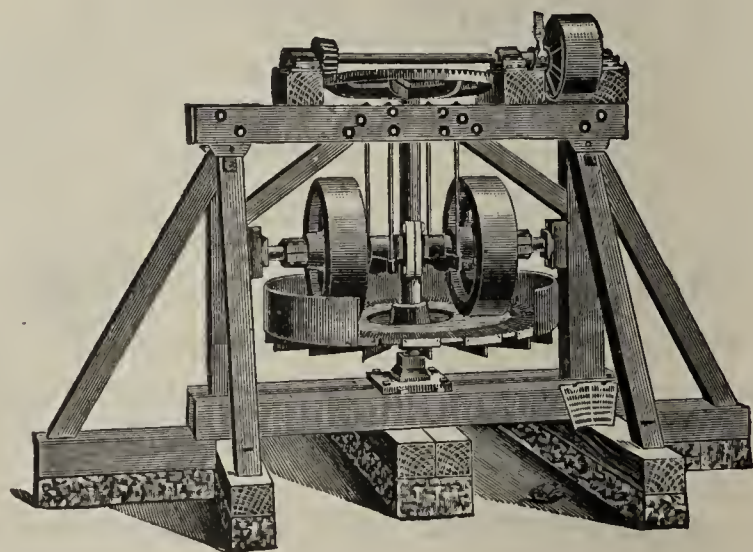
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.



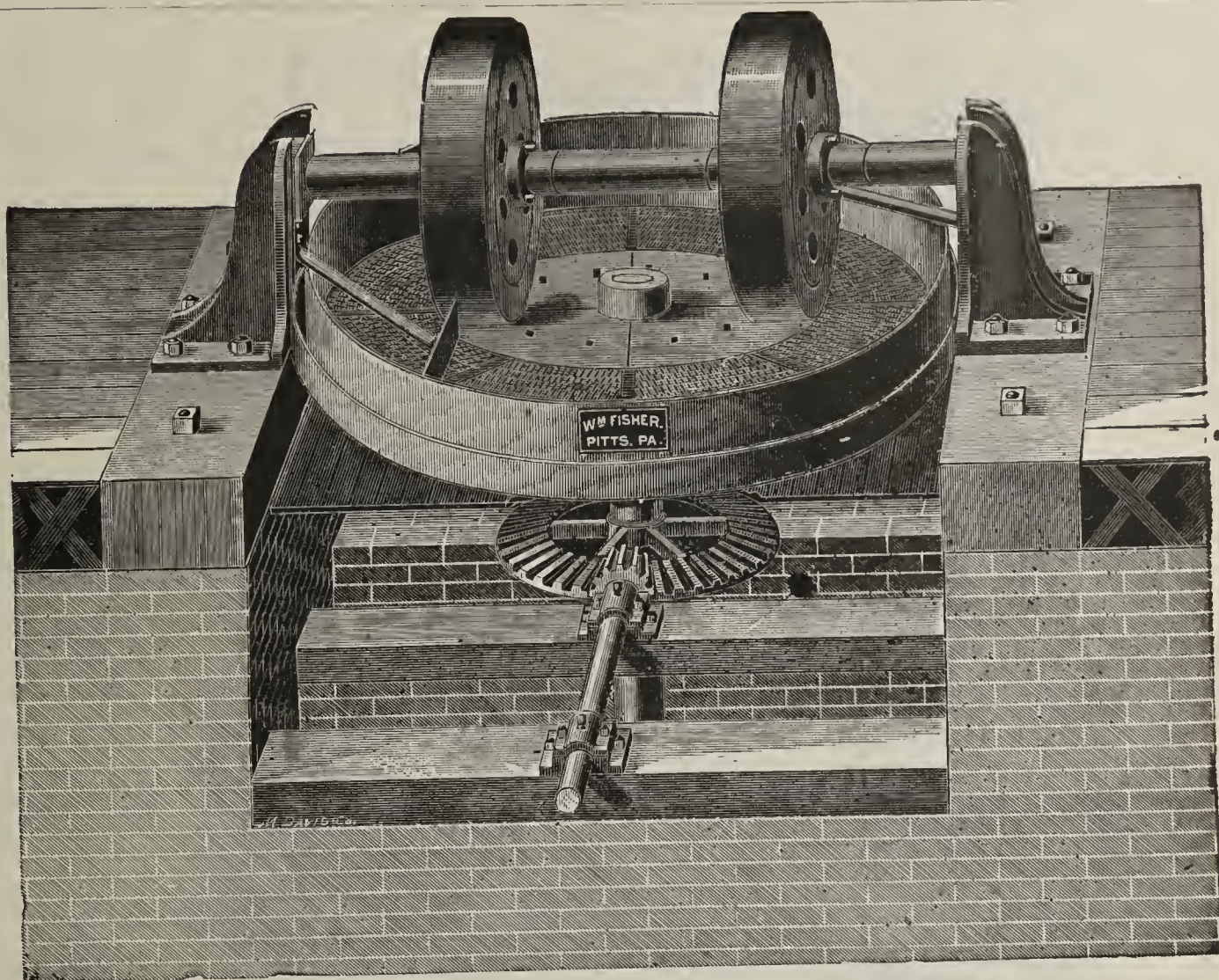


# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.  
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR  
Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

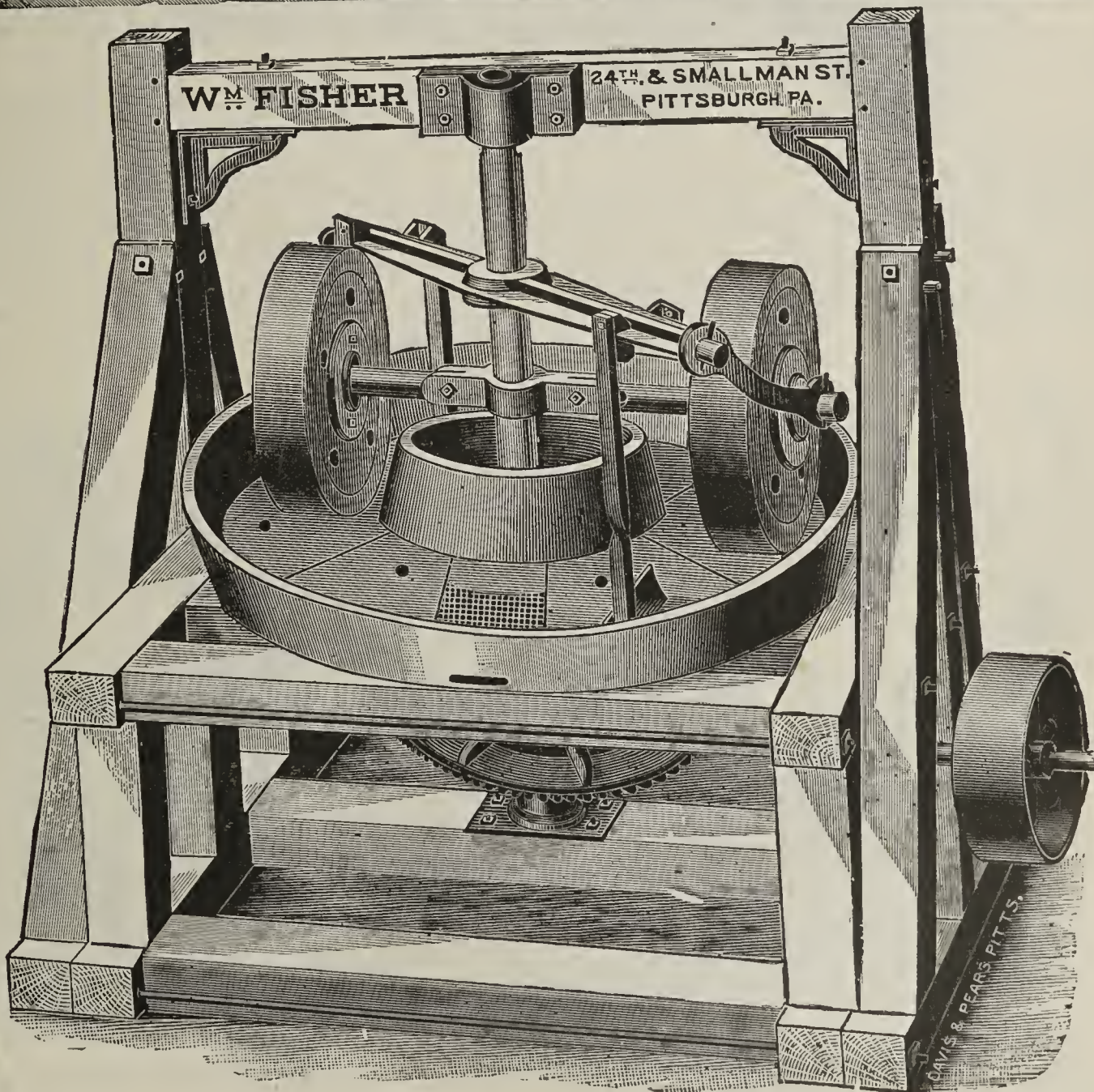
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.



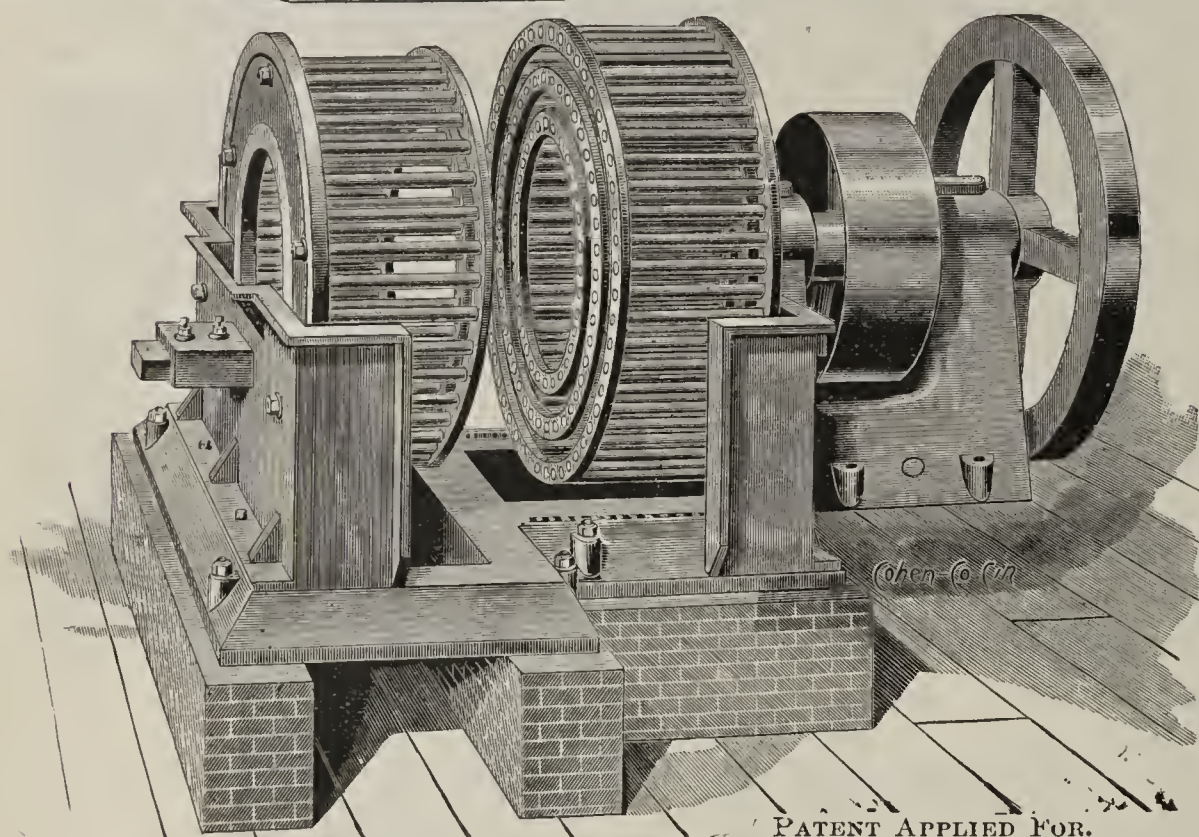
## Description.



This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

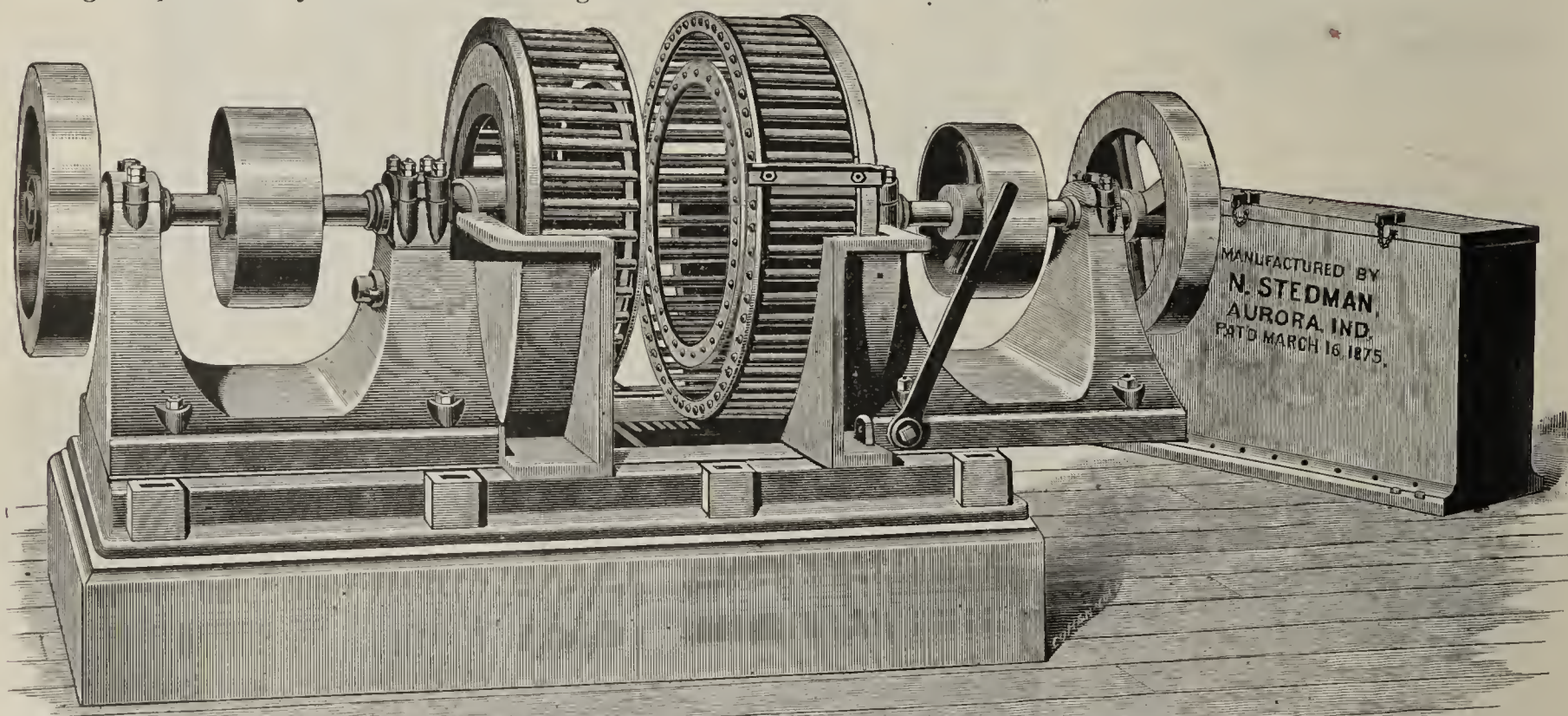
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be SOLD AT UNHEARD-OF PRICES.

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold VERY CHEAP. This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

**RUSHVILLE, IND.**

REFERENCE: Rush County National Bank.



THIS WAS AT  
THE END OF

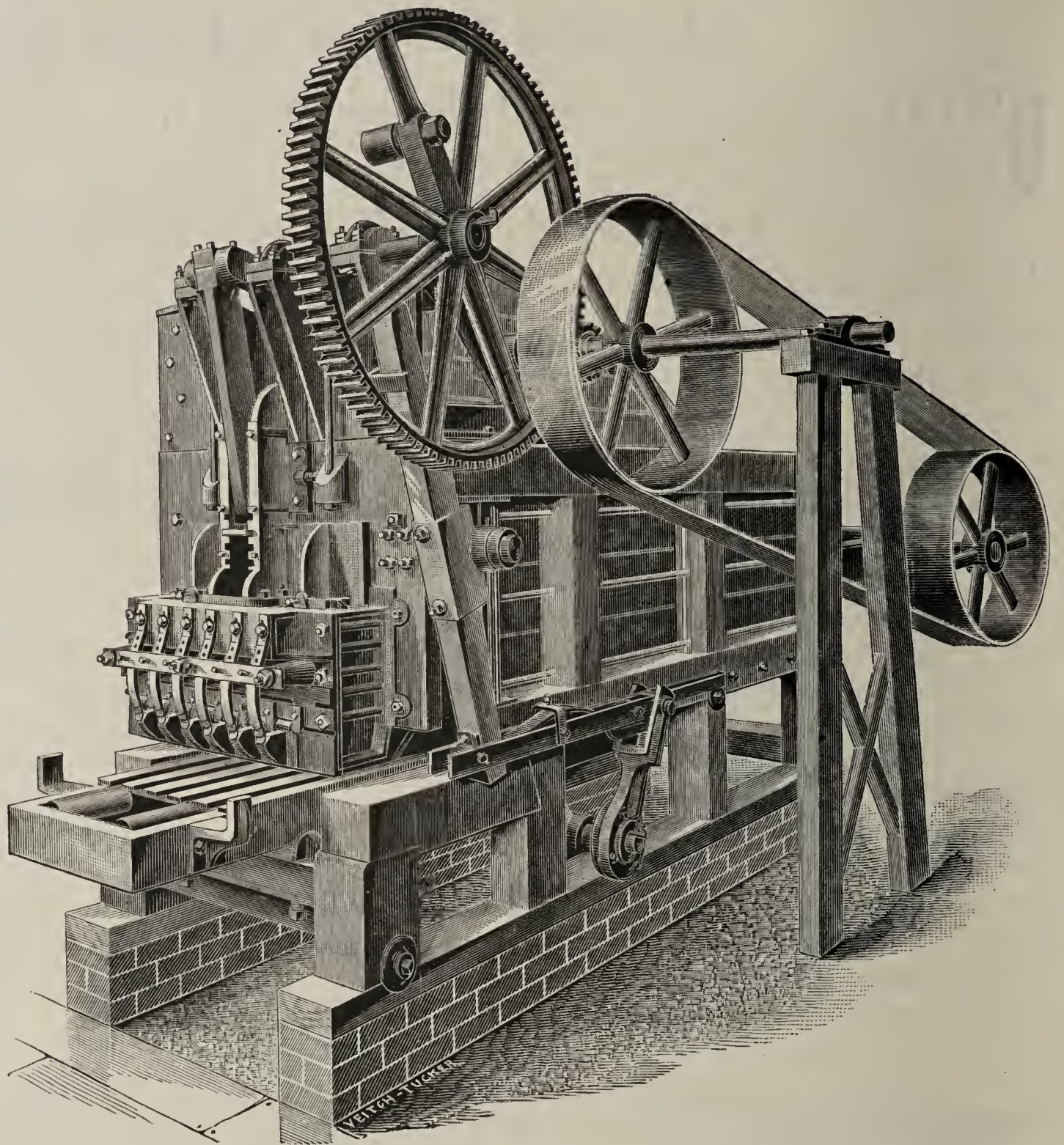
# THIRD SEASON.



WEIGHT

15,500

POUNDS.



**Press Box Lined With Steel.**

SALEM, VA., Nov. 7, 1892.

THE McLAGON FOUNDRY CO.:

GENTLEMEN—Have finished making brick for this season. The "New Haven" Brick Machine still stands the test. **Has worked first-class without a cent for repairs**, as there have been no breaks, not even a brick mould. Unless other machines you furnish have more breaks or wear out faster, you will not make much on repairs. Yours truly, G. R. PIERPONT.

We Can Furnish More Like Above.

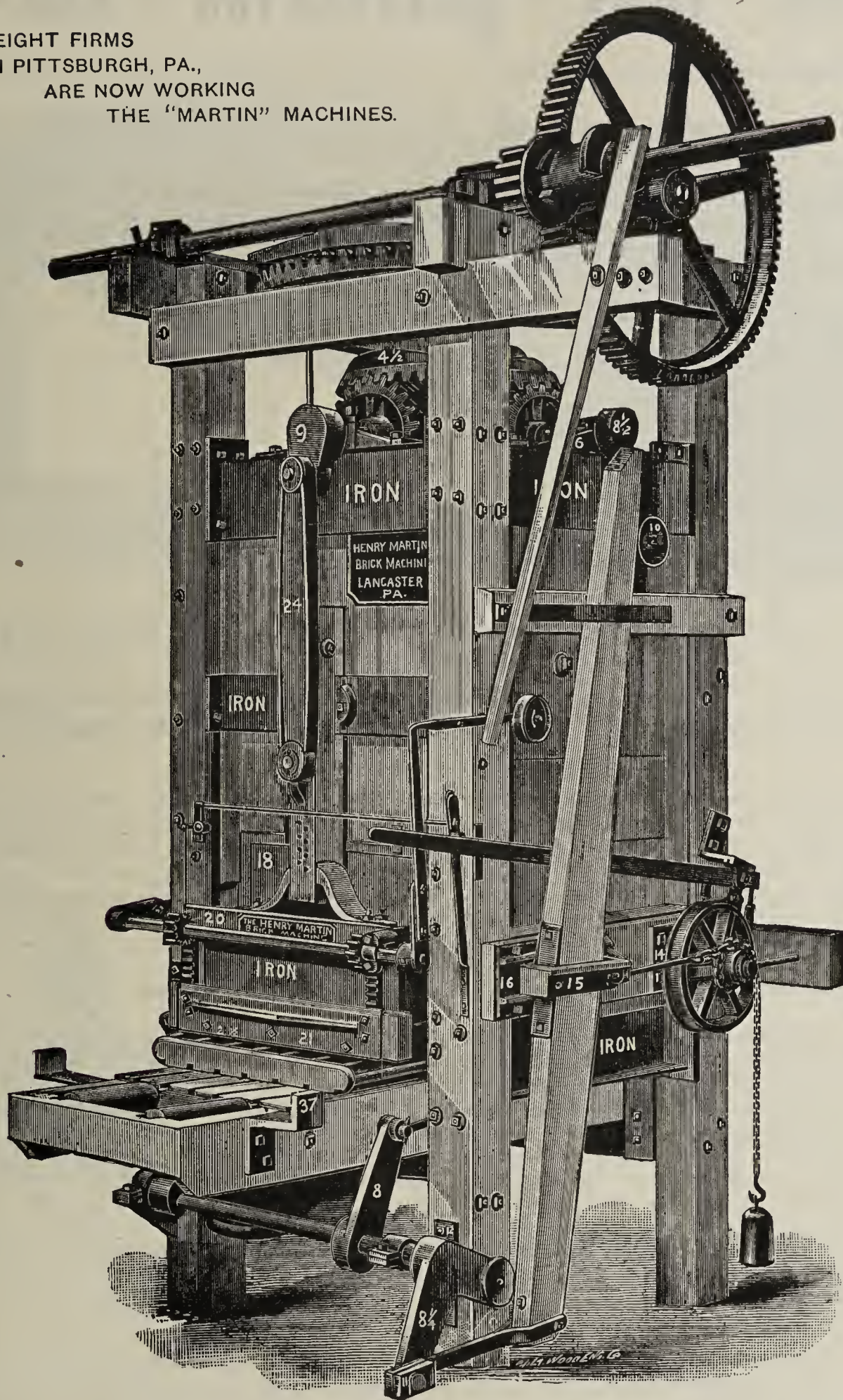
## The McLAGON FOUNDRY CO., New Haven, Conn.



THE  
OLD.....  
RELIABLE

# Martin Brick Machines.

SEVENTY-EIGHT FIRMS  
IN PITTSBURGH, PA.,  
ARE NOW WORKING  
THE "MARTIN" MACHINES.



Each  
and  
Every  
Machine  
is  
Built  
Under  
the  
Personal  
Supervision  
of  
its  
Inventor.

We  
Manufacture  
all  
the  
Latest  
and  
Best  
Improved  
Brick  
Machinery  
and  
Supplies.

## ...The Henry Martin Brick Machine Mfg. Co...

ESTABLISHED  
1857.

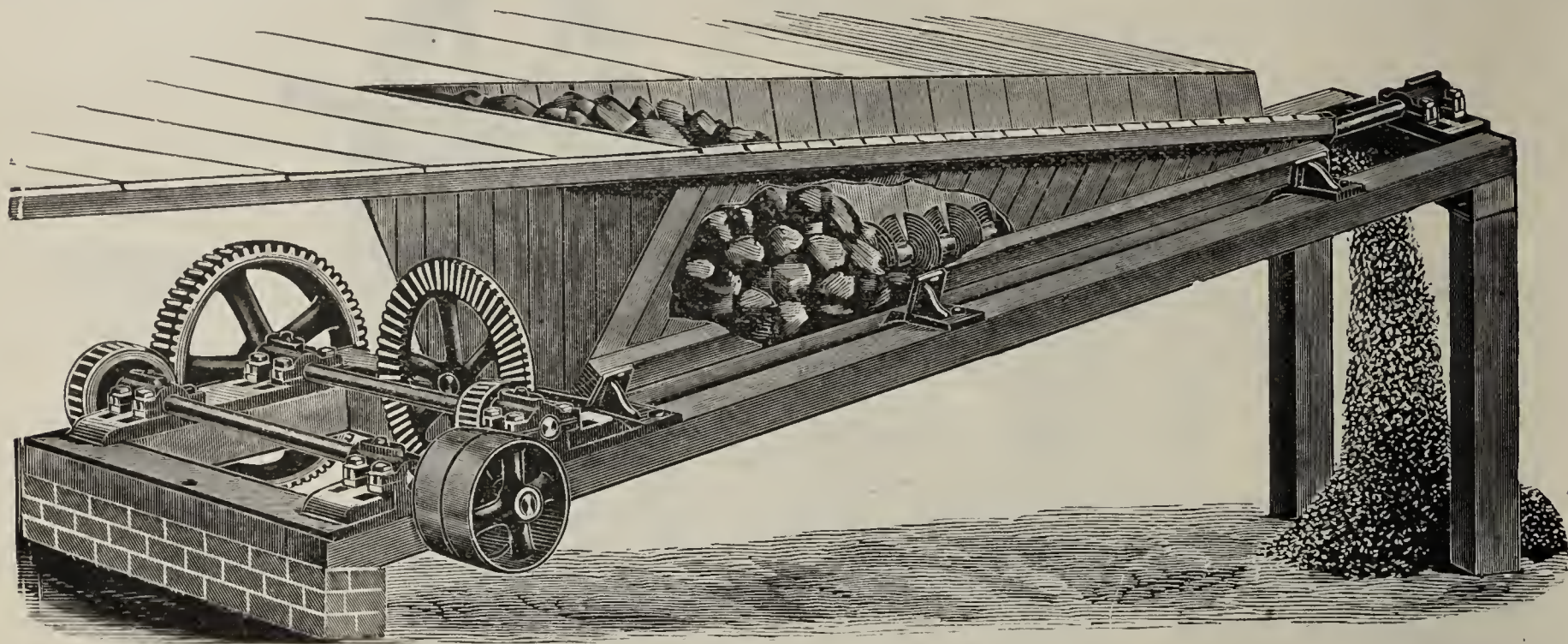
LANCASTER, PA., U. S. A.

INCORPORATED  
1887.

WRITE US  
FOR ANY INFORMATION DESIRED.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

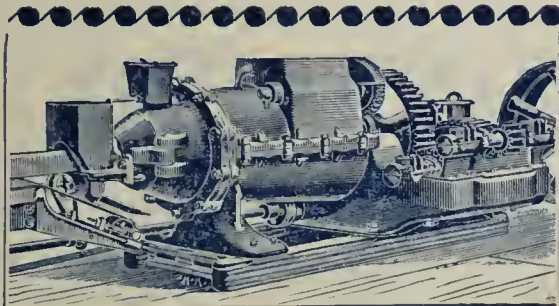
# John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.



J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY  
WILLOUGHBY, OHIO

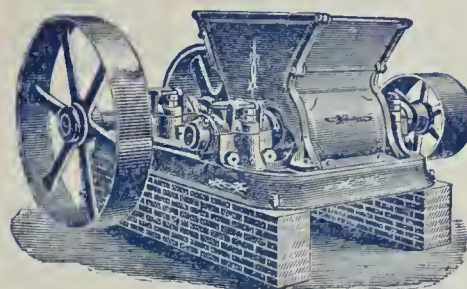


### The Penfield Auger Brick Machines

are the heaviest of the good machines and the best of the heavy machines. They are strong, durable, speedy, automatic. They make good brick. What more could you ask?

CATALOGUES FREE.

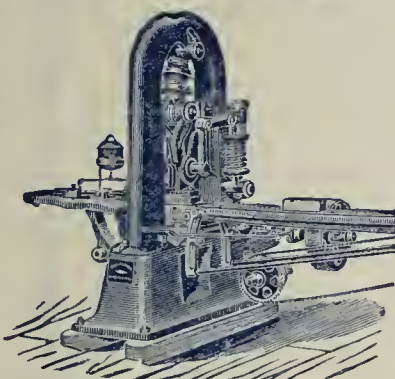
J. W. PENFIELD & SON,  
Willoughby, Ohio, U. S. A.



### Penfield Disintegrators and Crushers

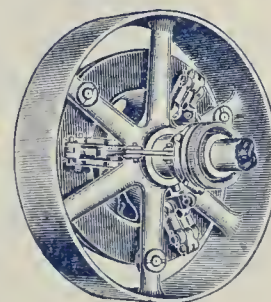
will aid you to prepare your clay better and you will make better brick. Better brick mean quicker sales, larger demand, better prices; advantages worth securing. Send for our catalogues.

J. W. PENFIELD & SON,  
Brick Machinery Makers,  
Willoughby, Ohio.



Every time you press a brick by hand, you lose money. A Power Press will do everything a hand press can and do it easier, quicker and cheaper. PENFIELD'S POWER PRESS is simplest and strongest; lasts longest; costs least for repairs; is guaranteed. Circulars free.

J. W. PENFIELD & SON,  
BRICK MACHINE MAKERS,  
Willoughby, Ohio.



Equip  
your  
Line-  
Shafting  
with  
the

### Imperial Clutch Pulleys.

Friction regulated without stopping shaft. Clutch mechanism perfectly balanced. Runs at any speed. Takes small space on shaft. Strictly first-class. Send for details.

J. W. PENFIELD & SON,  
No. 12 Mentor Ave.,  
Willoughby, Ohio.

J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY



J.W. PENFIELD & SON  
CLAY WORKING  
MACHINERY  
WILLOUGHBY, O.

92

THE CLAY-WORKER.

# The Proof of the Pudding

IS IN THE REALIZATION NOT IN THE ANTICIPATION.

JOHN BURNS, President  
F. PLUMB, Treasurer

OFFICE OF

JAY BAKER, Secretary  
T. C. TRIGEL, Superintendent

THE STREATOR TILE COMPANY,

MANUFACTURERS OF

Superior Drain and Paving Tile, and Building and Paving Brick.

Streator, Ill., Jan'y. 12th. 1893

Messrs. J.W. Penfield & Son,

Willoughby, Ohio.

Gentlemen:- The No. 10 Auger Machine that we purchased of you last spring has been running ever since and making all the brick you guaranteed it to make or more; it does its work without any trouble as it is so strong and heavy that there is no strain at any point, and therefore no breaking of any of the parts.

We are well pleased with it, and would not exchange for any machine that we now know of.

The automatic cutter is a success in every particular, and the remark of almost everyone that sees it at work is that "it's a daisy".

The 18 Inch Disintegrator is the best machine we ever have used in this clay (and we have used quite a number of them.) It leaves the clay in a loose and spongy condition so that it takes water readily and is in the best condition possible for pugging and getting in proper shape for making brick or tile.

Yours Resp'y.,

J. C. Trigel, Supt.

If you have any doubt as to whether Penfield Auger Brick Machines are a success or not, send for our new book, "With the Brickmakers." It will convince you.

If you wish to know *why* they succeed, you should have our catalogue No. 1—free for the asking.

## J. W. Penfield & Son,

Brick and Sewer Pipe Machinery Manufacturers,

WILLOUGHBY, OHIO, U. S. A.

J.W. PENFIELD & SON  
CLAY WORKING  
MACHINERY



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

W. B. MERSHON & CO.,

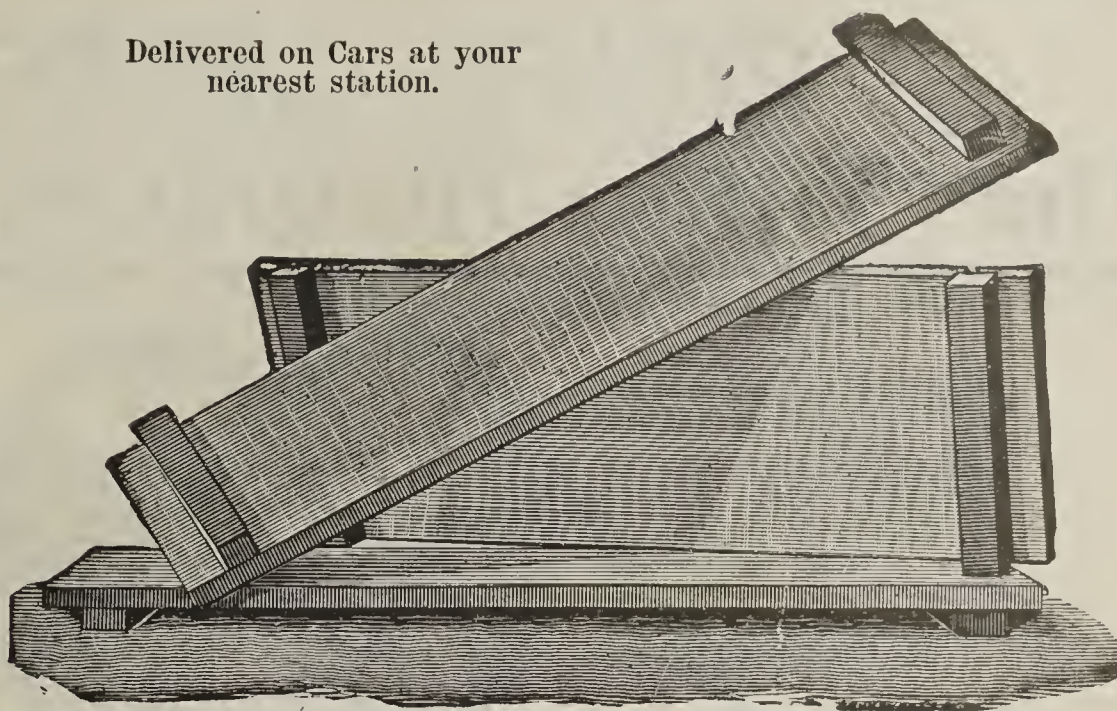
East Saginaw, Mich.

Write for circulars and prices.

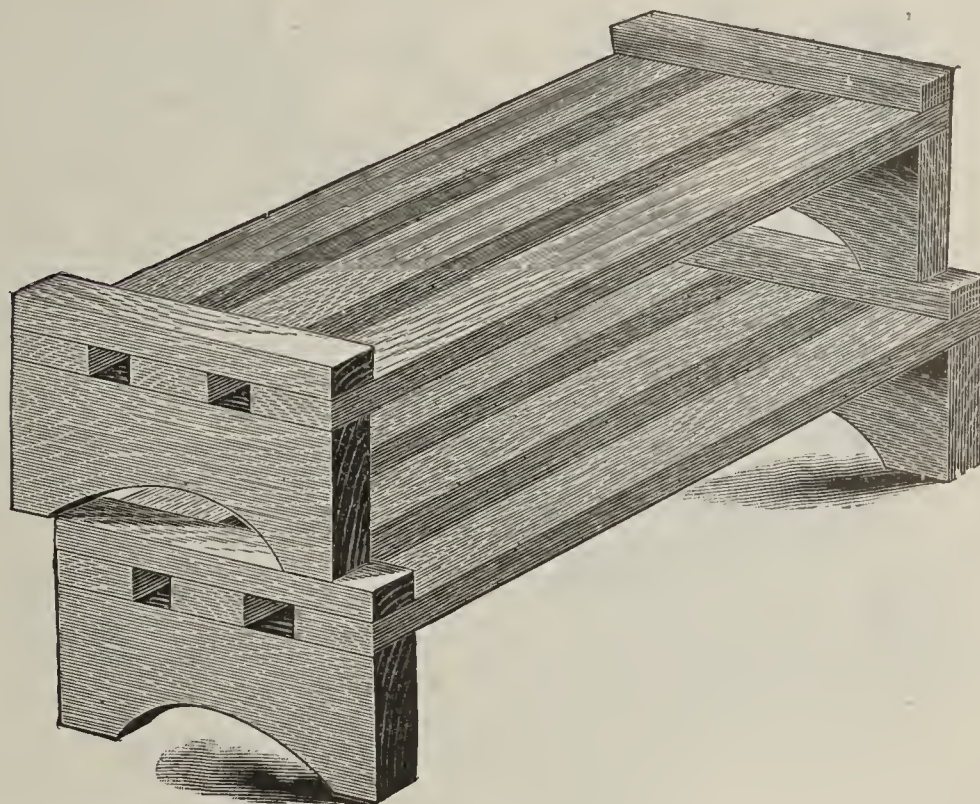
THE CLAY-WORKER.

93

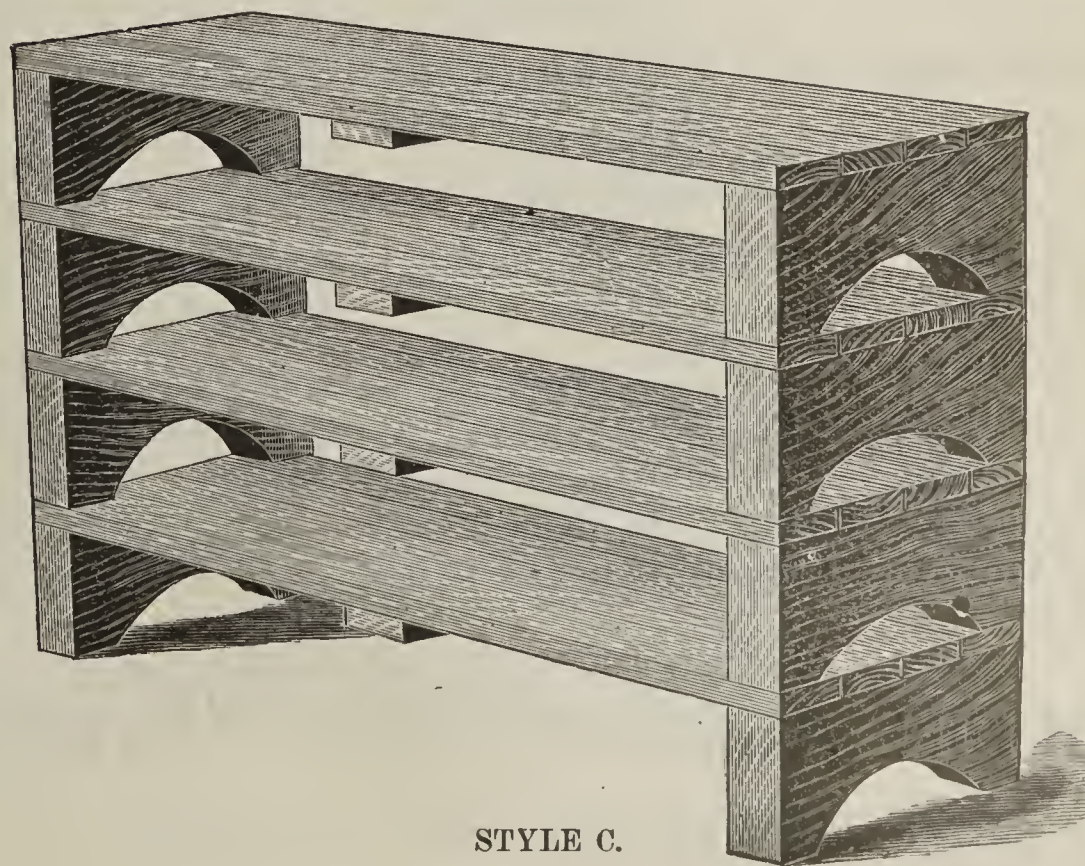
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.

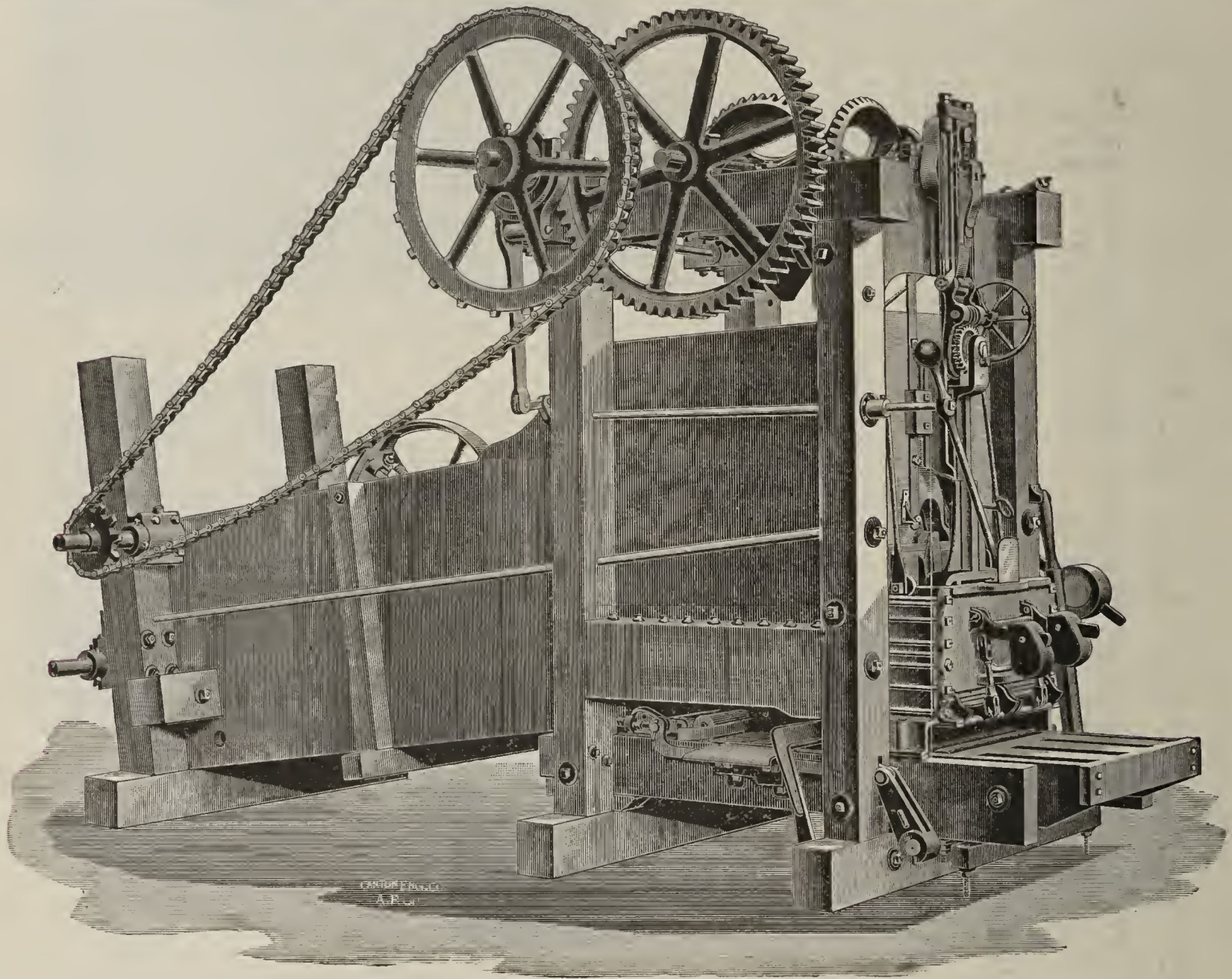


STYLE C.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



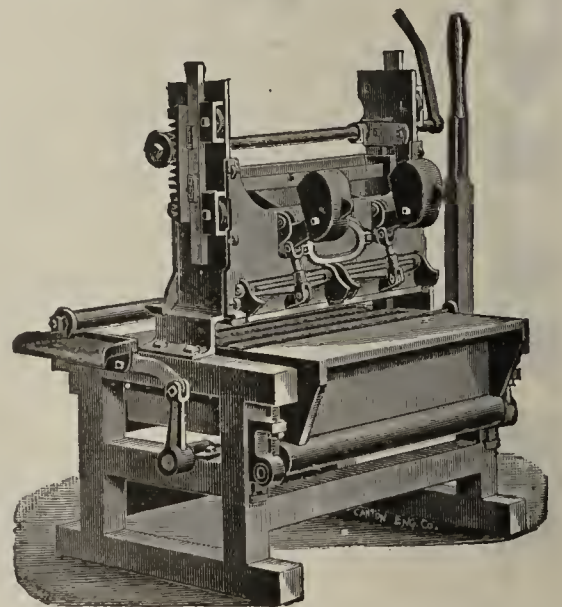
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# THE COLUMBIAN SPECIAL RE-PRESS

.....Used throughout the World and indorsed by all users.

Will Re-Press 4,000 more brick per day  
than any other double die press.

Capacity 20,000 to 30,000 brick per day.



Fifteen years experience on represses exclusively enables us to offer the Ne Plus Ultra of all presses,

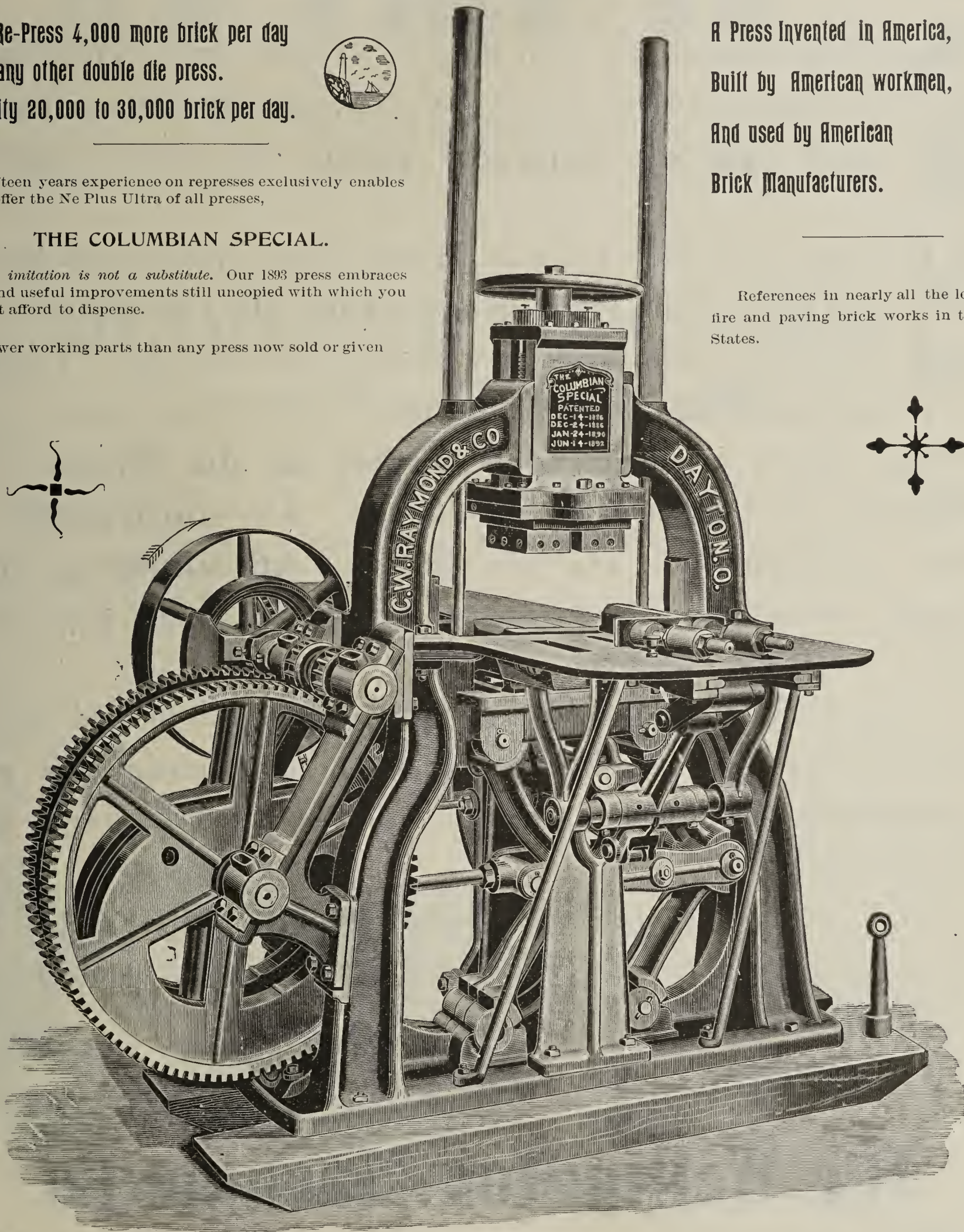
## THE COLUMBIAN SPECIAL.

*An imitation is not a substitute.* Our 1893 press embraces new and useful improvements still uncopied with which you cannot afford to dispense.

Fewer working parts than any press now sold or given away.

A Press Invented in America,  
Built by American workmen,  
And used by American  
Brick Manufacturers.

References in nearly all the leading red,  
fire and paving brick works in the United  
States.



C. W. RAYMOND & CO., = Dayton, Ohio.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.



# WE FIND IT

# “GO AND SEE IT!”

We know what we are talking about, but YOU NEVER WILL unless you GO

Is forgotten by many that the **MONARCH** machine is radically different than all others in its main features. It has a Double Pug Mill and Double Presses, which will never wear out or leak. They can't, they are in the mud.

Nearly six tons of iron and steel; that is enough so you can't break it, and we think it is

## GOOD FOR 50 YEARS.

That's a Whopper; You Say, But 

MENOMONIE, WIS., June 21, 1893.

GENTLEMEN:—The **MONARCH** is doing finely. Since we put the extra knives in the pug mill we have no difficulty in getting all the clay necessary for 50,000 per day, moulded quite stiff, with nice, well defined edges.

I must say that I am not going to be disappointed in the **MONARCH**.

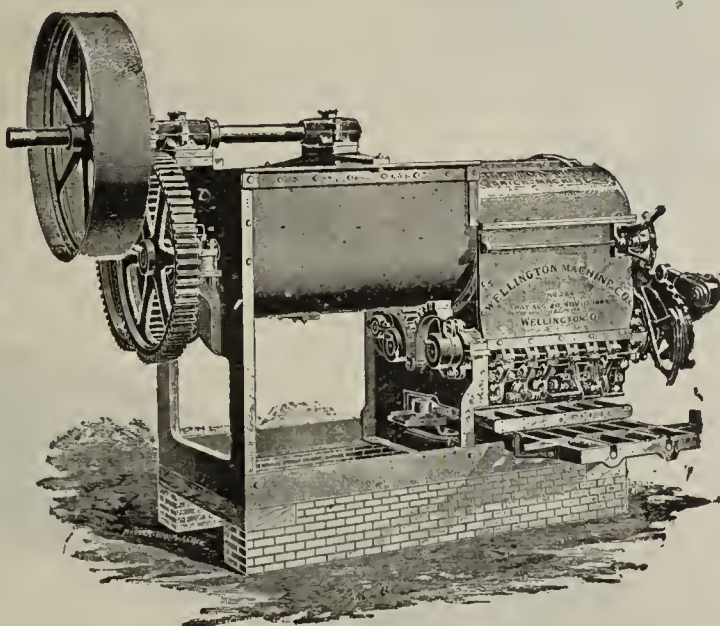
Yours truly

S. L. ALEXANDER,

Superintendent The Wisconsin Red Pressed Brick Co.

Watch this page next month.....  
.....Many more of the same kind coming.

Previous Letters: September, from Hamburg, Pa. October, from Council Bluffs, Ia. November, from Gettysburg, Pa. December, from Buffalo, N. Y. January, from Utica, N. Y. February, from Pittsburg, Pa. March from Toledo, O. April from Akron, O. May from Mansfield, O. June from Painesville, O.



A Brickyard Conversation  
Where a Monarch is used

OWNER TO VISITOR:—"There it is! You did well to come and SEE it, for that is the only way its advantages are fully appreciated. When first I read the description of it, I had a kind of a hazy, dreamy impression that it contained some vital improvements, but like yourself I did not realize the immense money value to the user until I actually saw it in operation."

## The Wellington Machine Co.,

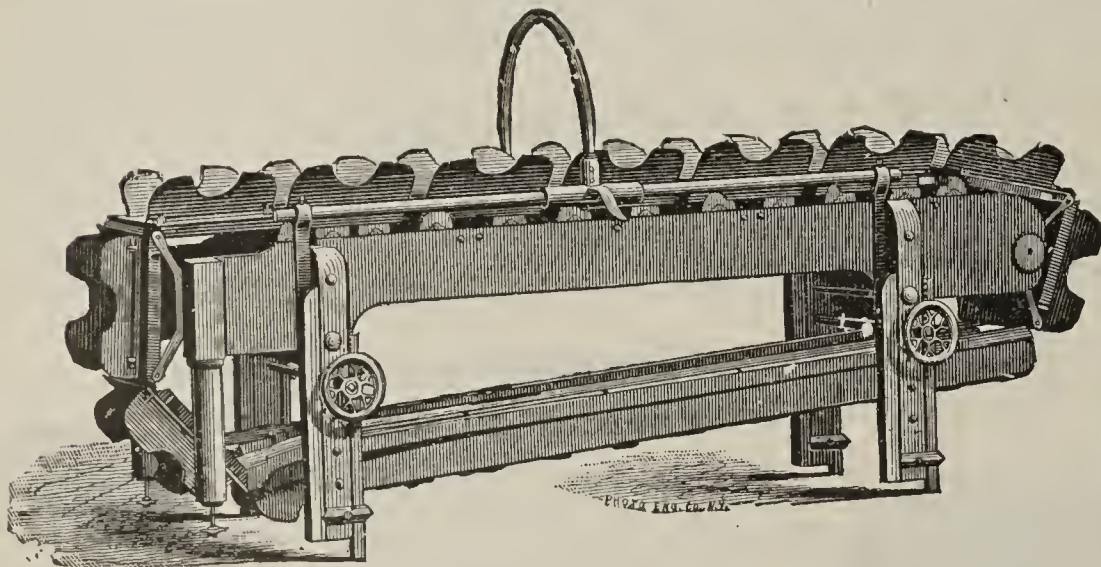
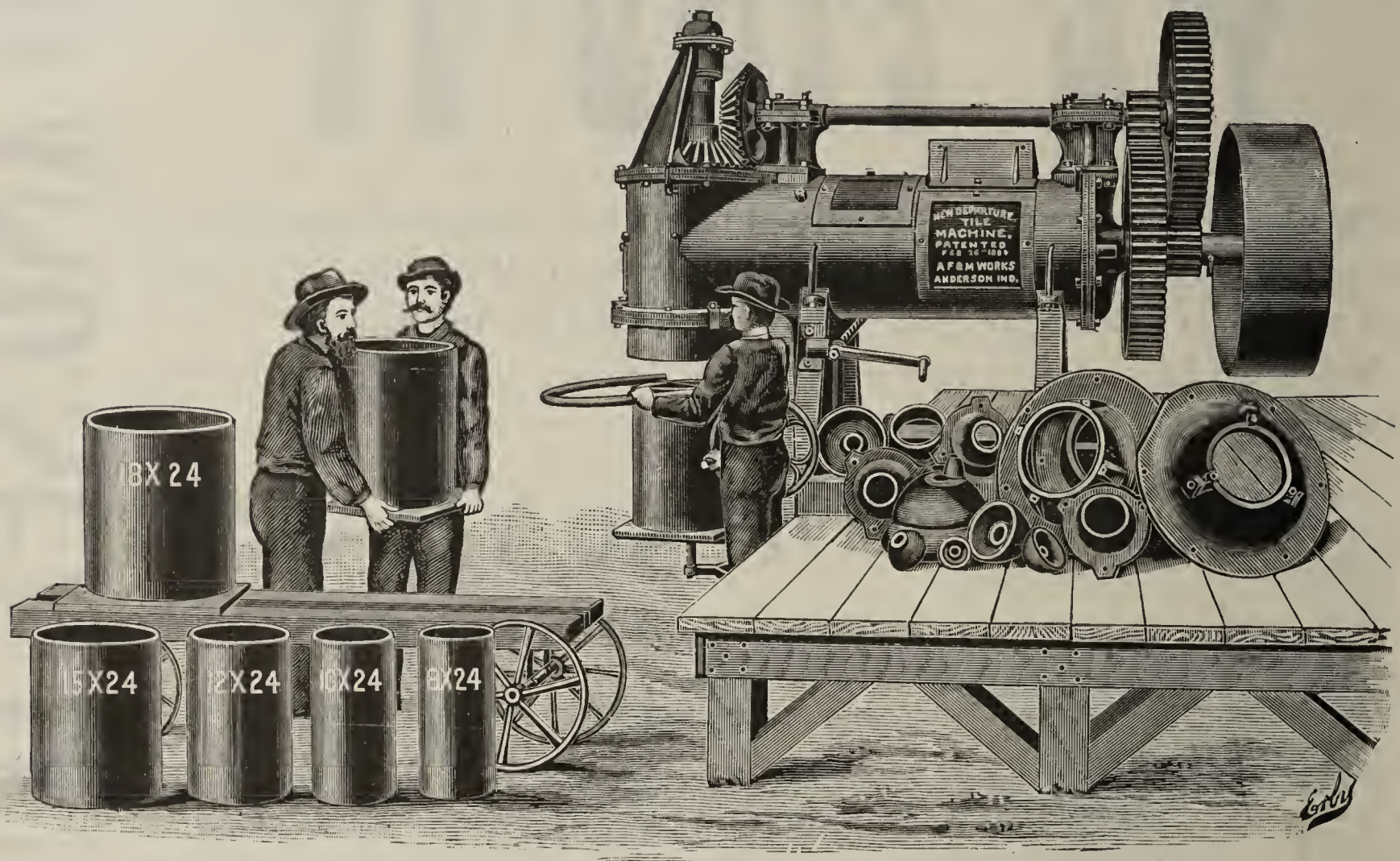
Wellington, Ohio.

"The procession is passing by." Get in it.



# CHAMPION OF THE WORLD.

*The "NEW DEPARTURE" Brick and Tile Machine.*



We also manufacture Belt Conveyors and Tile Yard appliances of every description. If you want anything at all in the line of Tile Machinery, write us for prices, etc.

Address,

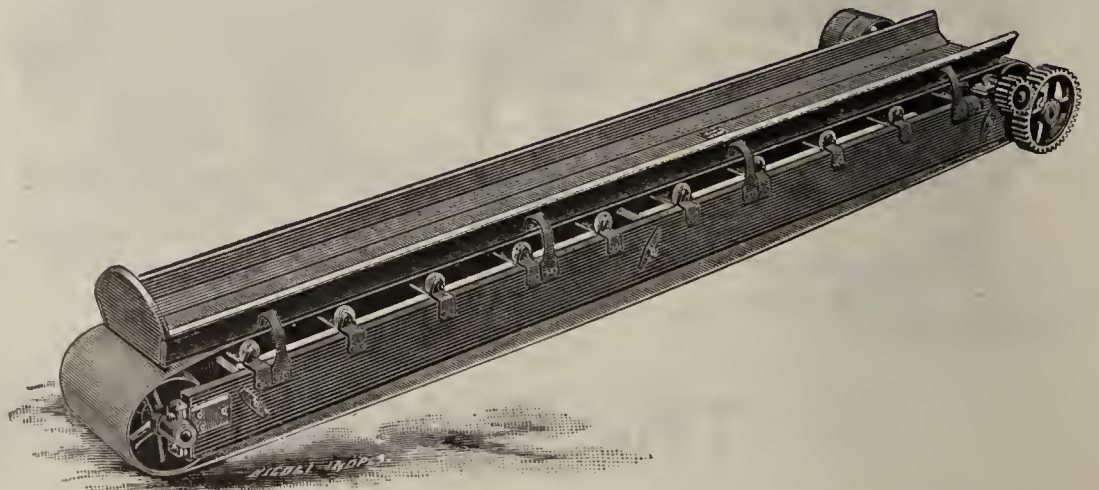
[Mention the Clay-Worker.]

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

**Down Delivery for Large Tile.**

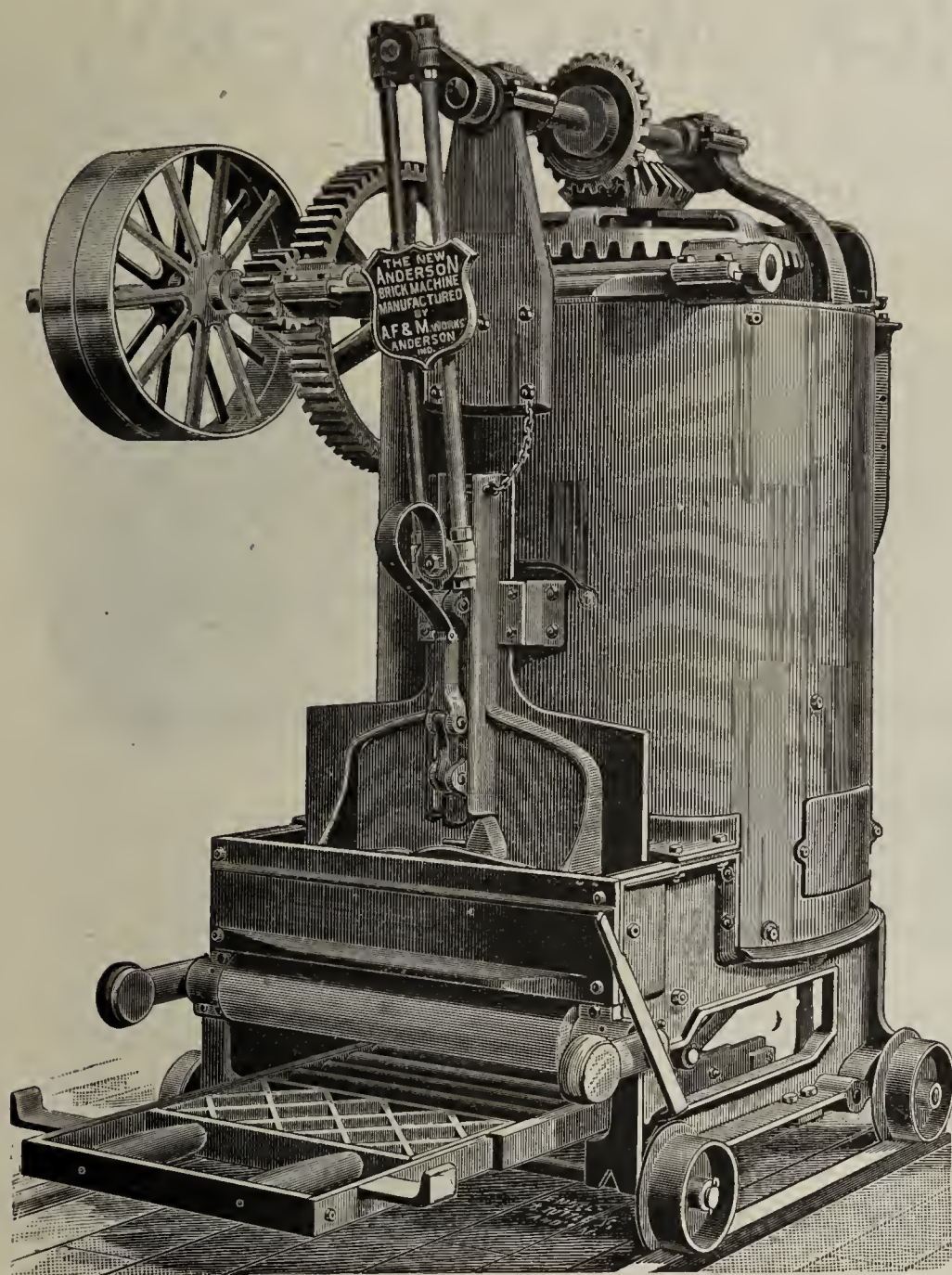
**Side Delivery for Small Tile.**

We are the exclusive manufacturers of the **POTTS' PATENT RECEDING TILE TABLE.**



**THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind.**



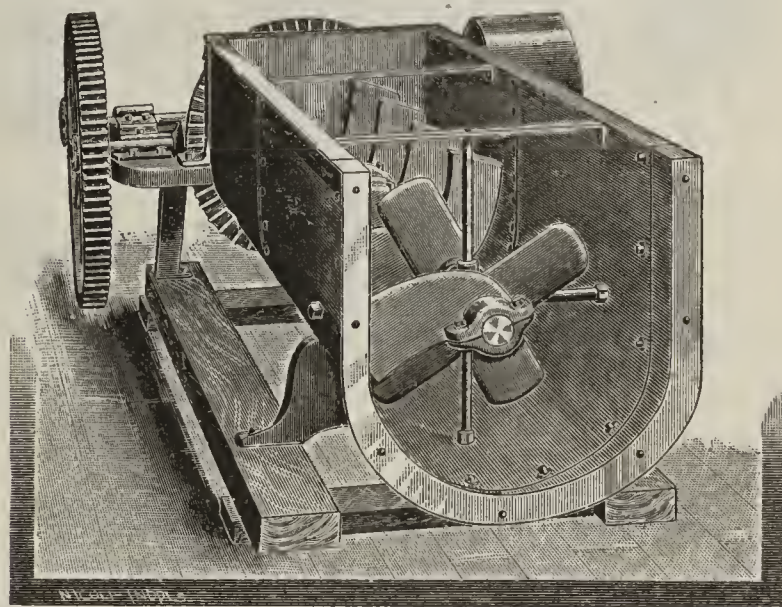


## THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works  
ANDERSON, IND.

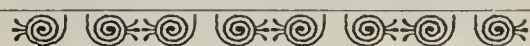
THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



End View of Pug Mill.



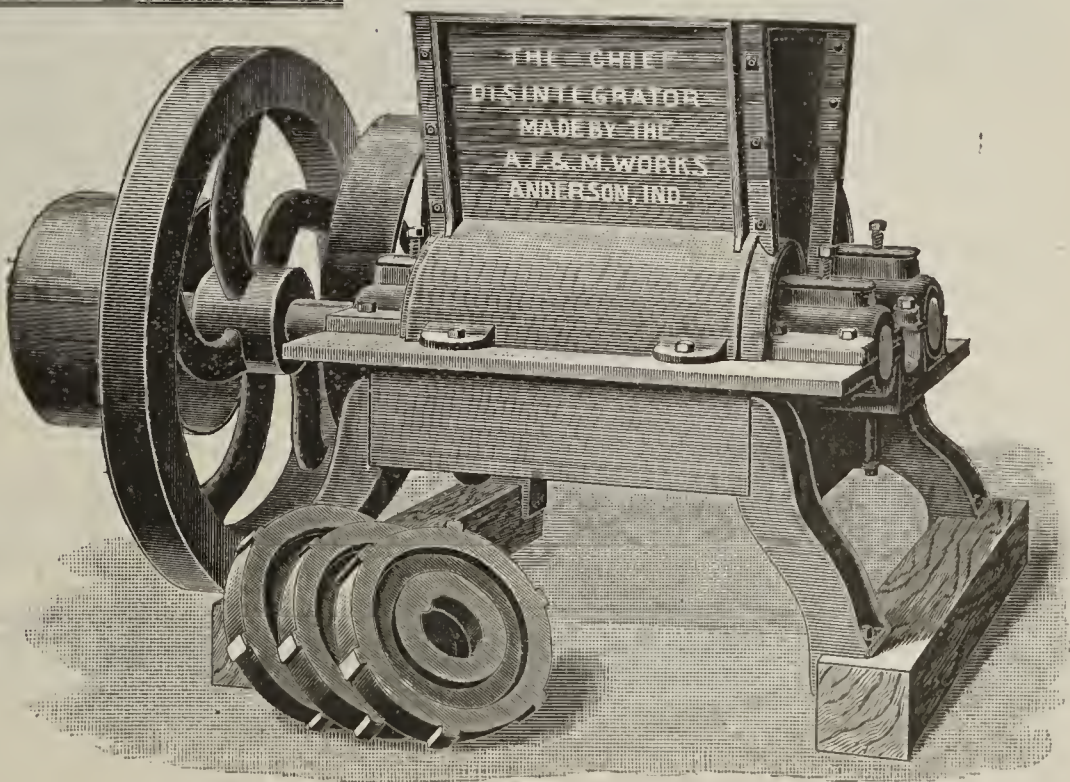
We also manufacture the  
**NEW IMPROVED CHIEF BRICK MACHINE.**



## The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 3/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

**PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.**



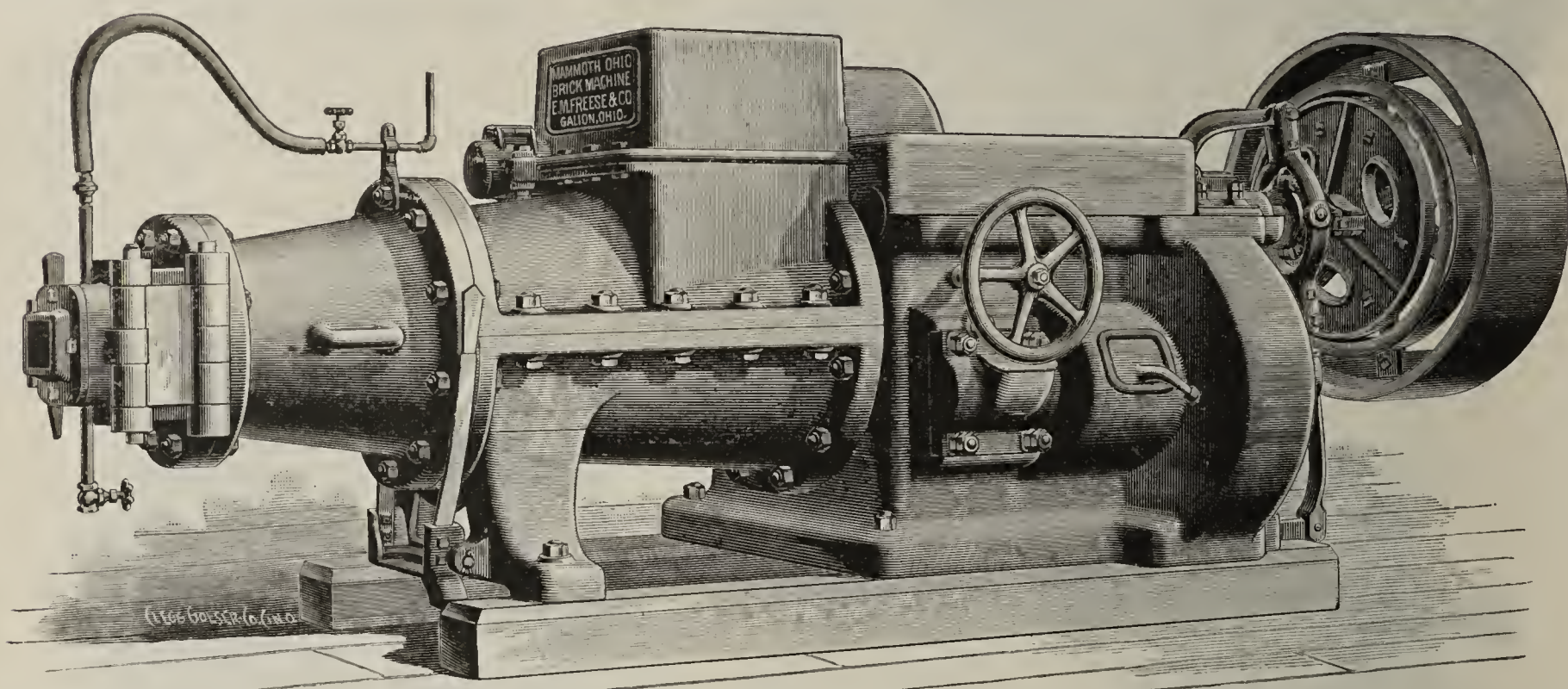
[Mention the Clay-Worker.]

Correspondence Solicited.



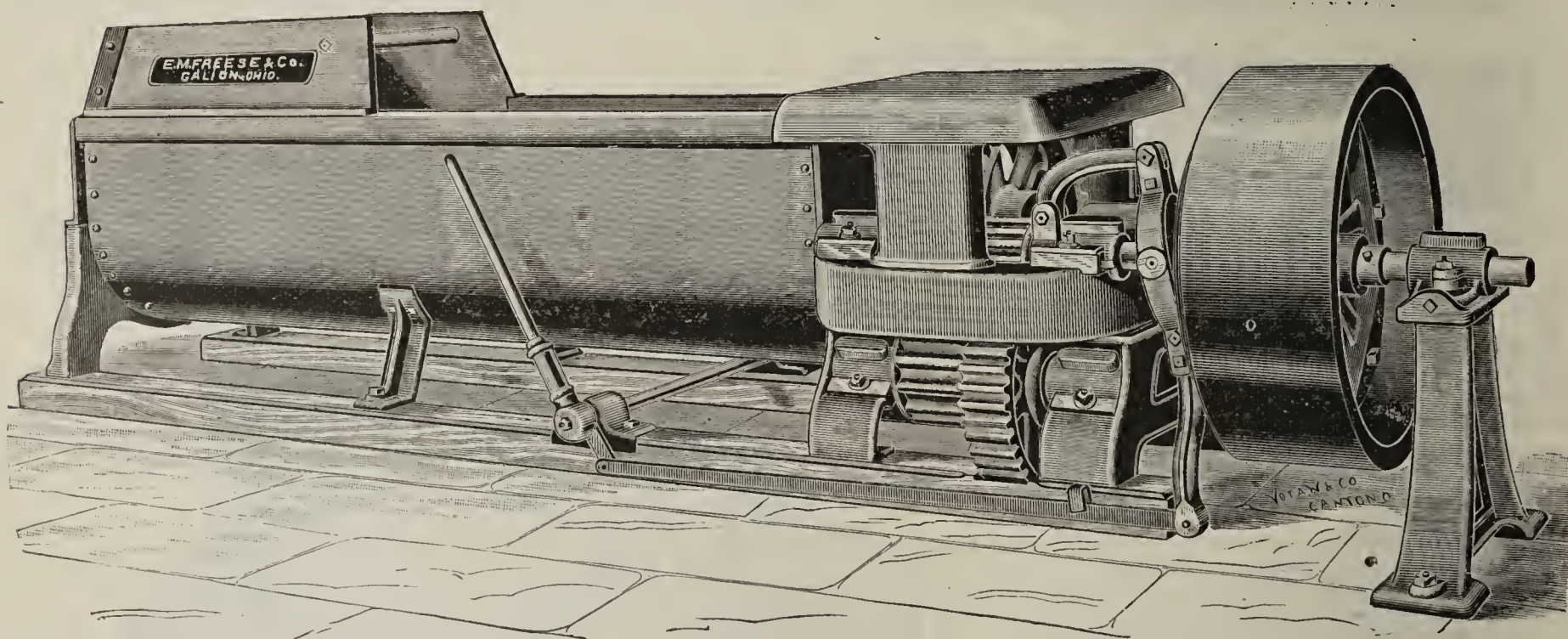
# SUPERIOR BRICK MACHINERY.

*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

DON'T FAIL TO SEE IT OR GET PARTICULARS. WE MAKE BRICK MACHINERY OF ALL SIZES AND DESCRIPTIONS.  
**PUG MILLS THAT PUG THE CLAY.**



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

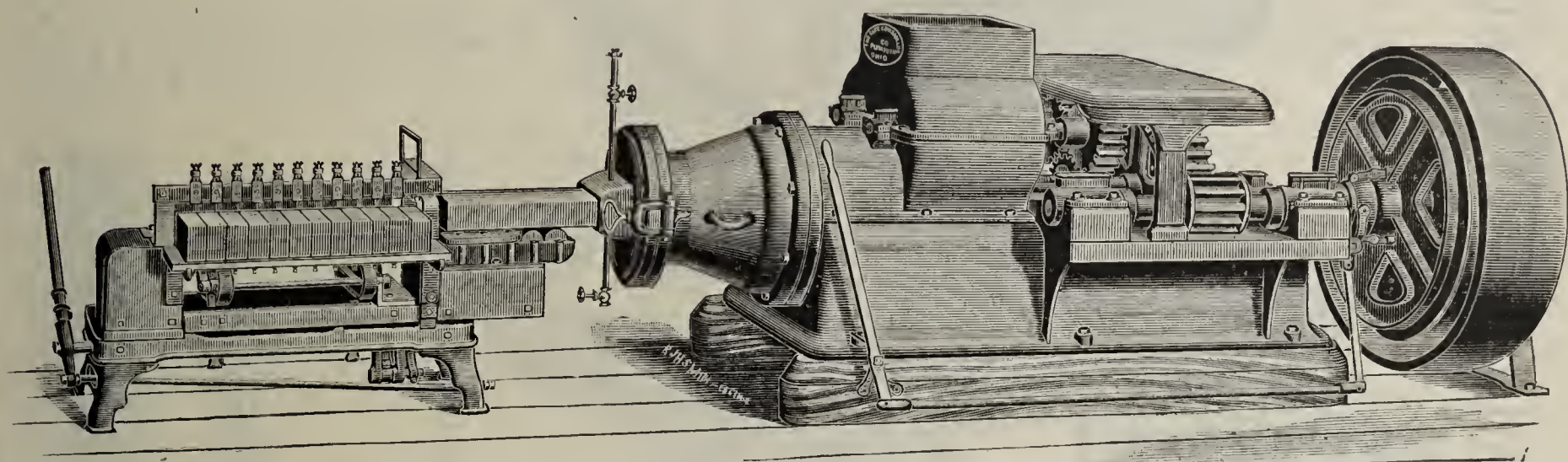
✂ IT WILL PAY ✂

ADDRESS **E. M. FREESE & CO.,**

**GALION, OHIO.**



# SAVE YOUR MONEY BY BUYING THE BEST.

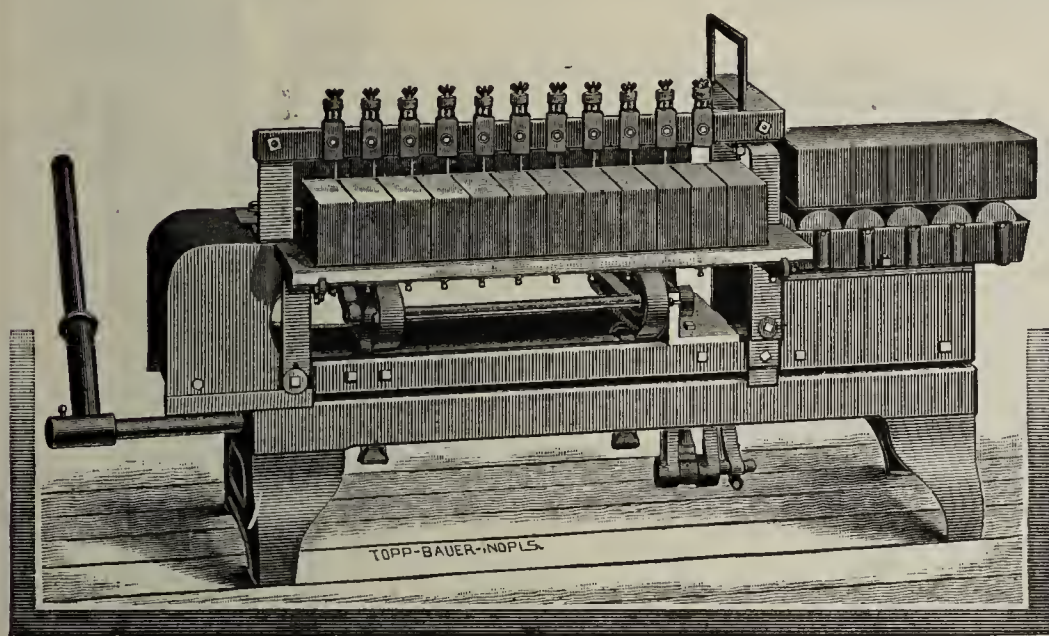


## THE "PLYMOUTH"

Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and pugging device.

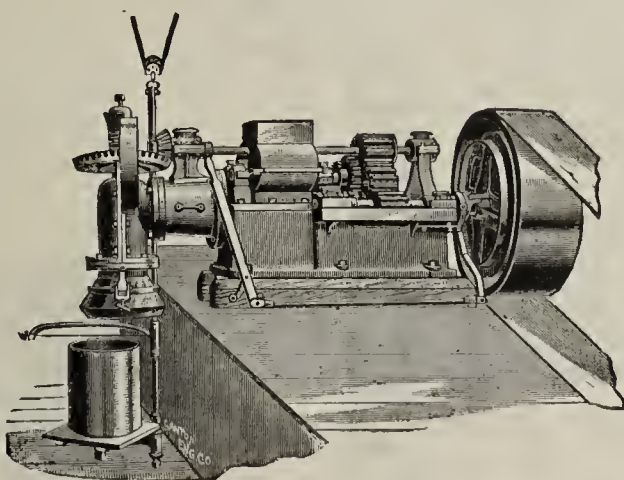


We build our Machines  
for

STRENGTH

... and ...

DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

It will Tell You  
All About It.

# The Fate-Gunsaulus Co.,

PLYMOUTH, OHIO.

[Mention the Clay-Worker.]



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

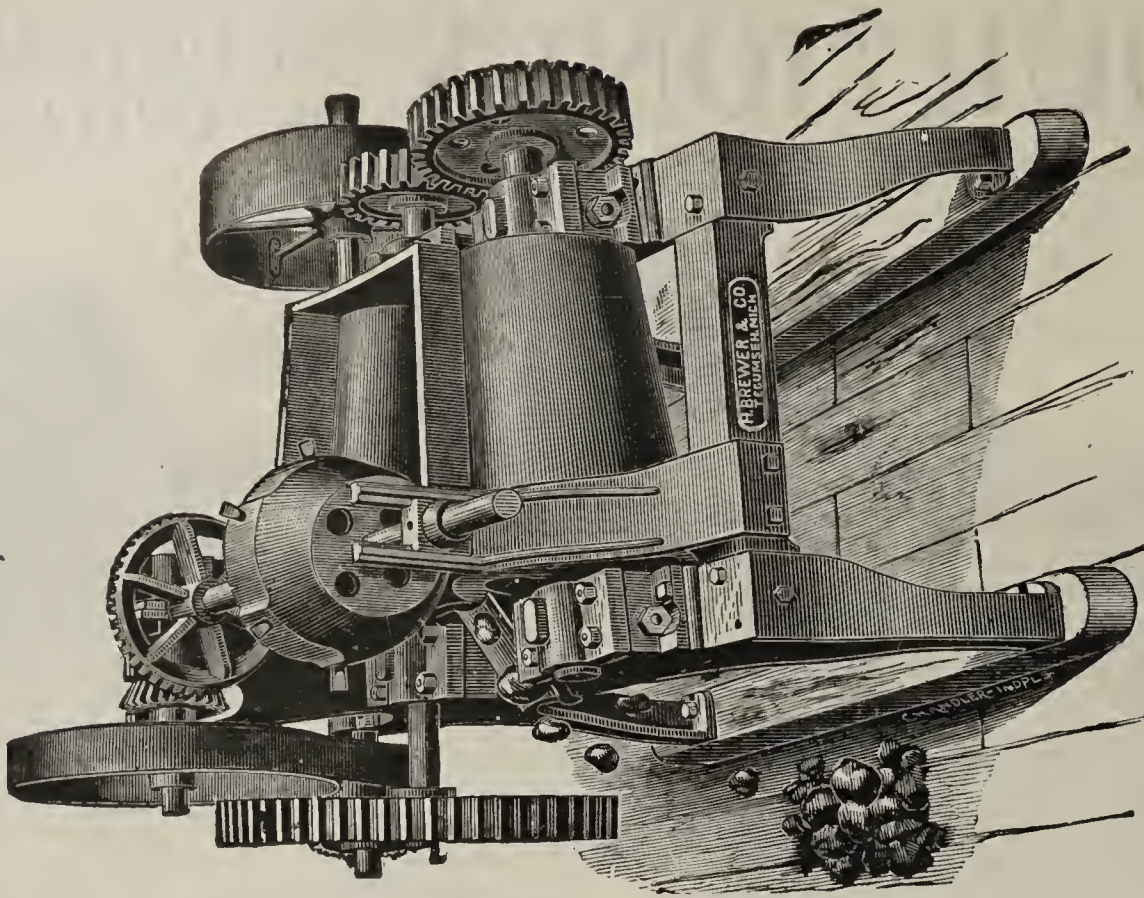
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface, and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

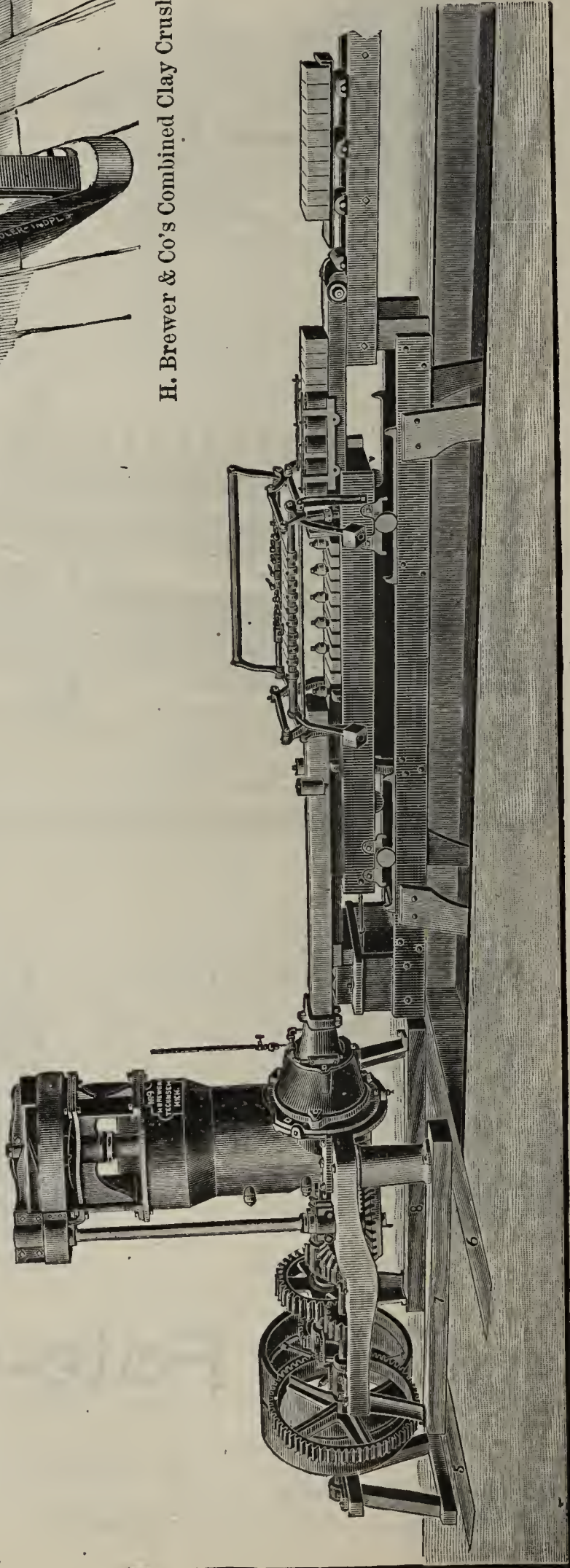
**H. BREWER & CO.,**  
**Tecumseh, Mich.**

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.

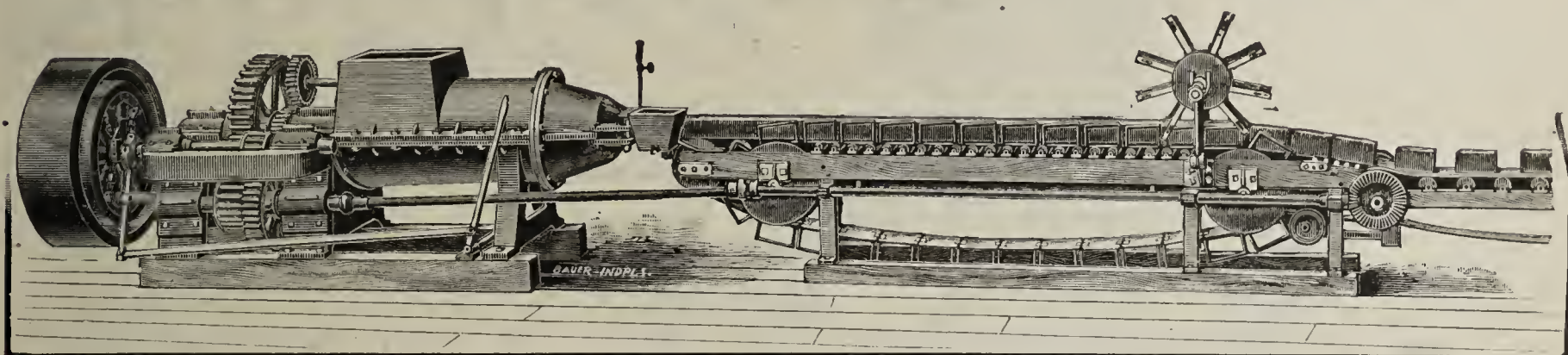




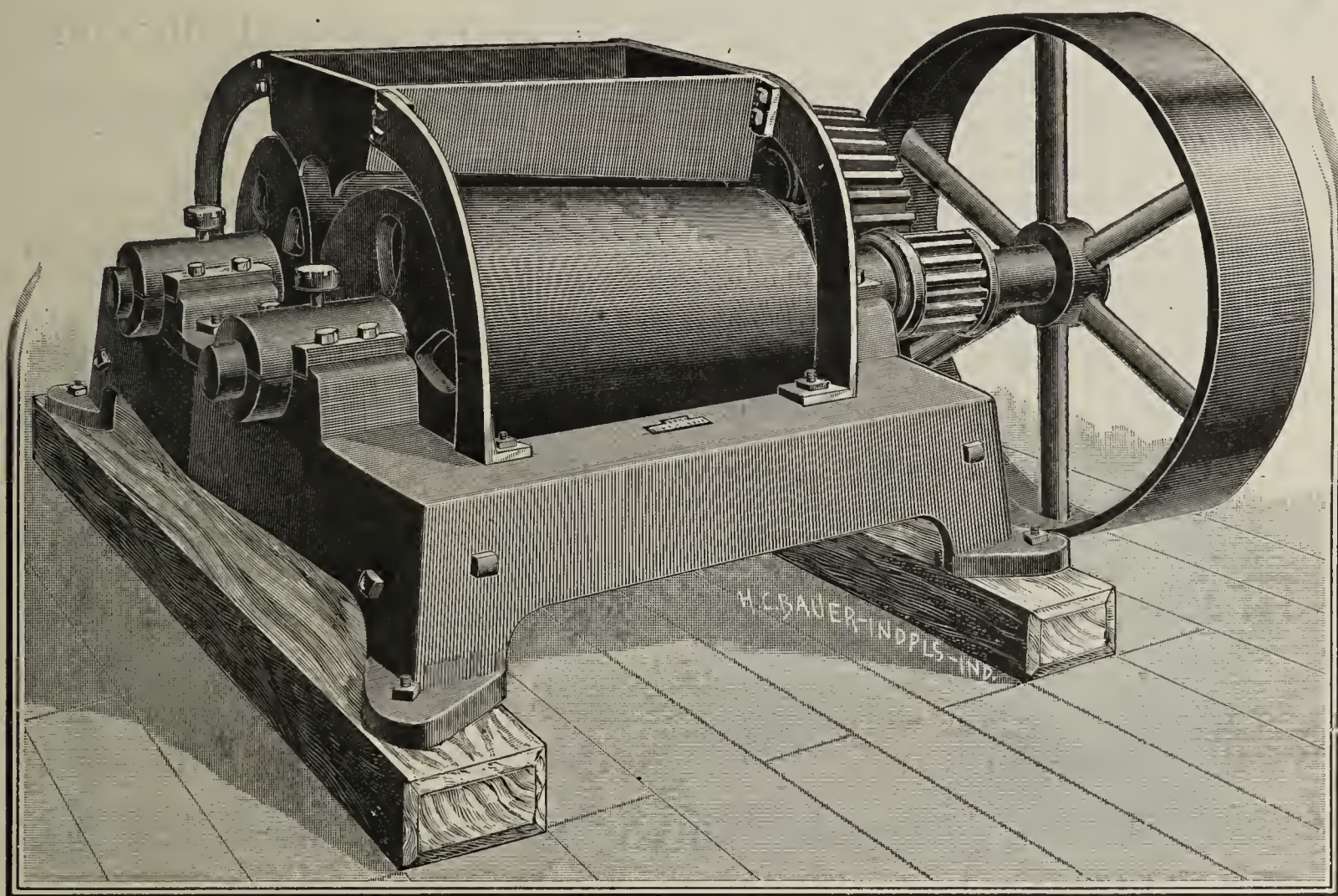
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# The Eagle Repress.

---

**N**OT dead, nor yet shrouded, but still holds the fort in two weeks out of three, and would have spread its wings in the third, had not some cheap John come along, and actually given two of those common toggle-joint affairs away.

No I am not dead, but holding my own wherever they place me, driving my competitors to the wall every time. Buy the Eagle Repress, and you will get something that will do you an honest days work at honest prices.

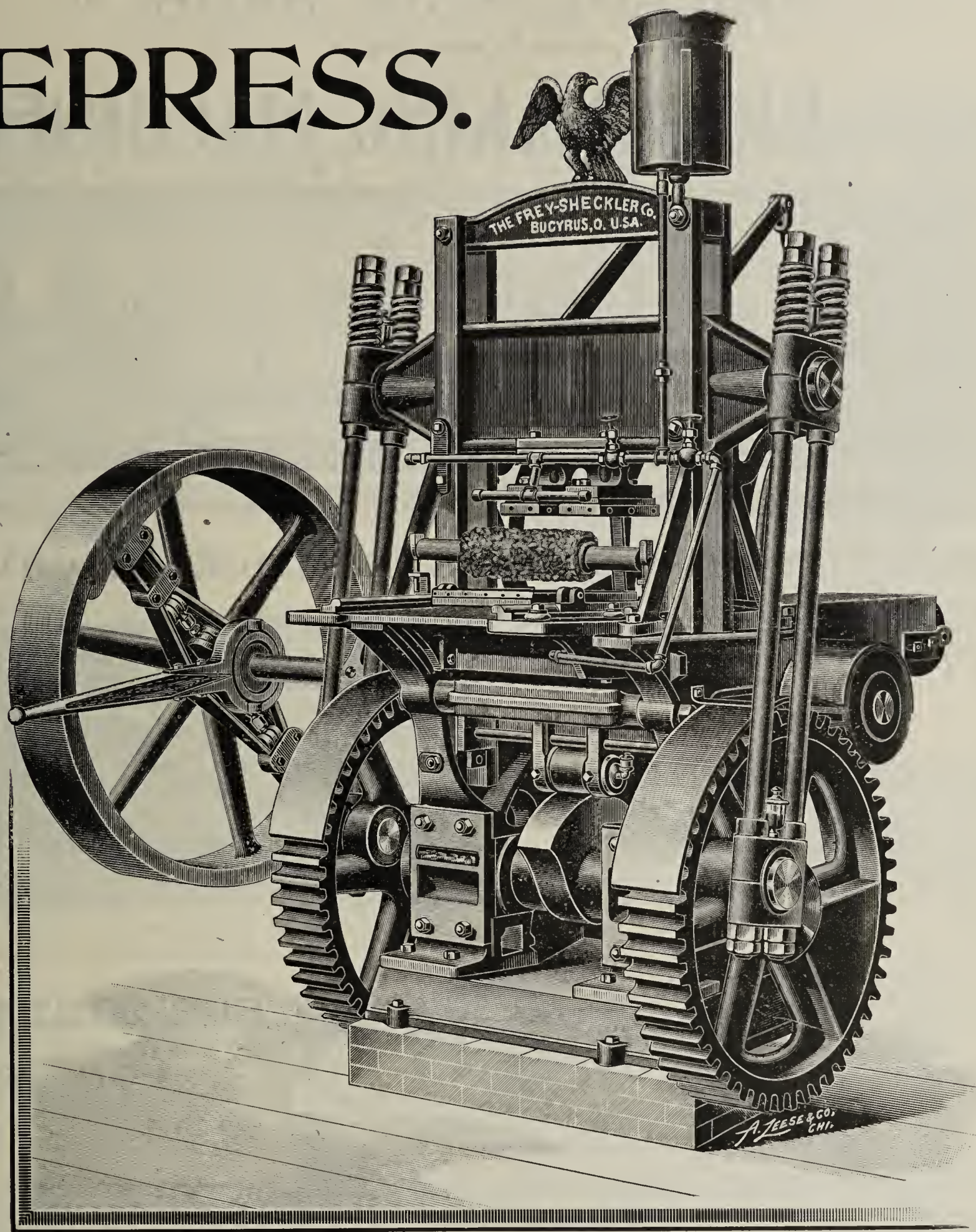
I am sold entirely on my merits, with thirty days trial to responsible parties. You cannot find me standing idle all over the country, with other presses of toggle joint construction by my side, but I am performing wonders in a vast number of places, while Mr. Toggle Joint is standing only a few feet away, a thing of the past, too dead for a post-mortem.

THE FREY-SHECKLER CO.,  
BUCYRUS, OHIO, U. S. A.

Send for Catalogue.



# The EAGLE STEAM POWER REPRESS.



## The Frey-Sheckler Co.,

HENRY STUCKEY, Chicago Agent,  
Gault House, or 117 Builders' Exchange.

Manufacturers of Clay-  
working Machinery, Bucyrus, Ohio, U. S. A.

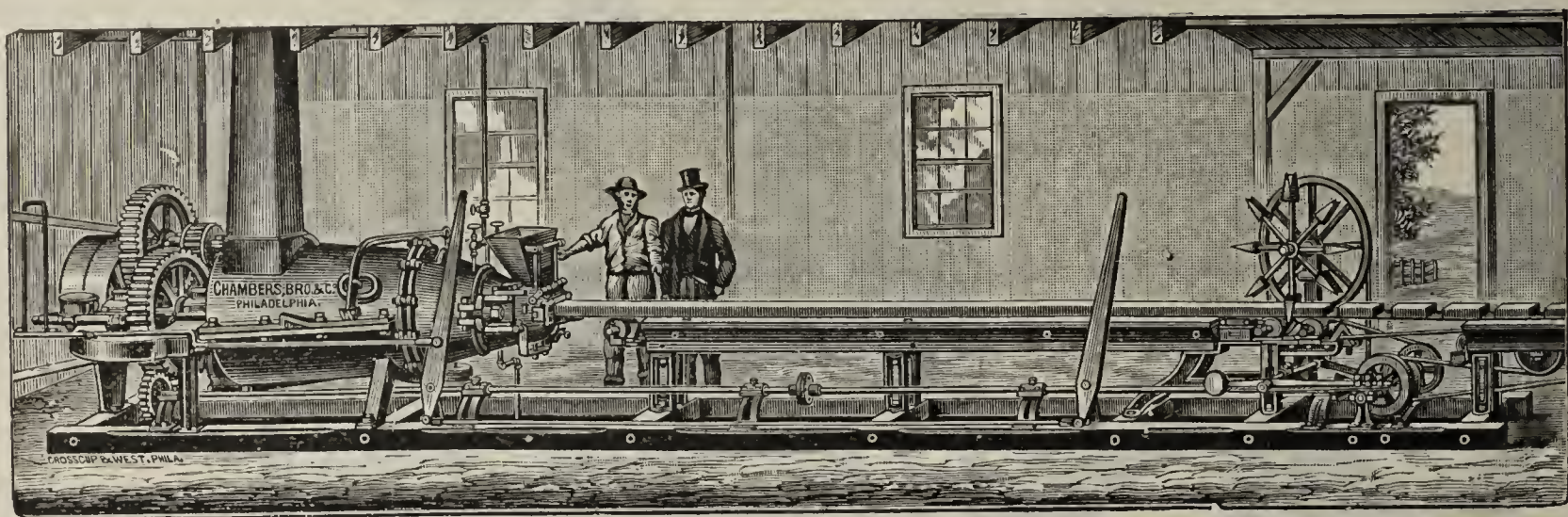


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



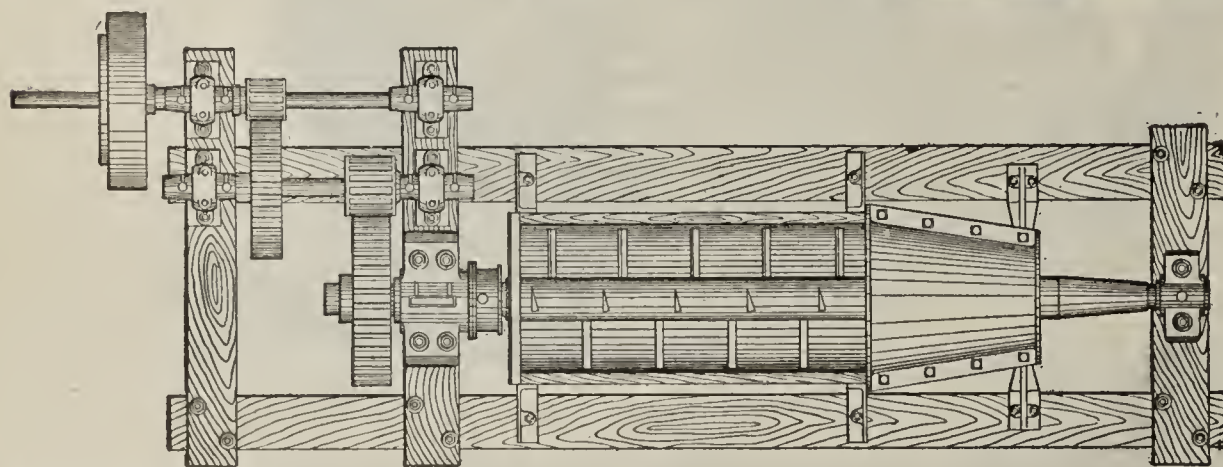
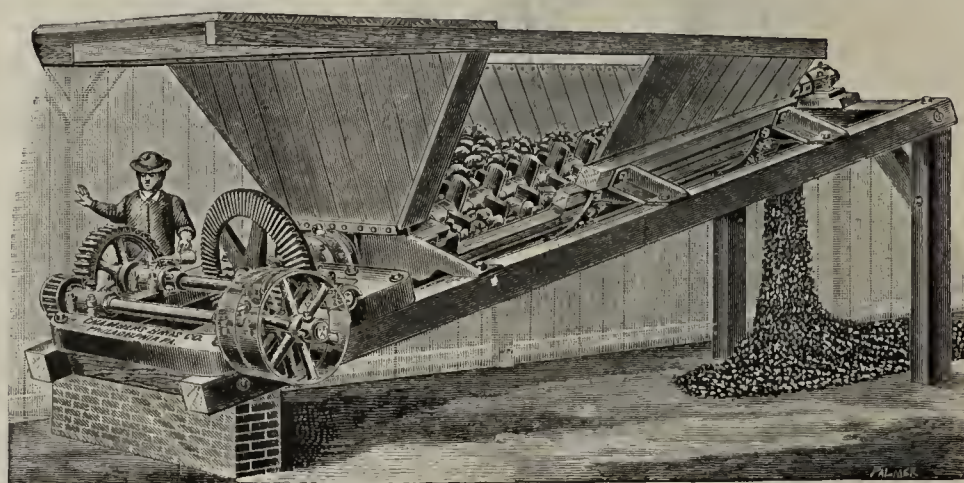
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

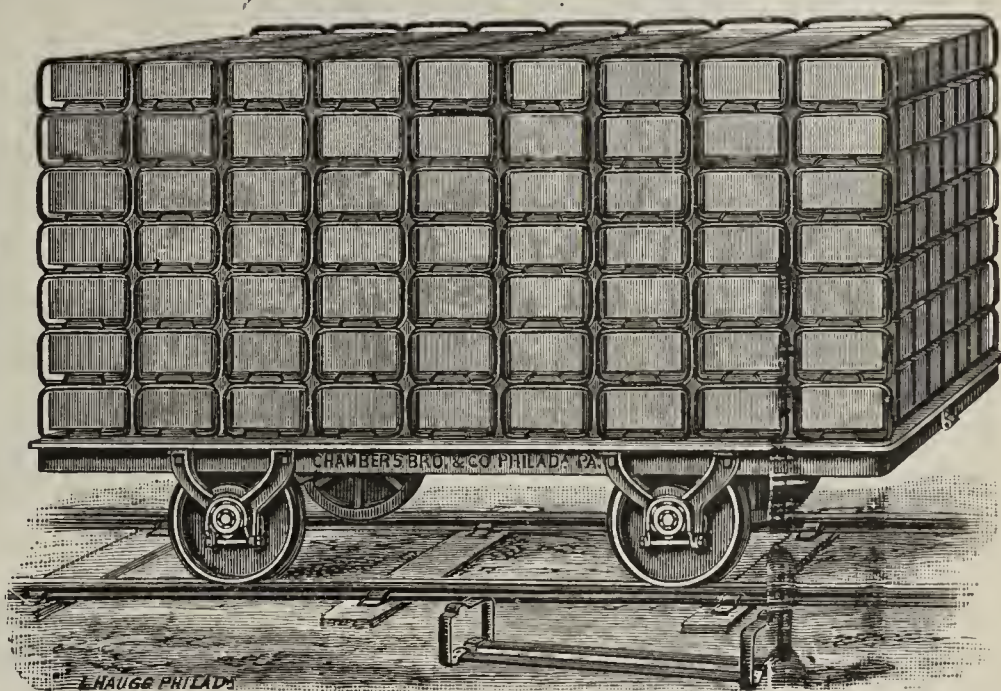
Fifty-Second St., Below Lancaster Ave.,

PHILADELPHIA, PENN.

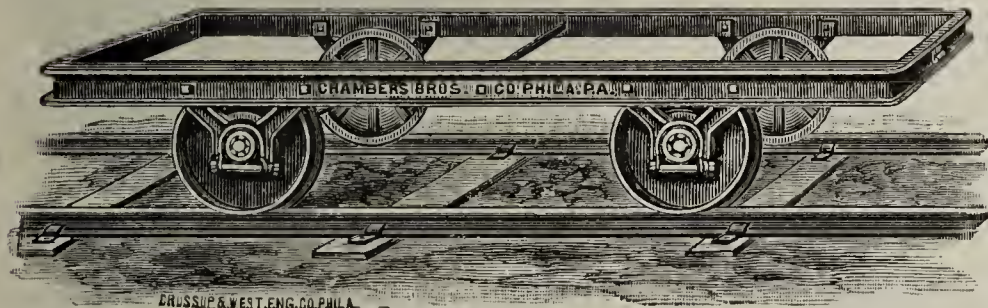
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

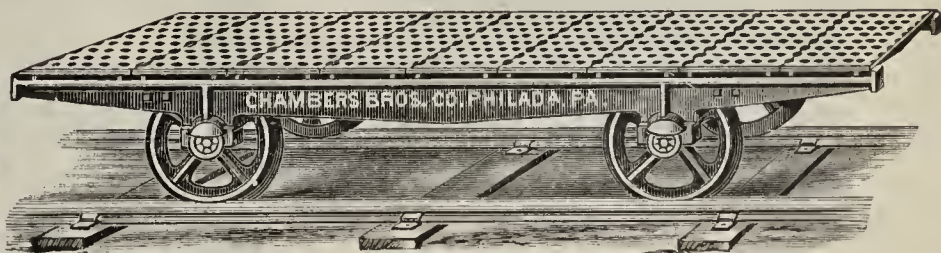
### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

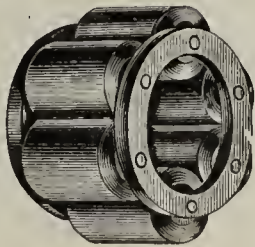


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

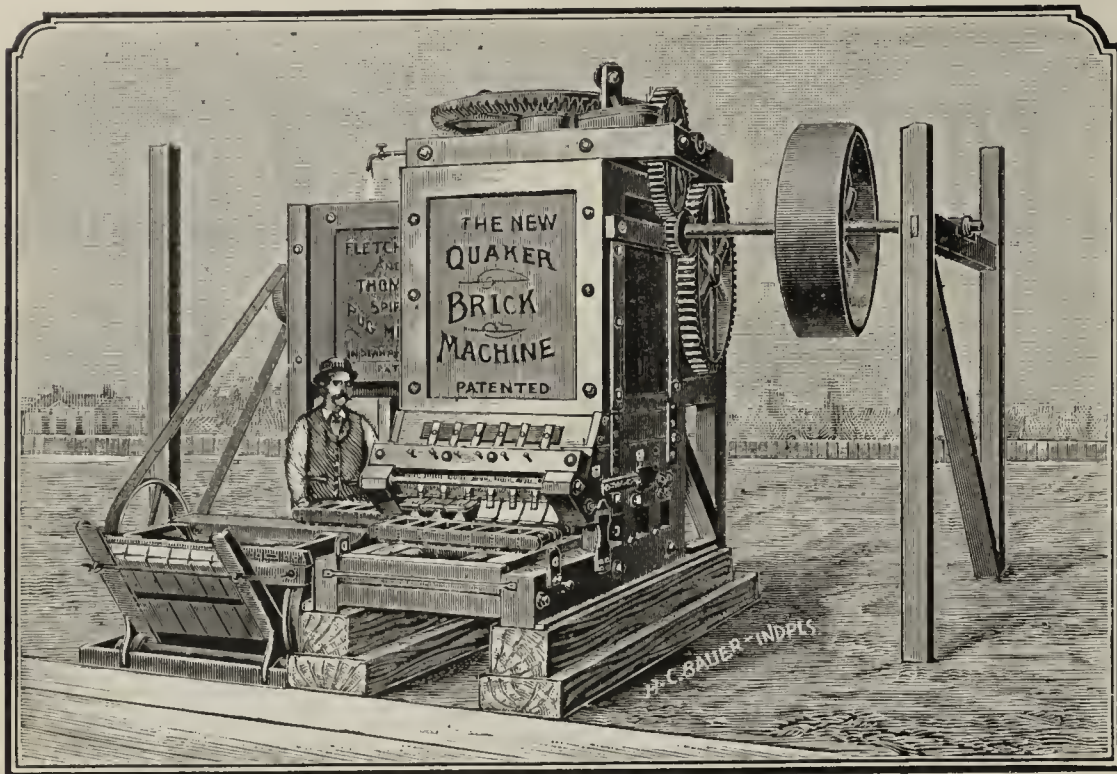
[Mention the Clay Worker



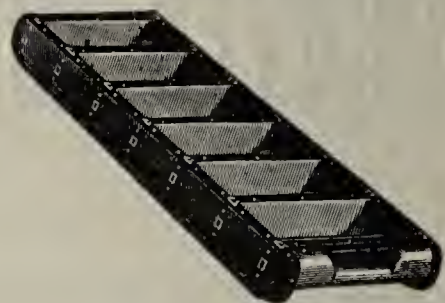
## FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

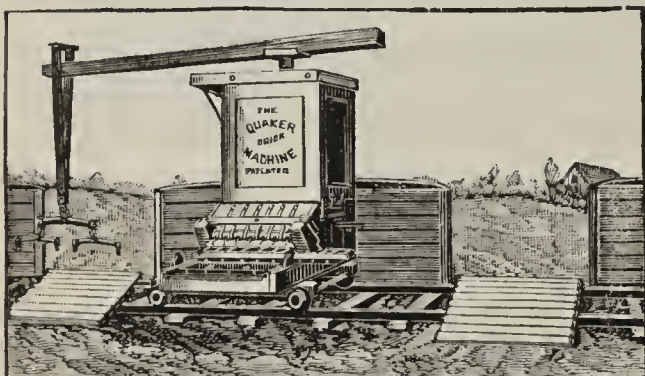


Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

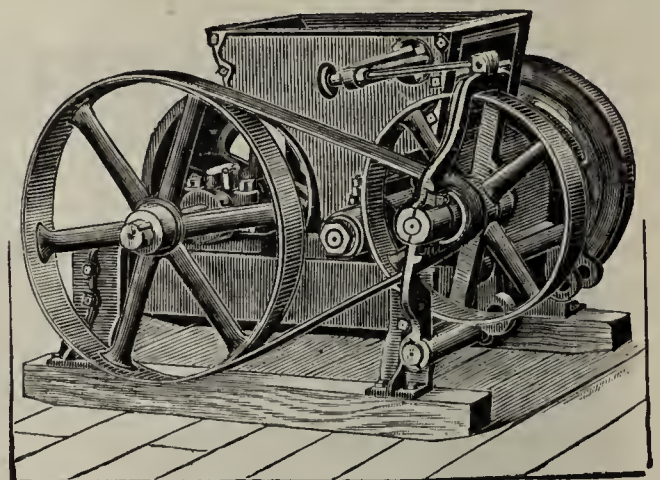
This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



THE NEW QUAKER

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



DISINTEGRATORS.

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

FLETCHER & THOMAS, Indianapolis, Ind.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

The  
PERFECTION  
HYDRAULIC  
BRICK PRESS  
and....  
ANDRUS IMPROVED  
DOUBLE PRESSURE  
BRICK PRESS

Are the best Presses in  
the market.



The  
GRATH DOUBLE  
DOWN DRAFT KILN,  
PERFECTION CLAY  
DISINTEGRATOR  
....and  
QUINCY CLAY  
GATHERER.

Write for Circulars and  
Prices.

ALL of the above appliances are in use at the yards of the American Hydraulic Press Brick Co., Collinsville, Ill., who are producing the finest quality Press Brick in the country, free from granulation.

We solicit an inspection of our works.

## ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

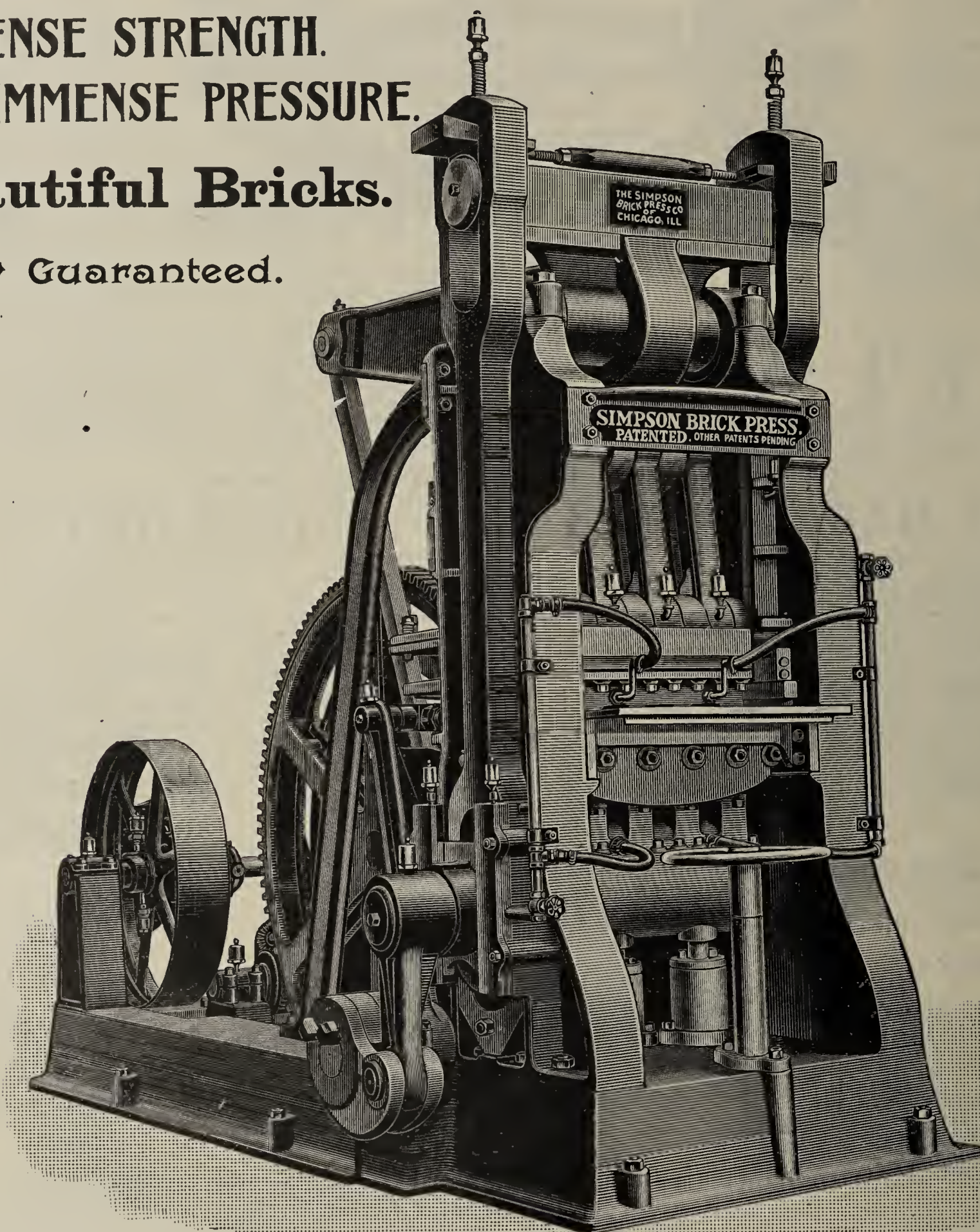
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

Beautiful Bricks.

Fully Guaranteed.



## THE SIMPSON BRICK PRESS CO.,

Agents for Canada:  
WATEROUS ENGINE WORKS CO., Brantford, Can.

Room 412, 87 and 89 Wash. St., CHICAGO, ILL.



# The SIMPSON 5-MOLD Brick Press.

—Apply to—

**THE SIMPSON**

**BRICK PRESS CO.,**

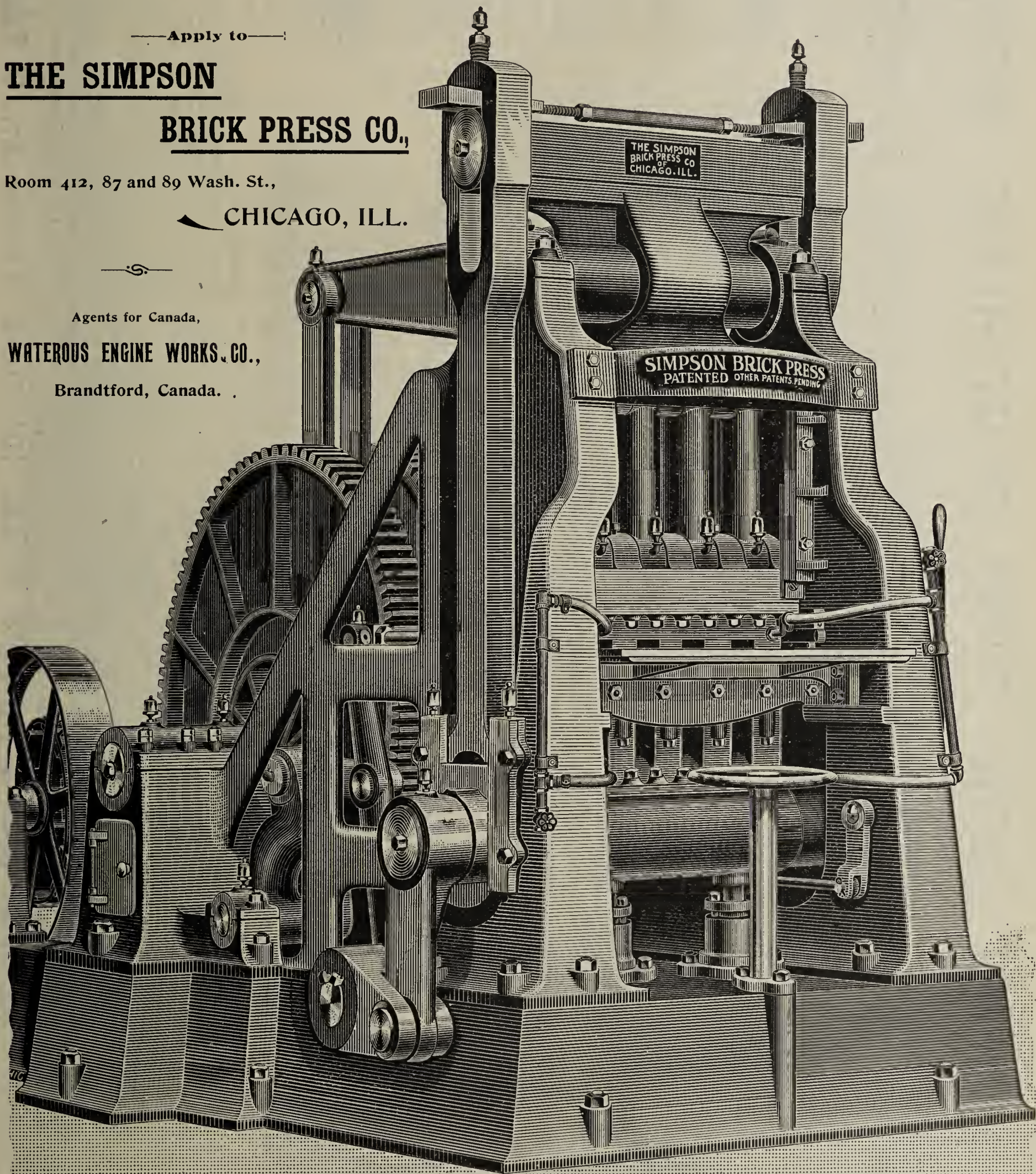
Room 412, 87 and 89 Wash. St.,

CHICAGO, ILL.

Agents for Canada,

**WATEROUS ENGINE WORKS CO.,**

Brantford, Canada.



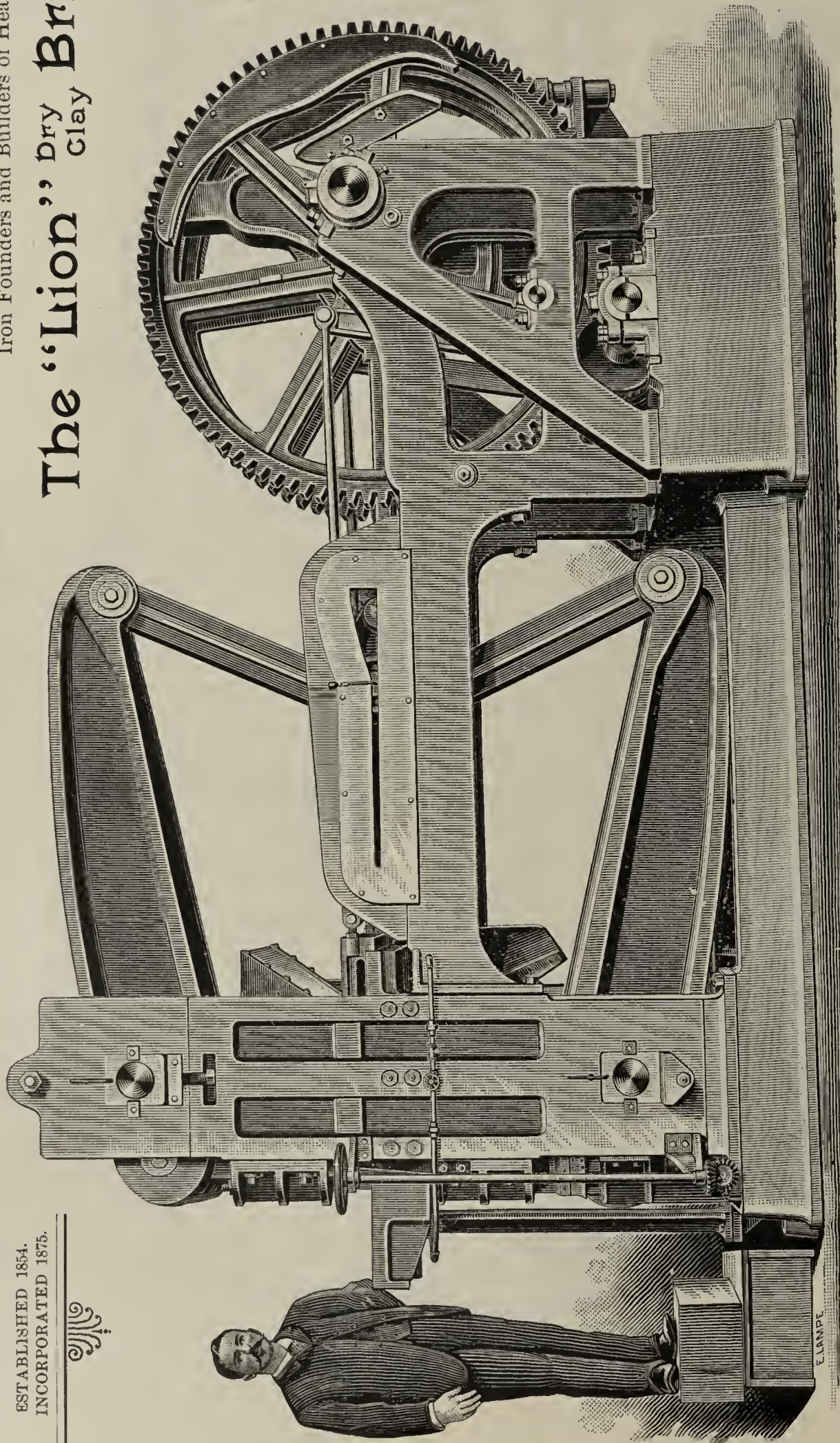


# ST. LOUIS IRON AND MACHINE WORKS.

Iron Founders and Builders of Heavy Machinery.

ESTABLISHED 1854.  
INCORPORATED 1875.

## The 'Lion' Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to

30,000 pressed

bricks per 10 hours

Pressure, 200 Tons on Five Bricks.

### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

**ST. LOUIS IRON & MACHINE WORKS, Main Street and Choteau Ave., St. Louis, Mo.**

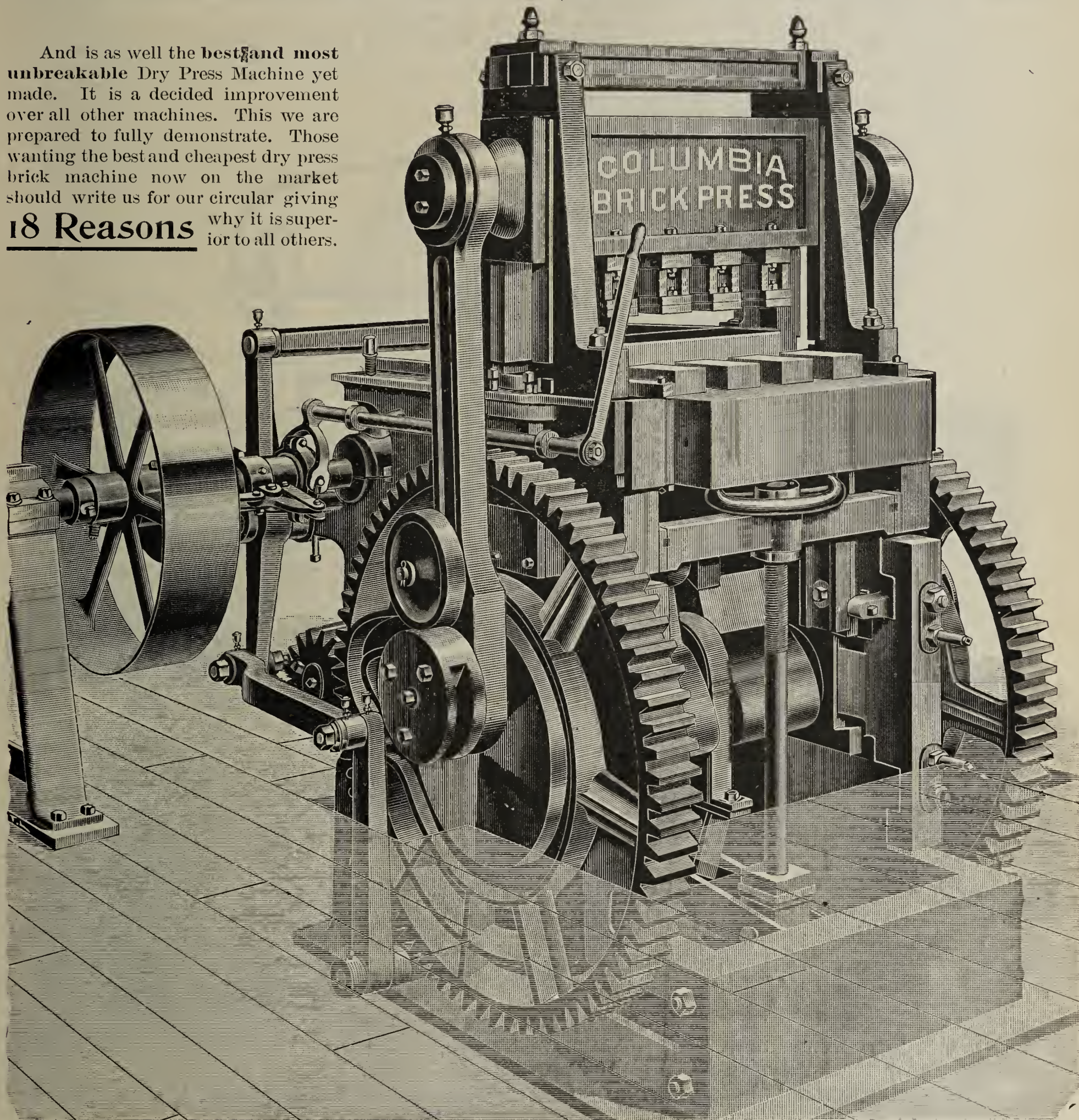


# ❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

## FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

### COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



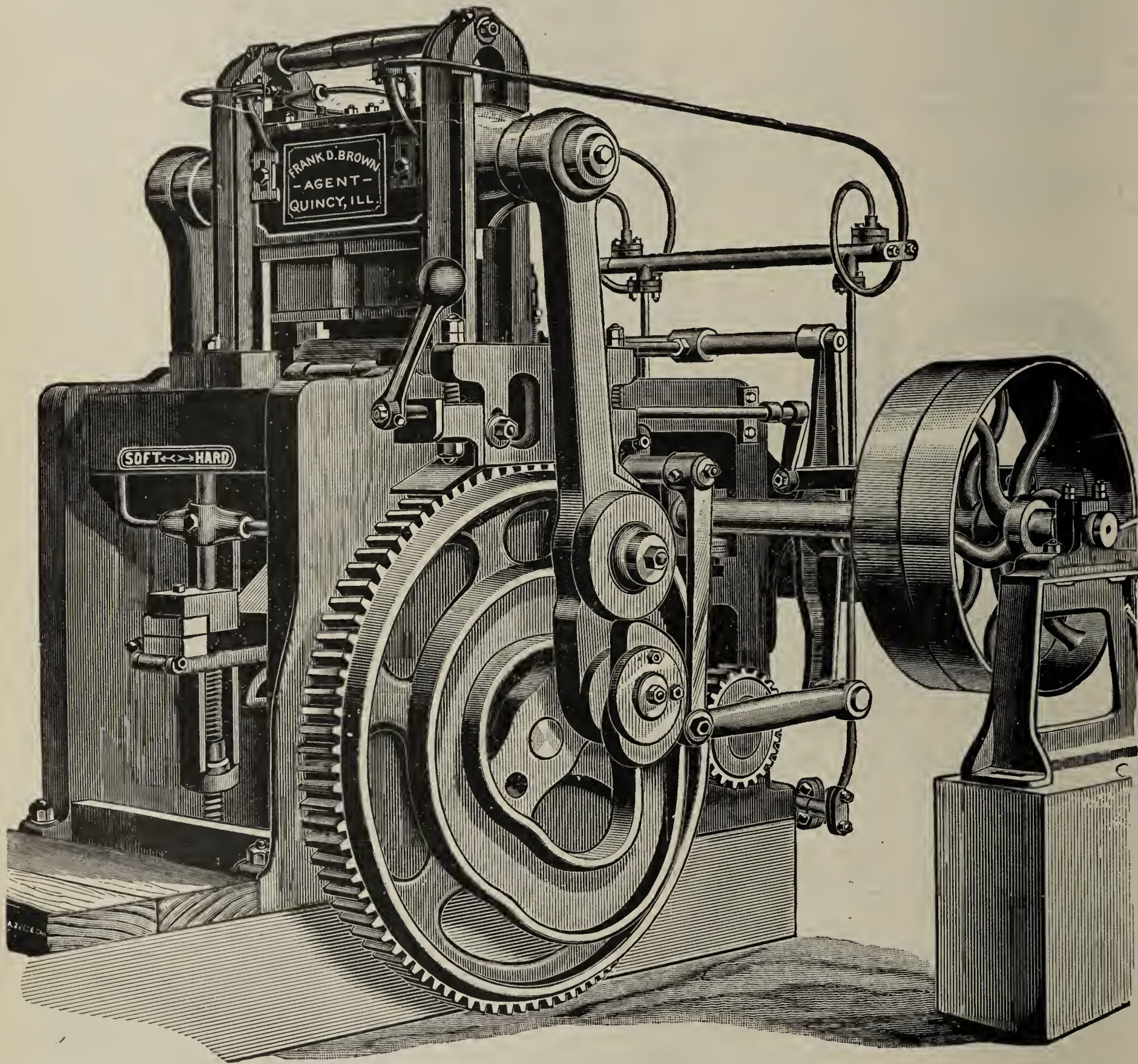
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.  
Will place the machine in your yard and guarantee entire satisfaction.  
Your correspondence solicited.

**FRANK D. BROWN, Quincy, Ill.**



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

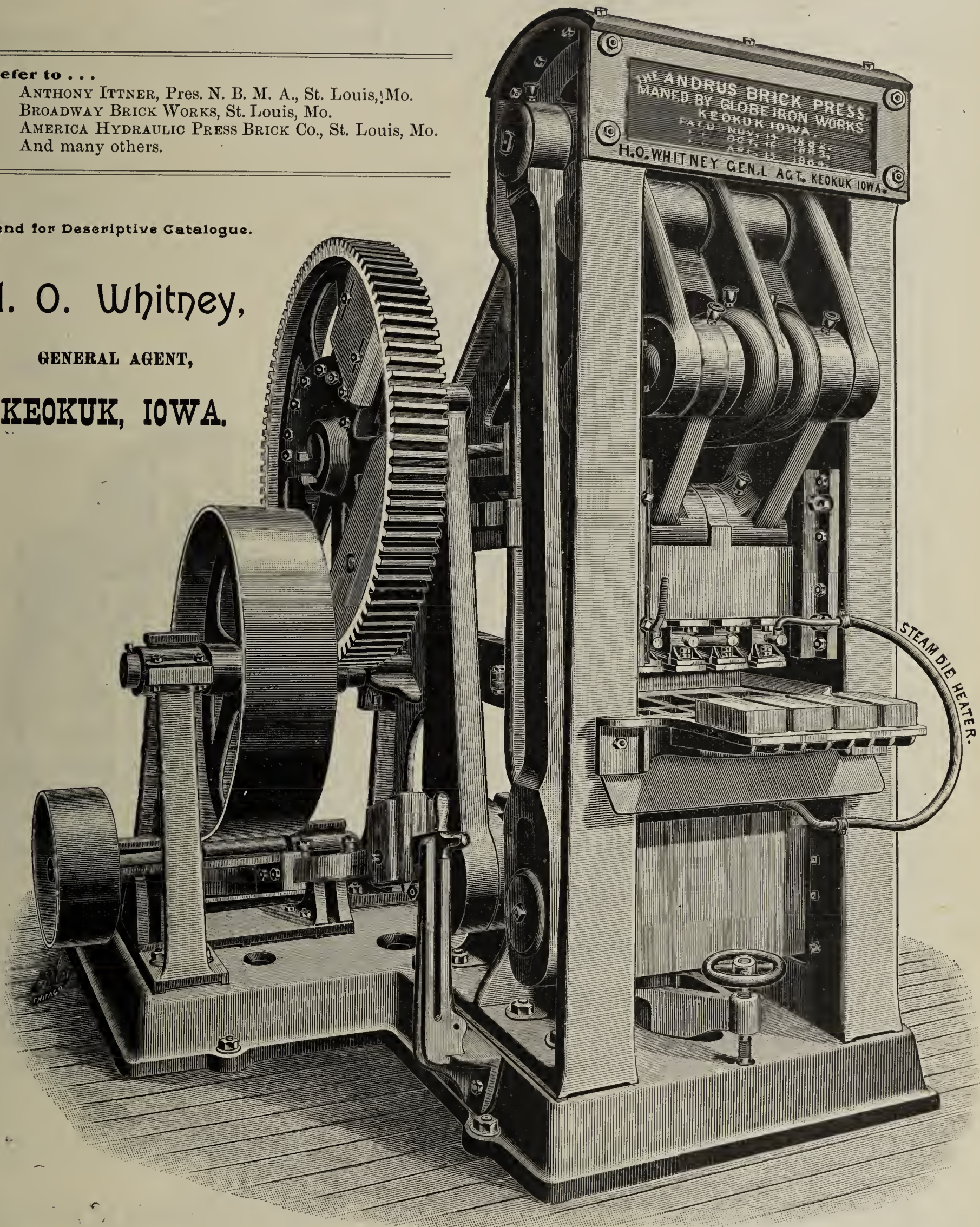
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.

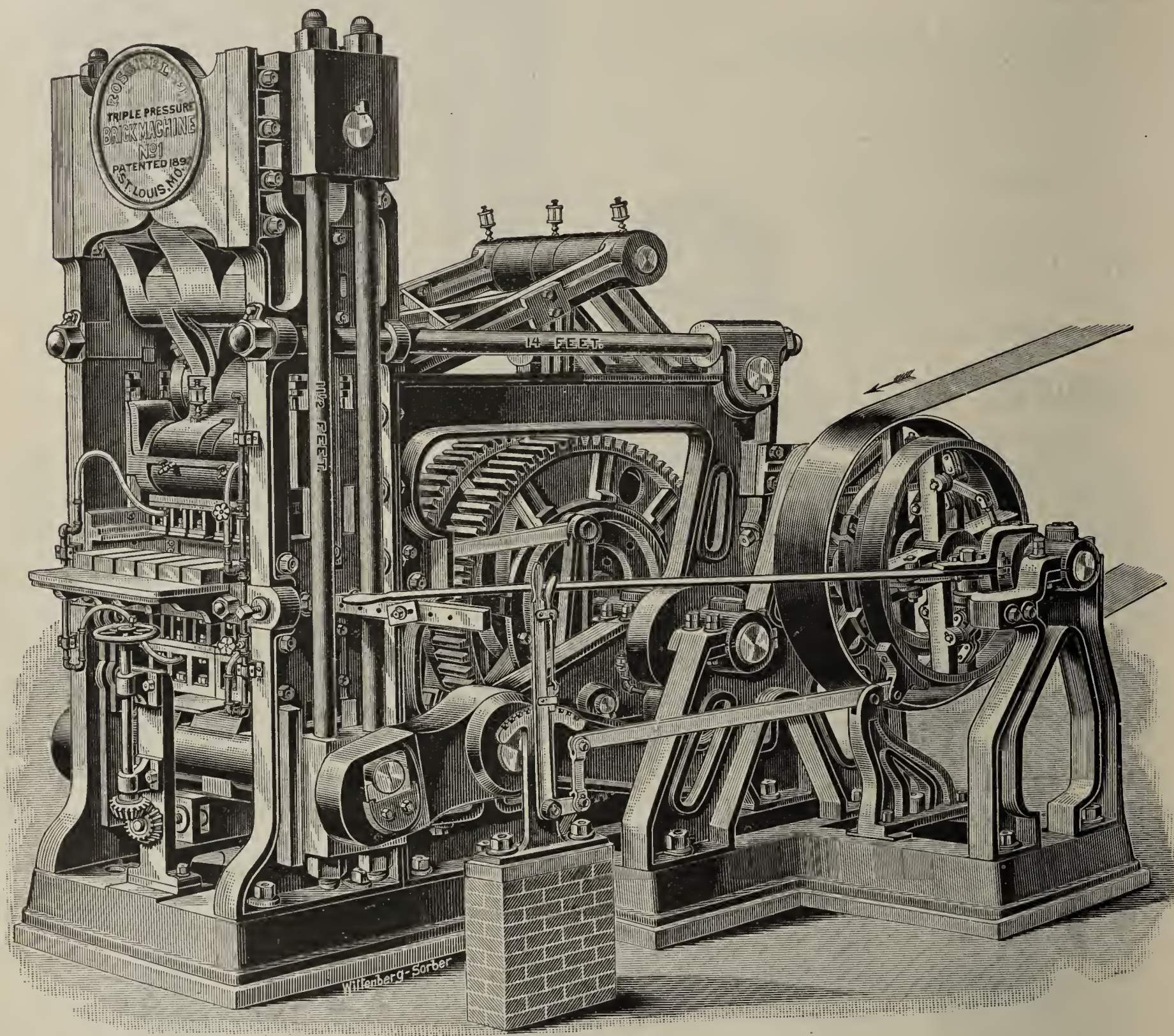




# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 75,000 pounds, Capacity 35,000 pressed brick per day.*



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**

*Room 207 Laclede Building,*

*ST. Louis, MO., U. S. A.*



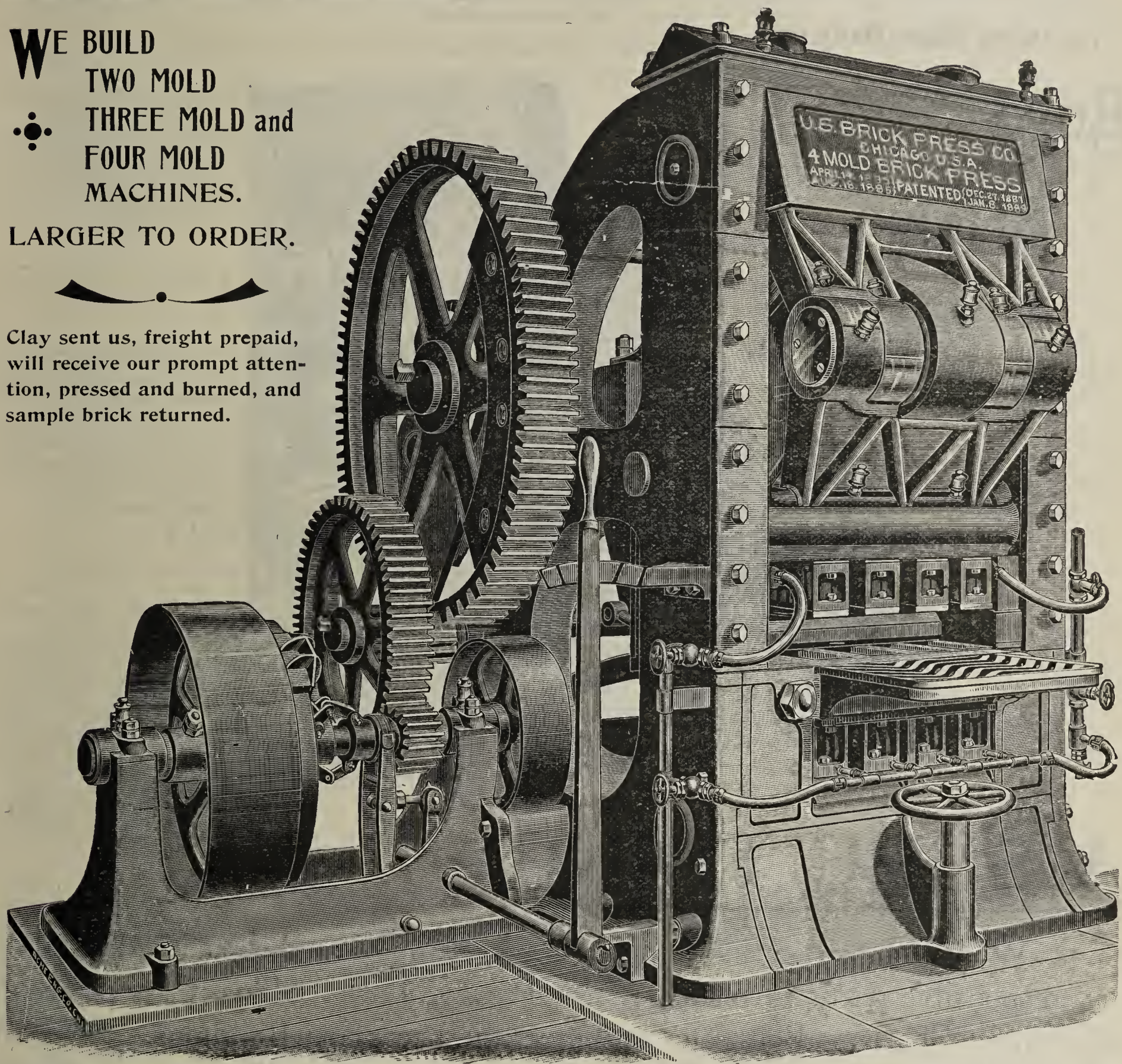
# THE U.S. DRY CLAY BRICK PRESS

Is specially designed to meet the requirements of the modern Brick Plant, inasmuch as it is representative of STRENGTH, DURABILITY, and above all, of SIMPLE CONSTRUCTION.

—✻ MAKES FINE FINISHED FACES ✻—

**WE BUILD**  
TWO MOLD  
••• THREE MOLD and  
FOUR MOLD  
MACHINES.  
LARGER TO ORDER.

Clay sent us, freight prepaid,  
will receive our prompt atten-  
tion, pressed and burned, and  
sample brick returned.



SEND FOR CATALOGUE AND PRICES TO

## THE UNITED STATES BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

111 to 113 UNITY BUILDING,

79 DEARBORN STREET, CHICAGO, ILLS.



# Millions . . . . .



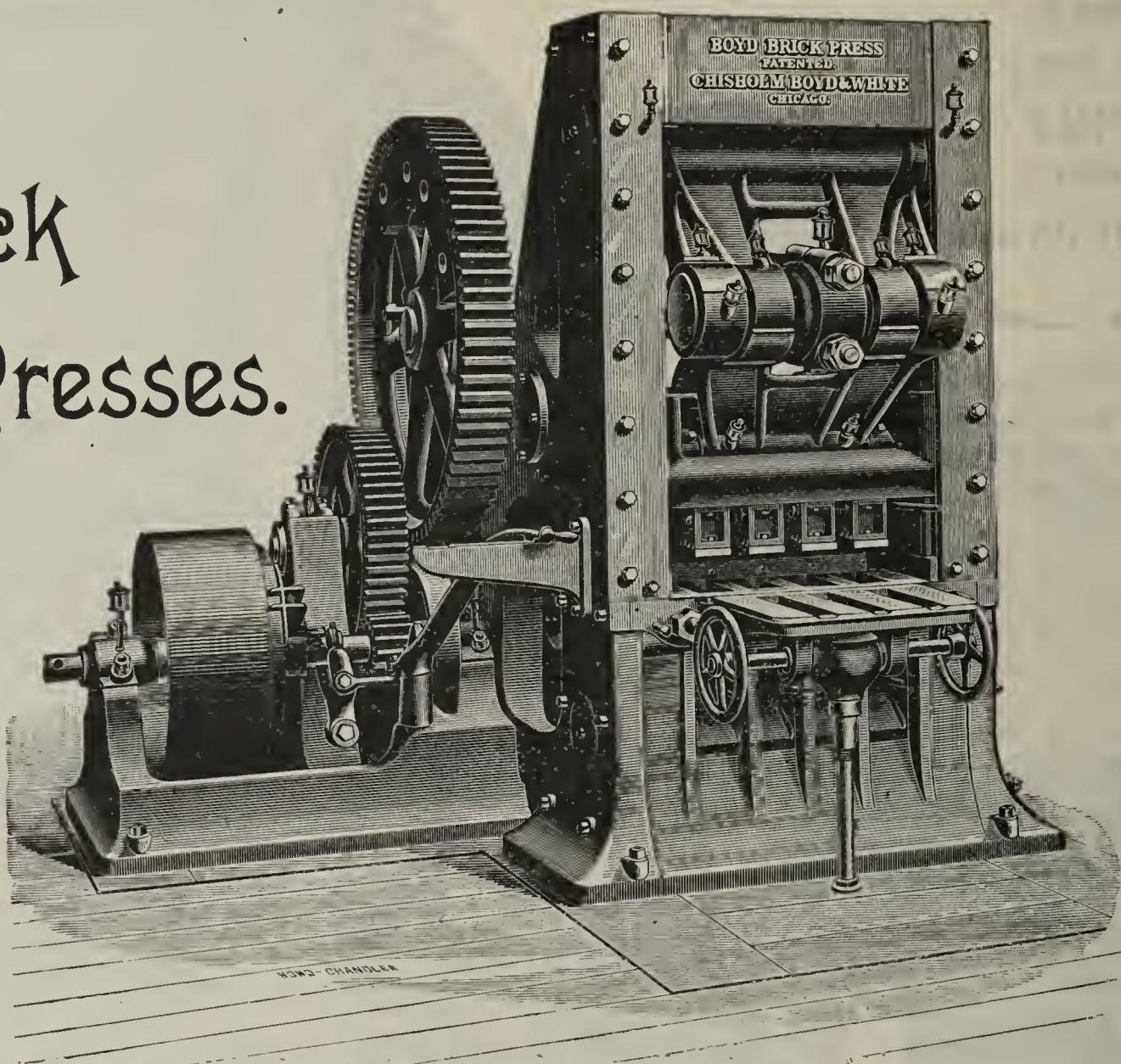
--- OF ---



# Beautiful Brick

Are Being Made Daily on

## Boyd Brick Presses.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you can have a sure thing?

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street,

CHICAGO.



## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire. It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers. Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT &amp; CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS &amp; COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

## FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular. (Extract.) Yours truly,

N. B.—Messrs. Carroll &amp; Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



# Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



# Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

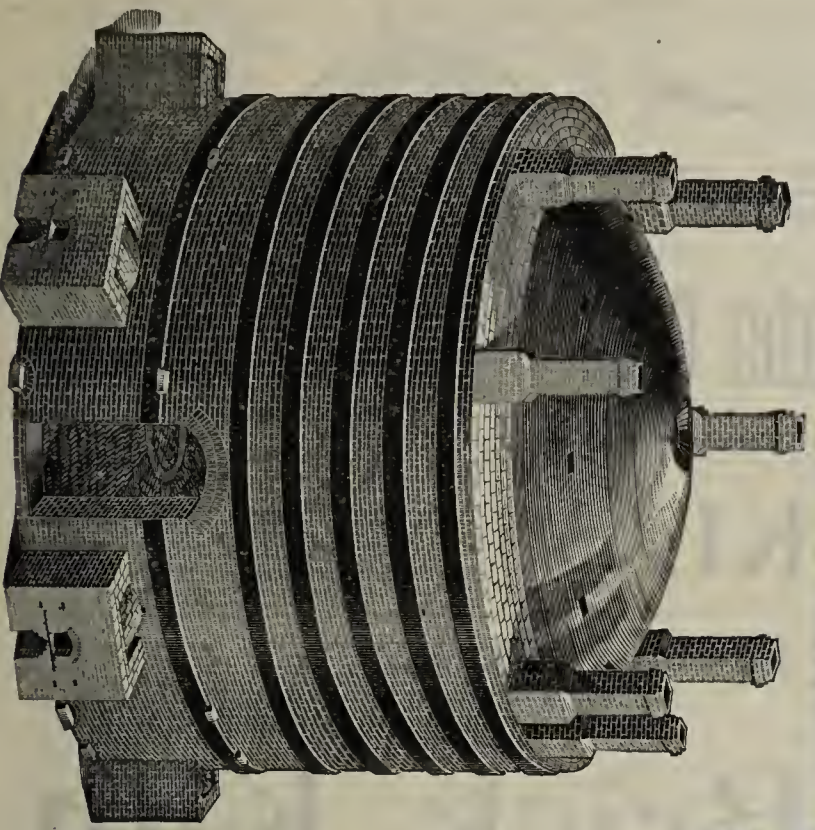
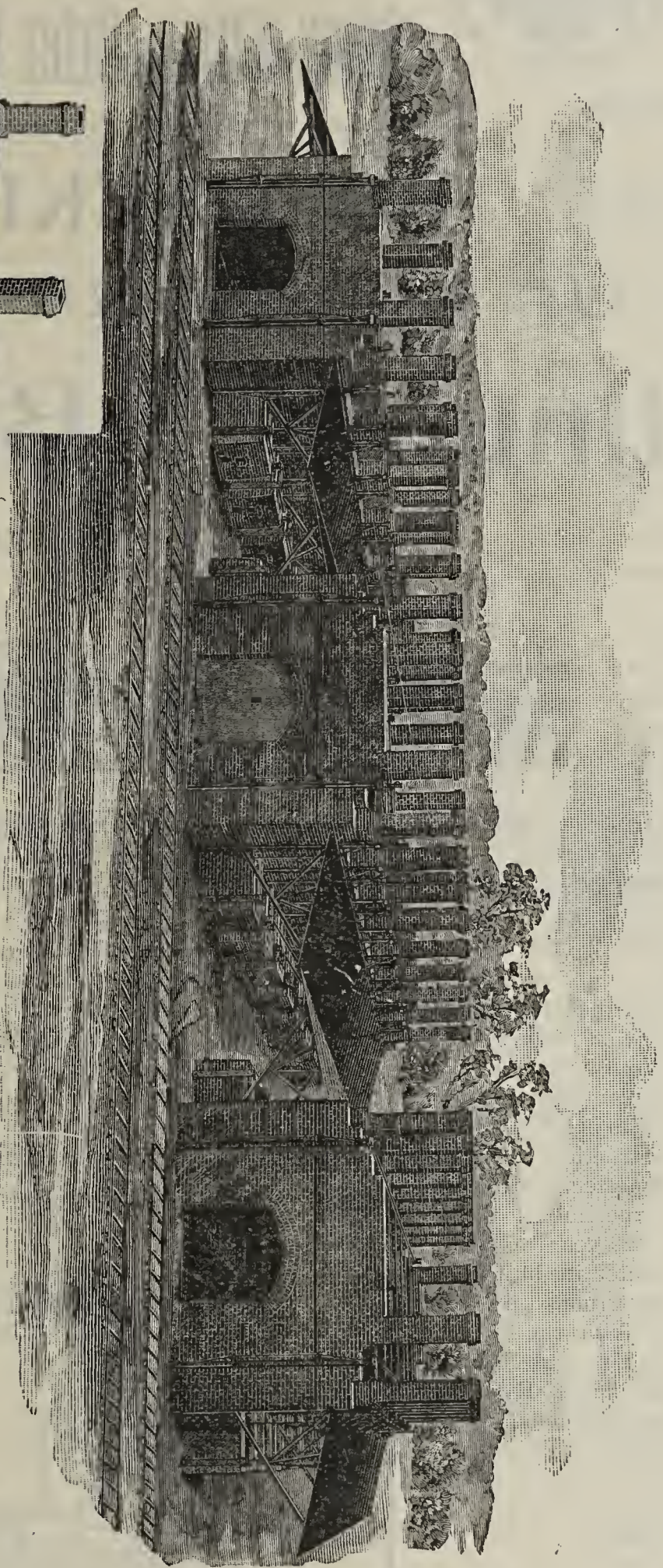
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



**A** VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



W. H. KELSO, President.

PAUL BOEHNCKE, Treasurer.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

F. HASPER, Secretary.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

Continuous

Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware  
of  
Infringe-  
ments.

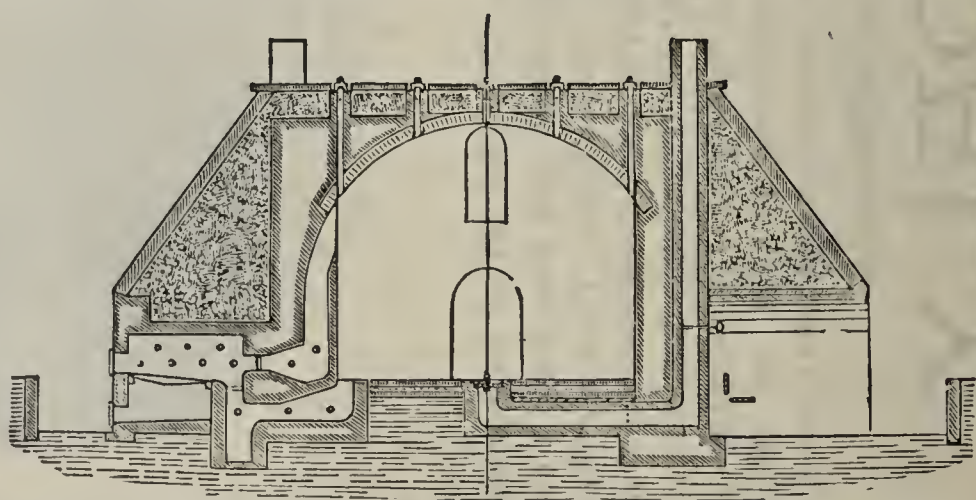
## ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,  
Box 35, Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

does not need any extra fuel or labor in connection with continuous kilns. Write for circulars and catalogue.

We have also Boehncke's Brick  
Drier, which is very economical,



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

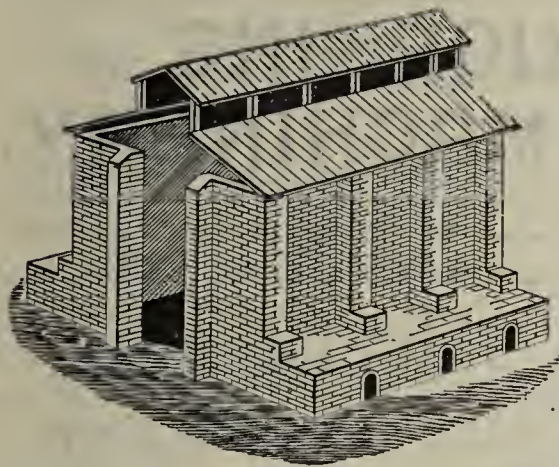
GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain  
Yours very truly,  
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

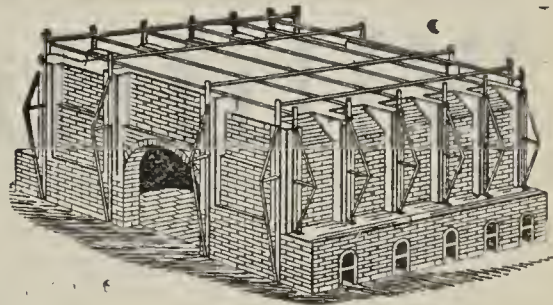
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ VITRIFIED PAVING BRICK. ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.





# "Leviathan"

The only Belt for Brick and Tile Machinery.  
Will outwear any three Belts of other makes in the Market.  
Runs in heat, steam and water without injury.  
Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,

WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

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We always Prove it in

Thompson's Water-Proof Belt Dressing for

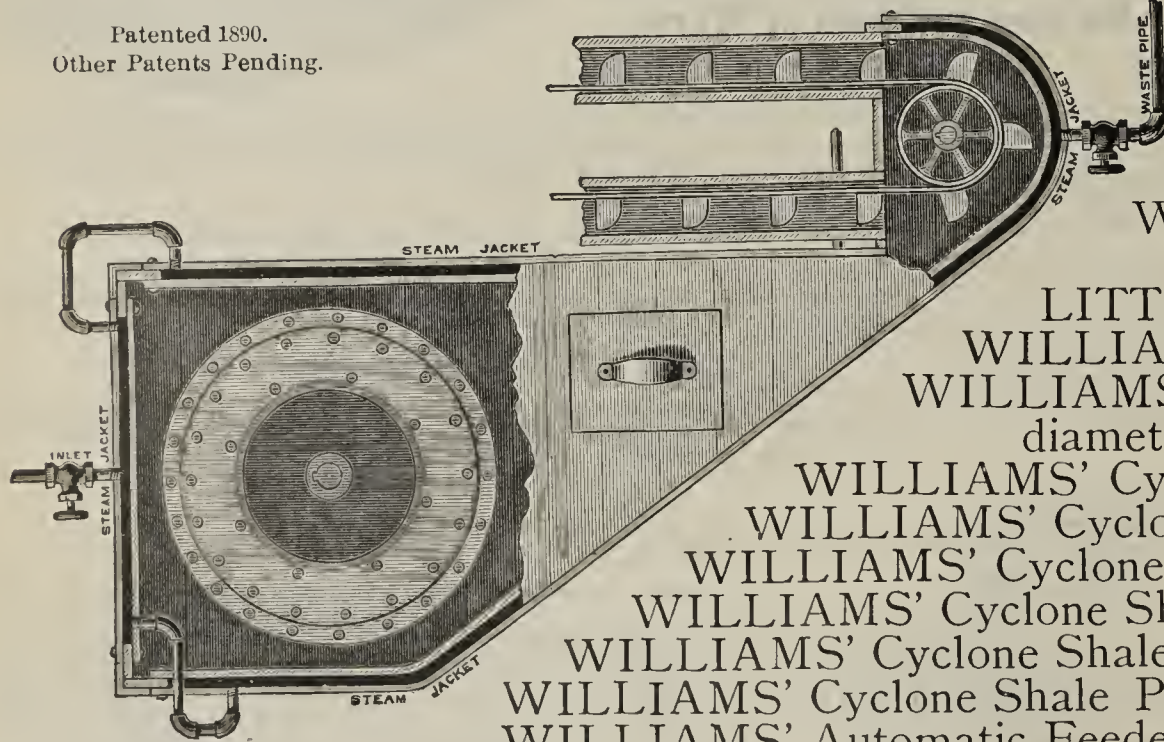
Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
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WILLIAMS' Clay Elevators.  
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Three sizes.

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WILLIAMS' Cyclone Clay Pulverizer 30 in.  
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WILLIAMS' Sizing Machine for Radial or Angular Brick.

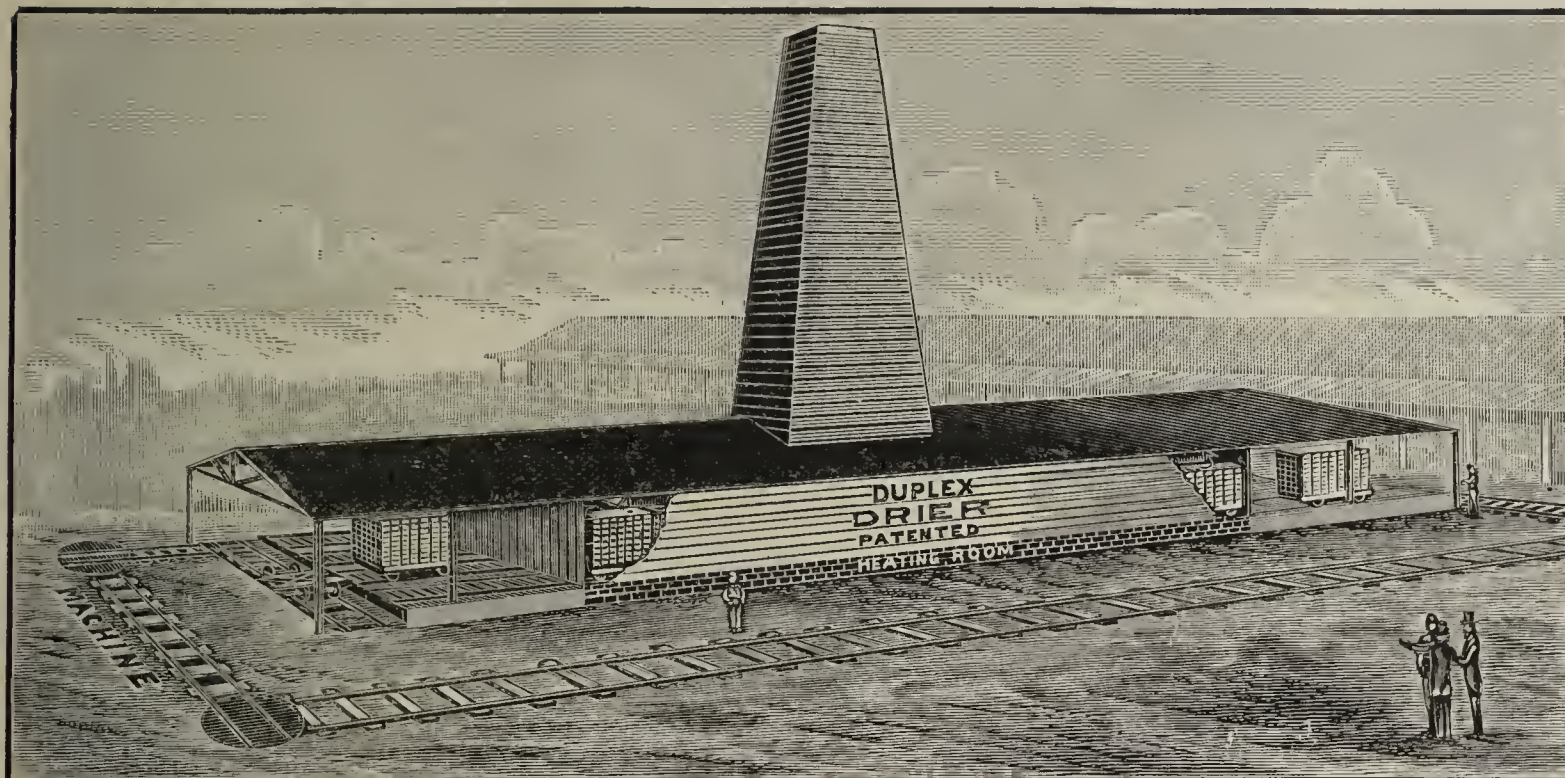
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**



# ATTENTION BRICKMAKERS!

Do not be alarmed by the  
screeching of Wild Cats  
or the howling of WOLVES.



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**The  
Duplex  
Steam  
Drier**

IS NO....

INFRINGEMENT.

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Harland Brick Co. have been using it at Bernice, Ill., for eighteen months, 75,000 daily capacity. Harland Brick Co., Shermerville, Ill., twelve months, 75,000 daily capacity. Galesburg Paving Brick Co., Galesburg, Ill., six months, 150,000 capacity. J. B. Legnard, Chicago, Ill., four months, 160,000 capacity, and others.

Now is the time to buy. Address,

**W. C. BYRNE,** Room 67, 162 La Salle Street, **Chicago, Ill.**

**S. G. PHILLIPS, Agent and Patentee,**

WOODBRIDGE, N. J.,

DEALER IN

**"Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.**

This frame enclosed "Inside Fan Dryer" erected ON GUARANTEE, to dry in TWELVE (12) HOURS.

"Live" steam used to test capacity, though exhaust steam may be quite as effective when favorably supplied.

CHARLES ANNESS, President.

JAMES J. LIVINGOOD, Vice-President.

MR. S. G. PHILLIPS, Woodbridge, N. J.,

DEAR SIR:—We are much pleased with "The Inside Fan Dryer" system, which was erected at our works last winter.

The running of the "endless" rubber belts, in which the slack is so easily taken up by the screw adjustment, of the special iron floor stands with their metallic wick "self oilers," and plates at both ends of the fan shaft to take the end thrust, and insure continuous oiling as well as to close the ends of the boxes and keep out the dust. Seems simply perfect for smooth, easy running; and have it and the entire outfit of machinery, come as nearly as fairly possible to taking care of itself.

It is remarkable how quick and yet safe and solid the drying may be effected in your use of more air distributed throughout the entire length of the dryer.

Though we now merely dry on racks, they are so arranged as to anticipate car use in the space they now occupy, and we can then fairly expect even more satisfactory results.

It does not seem to be at all extravagant to easily dry twice in 24 hours with the heat only from the engine exhaust steam—to claim to dry in half, in half of the time—cost but half of the fuel, and not half as much to erect, for the same quality and quantity of dried product, as compared with other artificial dryers. In other words we would not, nor do we believe any other practical brickmaker would, if he would look into the matter, have any other than the Phillips dryer. Very truly yours,

THE AIKEN FIRE & ORNAMENTAL BRICK CO.,  
JOHN E. ANNESS, Secretary.

JOHN E. ANNESS, Secretary and Treasurer.

CHAS. W. ANNESS, Director of Manufacture

AIKEN, S. C., June 17, 1893.

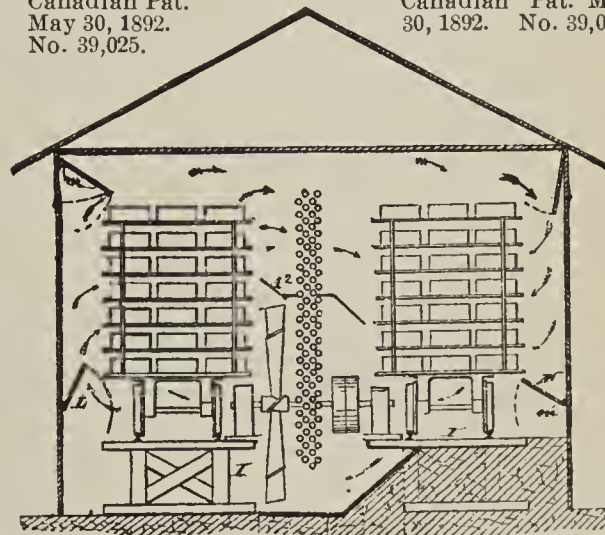
Canadian Pat.

May 30, 1892.

No. 39,025.

Canadian Pat. Ma.

30, 1892. No. 39,026



U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

**"Better Than Drying in the Sun."—"Exhaust Steam."**

S. G. PHILLIPS, Woodbridge, N. J.

OTTUMWA, IOWA, April 6, 1893.

DEAR SIR:—I have had your Dryer in operation during the last season and it continues to give me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTDICK.

**THE EFFECTIVE UTILIZATION  
OF EXHAUST STEAM  
A SPECIALTY.**

**"And Met the Requirements in Every Case."**

PHILADELPHIA, December 14, 1892.

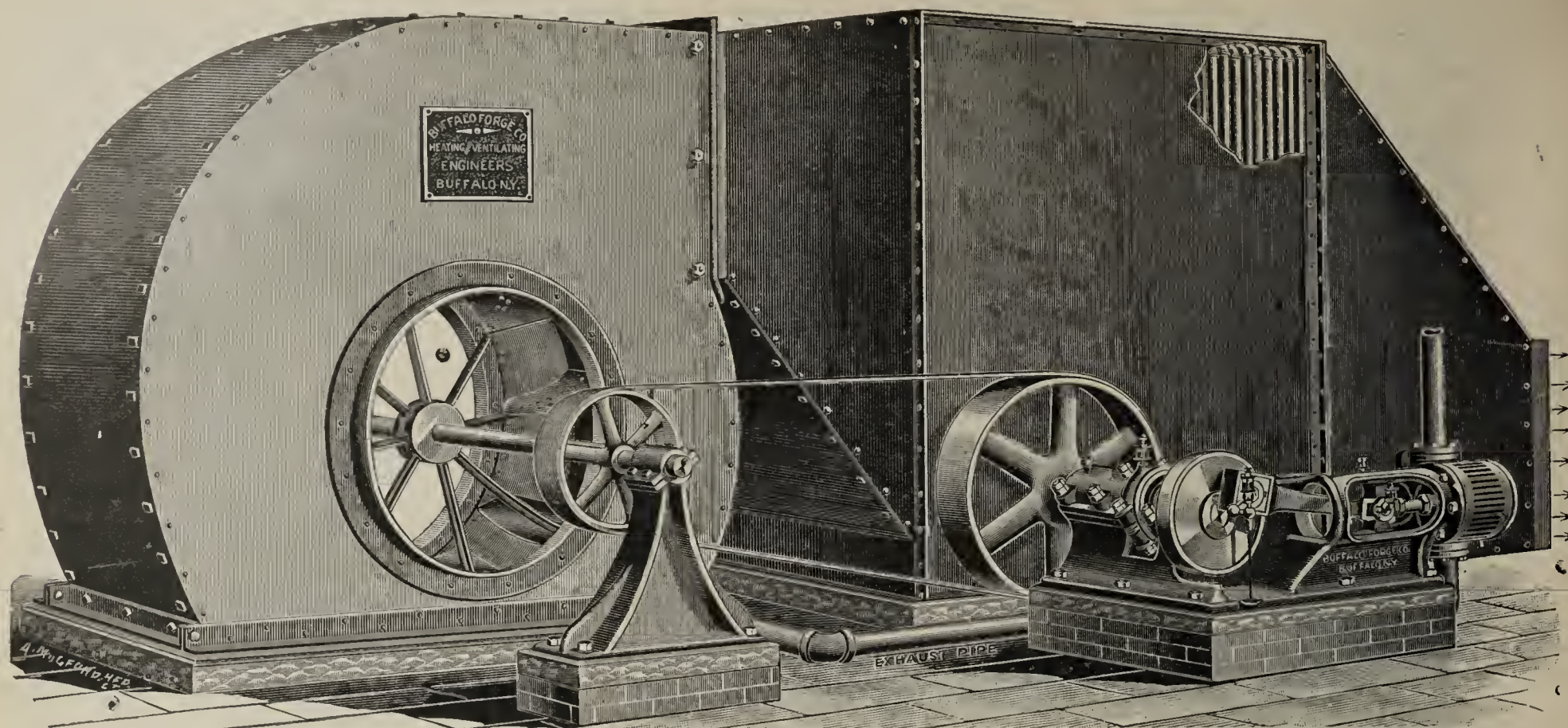
MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks. Yours respectfully,

CHAMBERS BROTHERS Co., J. H. Chambers, Gen'l Mngr.

**"I think you have the Dryer the brick people are looking for."**—Jno. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently: **"Not over 12 hours to make them VERY DRY—the best by great odds of any in the market"**—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance."





This Cut illustrates a type of Apparatus largely used in the Buffalo Progressive Brick Dryers.

To **CLAIM** that a Brick Dryer is economical, does its work evenly, does not crack the brick, and gives its full rated daily drying capacity, is **ONE** thing; to **PROVE** it is **QUITE ANOTHER**.

The proof that **Buffalo Progressive Brick Dryers** embody the above, and all other desirable features, may be obtained from any owner of one. Let us send you a batch of such proof, and a Complete Catalogue, giving full descriptions. All we need is your address.

[Mention the Clay-Worker.]

**BUFFALO FORGE CO., Buffalo, N. Y.**

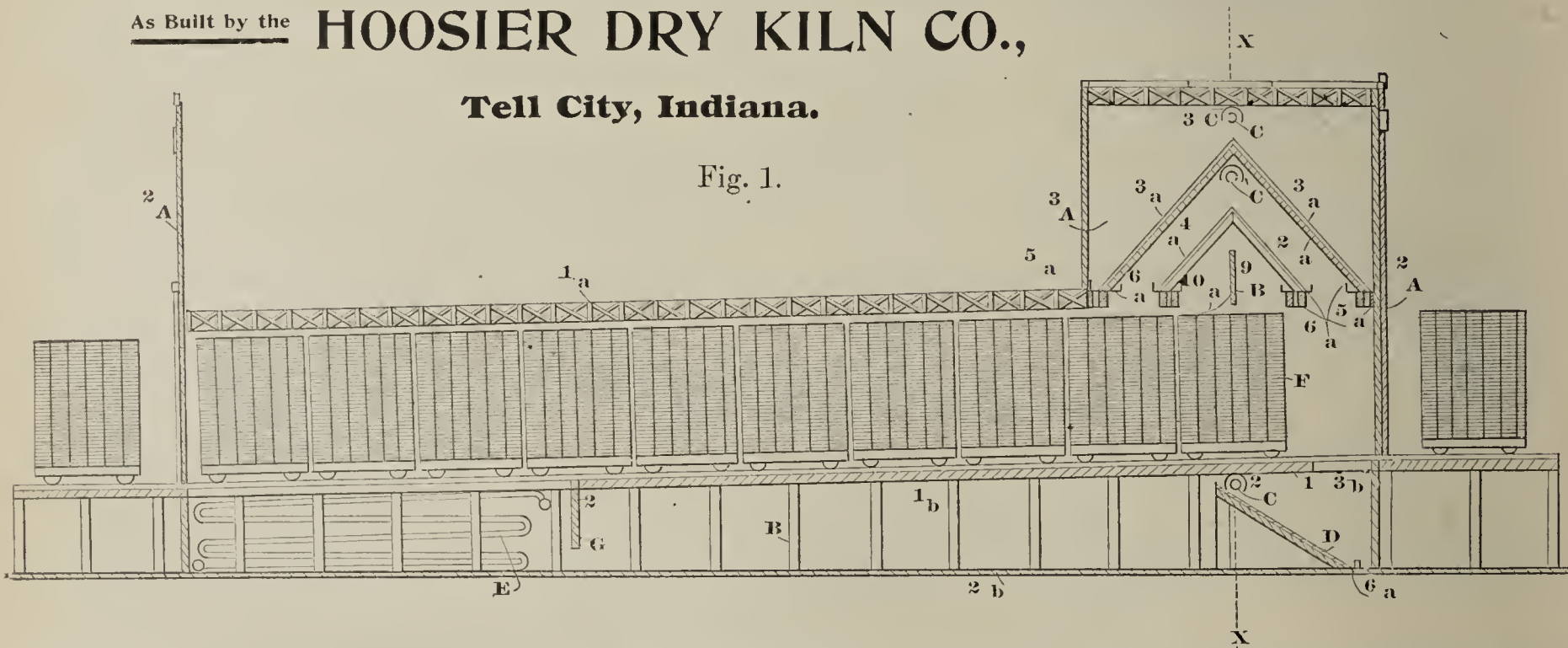
# HOOSIER DRYER,

As Built by the

**HOOSIER DRY KILN CO.,**

**Tell City, Indiana.**

Fig. 1.

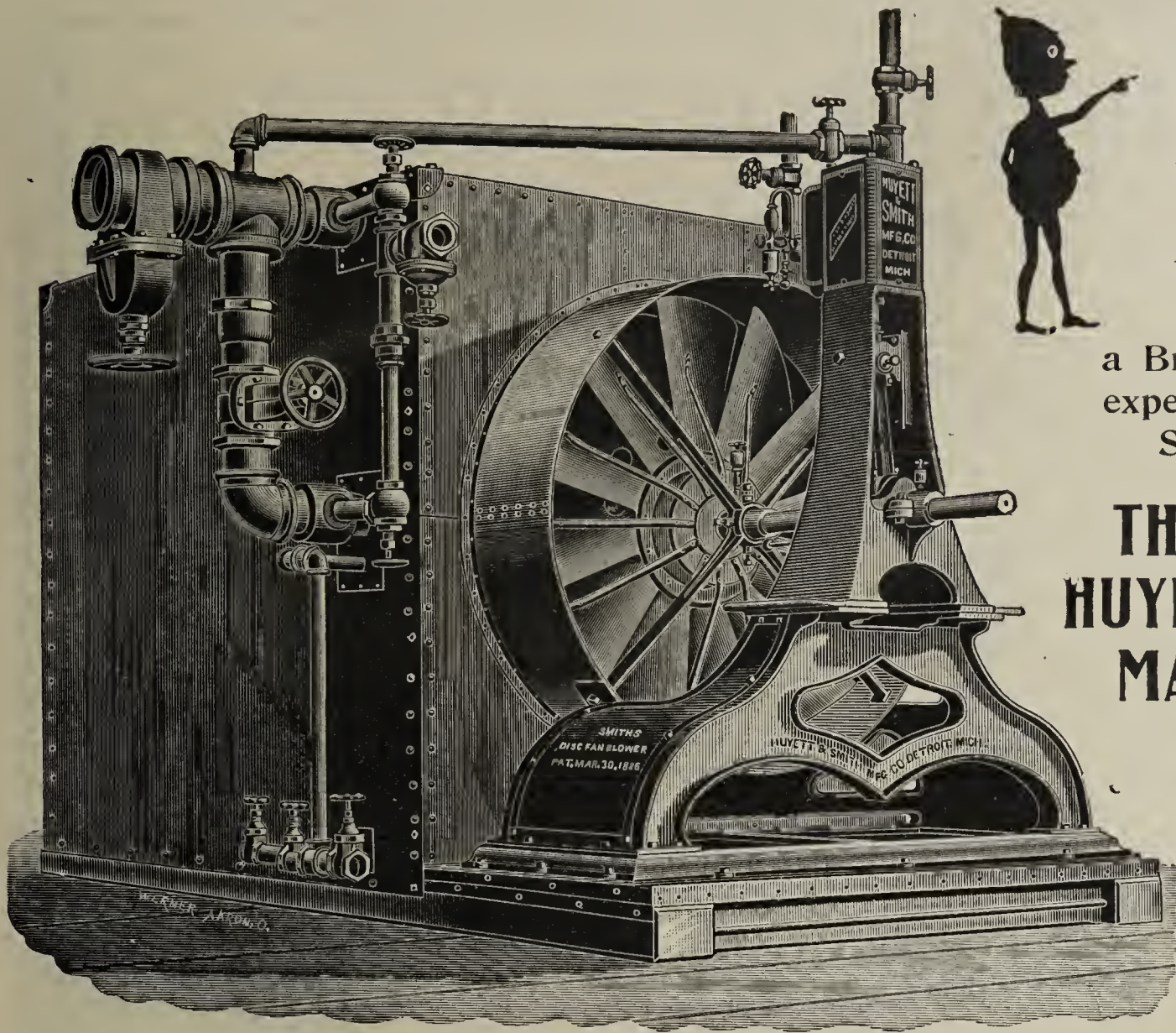


**TEST ON THE MARKET.**  
**LITTLE IN APPEARANCE.**  
**LARGE IN RESULTS.**  
**EASY IN FIRST COST.**  
**RIGHT IN COST OF OPERATION.**

**THE HOOSIER DRYER** in addition to the advantages indicated is constructed and operated in a manner that enables us to guarantee quicker work and more satisfactory results than any other dryer now on the market. By our system, which is covered by letter patents and which does not conflict with any former invention, we can handle clays that heretofore have defied all attempts at rapid drying. Our terms are reasonable and satisfactory results are guaranteed.

Either Gas or Steam used for Heating.





## Old Sol

What about him?

He is uncertain in this rainy weather,

Why not purchase a Brick Dryer that is no experiment?

Such a one is made by

THE....  
**HUYETT & SMITH  
MANUFACTURING  
COMPANY,**

Main Office  
and Works,

**DETROIT,  
MICHIGAN.**

This Hot Blast Apparatus used in connection with a system of tunnels forms the only perfect and efficient Brick Dryer known for the following reasons:



- 1st. It duplicates nature, the brick being placed in contact with a large volume of air in rapid motion.
- 2nd. The drying can be carried on continuously night and day in all kinds of weather.
- 3rd. Dries more brick to the ton of coal or cord of wood than any Dryer made.
- 4th. The brick are evenly dried, without cracking and will not "mash" in the kiln.

*For full information, prices and references, write*

**The Huyett & Smith Mfg. Co.,**

MAIN OFFICE & WORKS: **DETROIT, MICH.**

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# ANOTHER GOOD REPORT FROM THE EAST.

A PERFECT  
PRODUCT AS  
REGARDS DRYING  
IS GUARANTEED.  
THE "STANDARD"  
SYSTEM SO  
TREATS THE  
CLAY THAT  
COHESION AND  
DENSITY, THE  
ESSENTIALS OF  
"A GOOD, STRONG  
BRICK," ARE  
PRESERVED AND  
INTENSIFIED.

T. B. McAVOY & SONS  
BRICK MANUFACTURERS.

YARDS: { Twenty-fifth and Tasker Streets.  
Twenty-second and Mifflin Streets.

FINE PRESSED BRICK A SPECIALTY.

Residence: 1528 South Broad Street.

Philadelphia, June 14, 1893.

The Standard Dry Kiln Co.,  
Louisville, Ky.

Gentlemen;

Your inquiry as to how we like the Drier you put in for us this spring, at hand.

We are pleased with the Drier. It has come up to our expectations in every respect.

There are three points about the Drier that we admire, viz.:

1st. It was on the ground and in place ready to dry brick within the time specified in your contract. In other words, you were ready to dry brick when we were ready to make them- (two months after contract was signed.)

2nd. We get a good, clean, strong brick, entirely free from checks, or cracks, and in 24 hours.

3rd. It is economical in operation, and gives us no trouble whatever.

The Automatic Pump for returning condensed steam to boiler is a complete success.

We use Chambers' Machine.

You can refer to us at any time.

Respectfully yours,

T. B. McAvoy & Sons  
per Frank B.

ECONOMY  
OF OPERATION  
IS A CAR-  
DINAL FEAT-  
TURE OF  
THE  
STANDARD  
PATENT  
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DRAFT  
BRICK  
DRIER.  
IT PRODUCES  
MAXIMUM  
RESULTS AT  
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COST.

SEND FOR CATALOGUE AND PAMPHLET OF ENDORSEMENTS FROM USERS.

## THE STANDARD DRY KILN CO.,

General Office and Salesrooms, 923-925 W. Main Street,

LOUISVILLE, KY.



# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XX.

INDIANAPOLIS, IND., AUGUST, 1893.

No 2.

Written for the CLAY-WORKER.

## A BRICK CATHEDRAL.

THERE is a romantic interest in stepping back into the centuries to study building construction, which adds to the pleasure and does not detract from the material value of such investiga-



A BRICK CATHEDRAL AT ALBY, FRANCE.

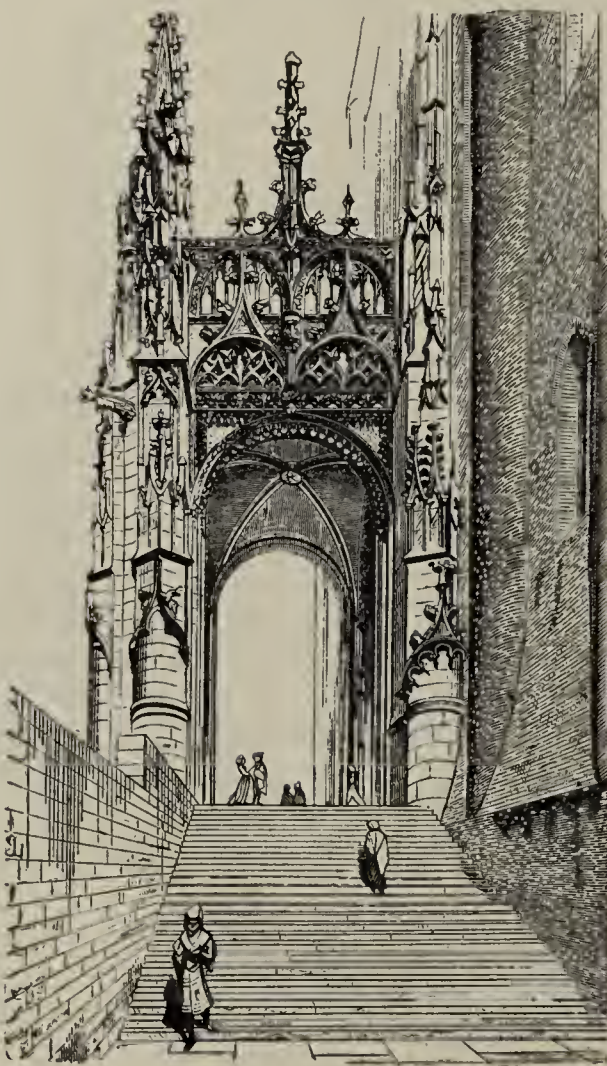


tion. As stated in the last number of the *CLAY-WORKER*, we now begin a series of articles on the brick architecture of the earlier period, with a view of showing to our readers the constructive and decorative forms which had their development in a time when nearly all work was of a high constructive and splendidly artistic character.

The cathedral of Alby, of southern France, was begun in the middle of the XIV century. Certain of the work of finishing was done, after an interruption of over a hundred years, during the XVII century. This is one of the few brick cathedrals of France; in fact, there are none more successful in the world than this. The plan is simple,—a long vaulted room, the choir end of which is shown in our picture. The front, or west end, has the tower, which we can see on the left hand side of the picture. The ceiling is vaulted, and the piers, which resist the thrust of the arches, instead of being on the outside of the cathedral, as is common, are entirely on the inside. The spaces between the piers below form small chapels and just below the line of the upper windows the space is vaulted again so that there are galleries or tribunes above.

Alby is one of the most pronounced types of what we might call military or fortified cathedrals. The religious wars of the XIII and XIV centuries, as well as the civil wars of that period, developed the military details which are to be noticed as a part of this building. Structures of this character which were built at a time and under circumstances which developed a necessity for defence, were located where, by nature, they had a defensive and commanding position. The windows were narrow and few, the structure itself was very strong and tall; there were provided crenelles, a type of which we see at the entrance to the porch at the left, and the machicoulis which come below them. A crenelle is an opening in a wall or battlement through which one could shoot or throw projectiles on the enemy below. The machicoulis served the same general purpose. They projected beyond the wall, so one could stand in position to drop stones or to shoot with arrows down along the line of the wall. In this instance they defended the doorway leading to the porch. The front tower of this structure was a veritable donjon,—an arrangement of defensive rooms and means of attack on the enemy be-

low. These donjons were arranged often in labyrinth form and connections which made them places of defense in case of last resort, as well as a situation from which a siege might be resisted at all times. Such a place was the tower in the front of the cathedral of Alby. The height of the cathedral, as well as the tower itself, made them places of defense and last resort in many of the cities of France during the XIII, XIV and XV centuries. After the discovery of gunpowder, a tall structure lost its value as a defense, though it was nearly a hundred years after that time before



PORCH OF CATHEDRAL.

the real value and full use of artillery was appreciated.

Aside from the entrance to the porch the walls approaching the porch itself and its height made it defensible. In the case of this structure the sides and front were surrounded by walls which took in the archbishop's residence, which is not shown in this cut. The porch itself was added during the XV century in the form as we see it here. It is a veritable bit of architectural lace-work, magnificent in outline, rich in detail and picturesque in plan. Its richness begins to show at the head of a long flight of stairs, surrounded by a splendid wall, the beginning of which can be seen in the cut. The progress

of this structure was interrupted at the beginning of the XV century, and the small towers and balustrades at the top were added in the XVII century, not that no work was done above this previous to this time. We can see that the tower was carried up during the XIV century. The line of the lighter colored material, which shows in the cut here given, indicates just what part was added in the XVII century. The line of the roof is indicated by the presence of the gargoyles and the starting point of the downspouts. The work above this is a screen and continues above the roof and vaulting of the internal structure. Originally the gargoyles served the purpose of downspouts. The water ran through them and to the ground. These gargoyles, imitations of which we see in modern terra cotta work, were often grotesque figures and forms, the outlines of which are familiar to many of us.

There are peculiarities in connection with the construction of the vaulting of this building and the character of the brickwork, and other forms which recall the early Roman work. This was, no doubt, developed from the fact that this section of France was not far out of line of association with or a knowledge of the early Roman architecture. There is a splendid dignity about this structure, a massiveness and imposing quality which is not to be found in some of the more elaborate buildings of this period. One standing at the base of the wall, as we see those in the picture, may well think, "How great is the church, and how small am I."

It is interesting to see what was done in brick during this early period, to have a certificate both in the form of age and elegance of what was then accomplished, as well as what is now possible to us.

Let us hope that out of the excellence of our mechanical resources in the making of brick and handling of other structural materials there may come a higher artistic development and through it an addition to the material resources of those who have capital invested in the building art.

L. H. GIBSON.

#### A HINT TO ADVERTISERS.

A cheap imitation of a trade magazine is no more equal to the original which it follows and apes than is a shoddy garment the equivalent of one of high grade and texture, and if purchasers will examine closely, one is as easily detected as the other.



Written for the CLAY-WORKER.

## STREET PAVING BRICK.

## First Paper.

BY ALFRED CROSSLEY.



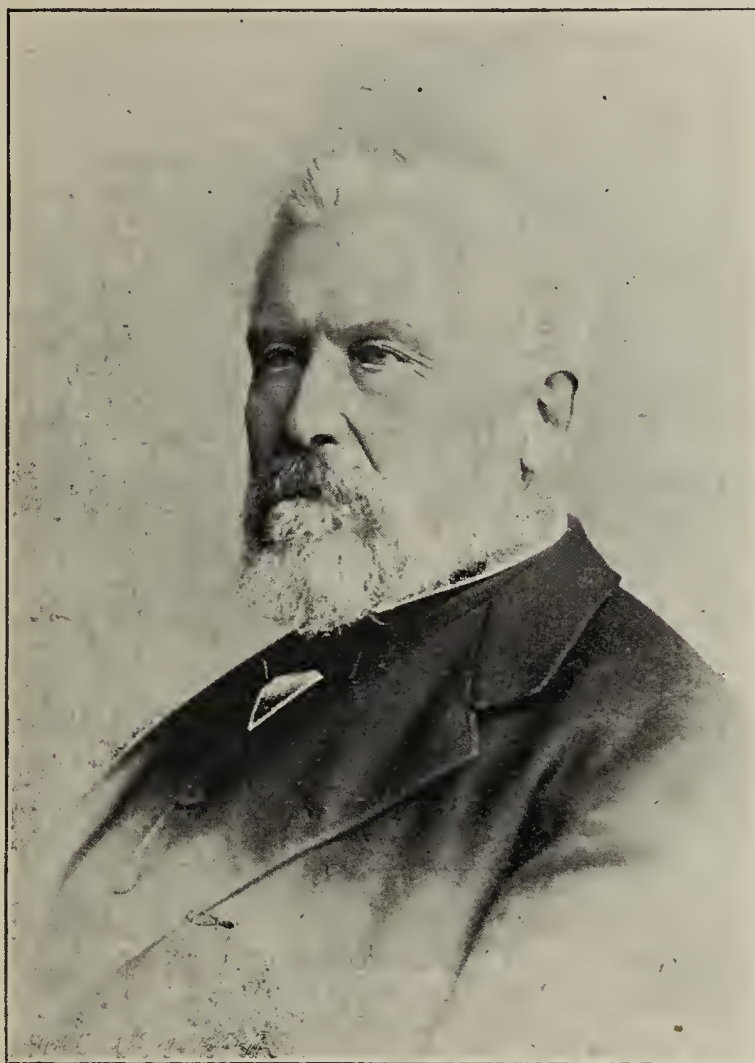
THOSE who had the pleasure of attending the Washington Convention of the National Brick Manufacturers' Association will remember that one of the most, if not the most, interesting subject on the program was that of the manufacture of paving brick, and probably no other subject provoked as much discussion. This was not to be wondered at when we reflect that there is no other single branch of the brickmaking business that is receiving so much attention from brick manufacturers in general, all over the United States. The discussion of this subject at the Convention must be regarded as very unsatisfactory, from the fact that the most conflicting opinions were expressed, and that sufficient time could not be taken to reduce the chaos of opinions to anything like harmony. A member of the Association and a friend of the writer, who had sat through all the sessions, remarked to him at the close, that any new beginner in the brick business attending the Convention for the first time, in search of information, would go away with his mind in a worse fog than when he came. It is not unlikely there were many such instances.

In the interest of all who are in any way connected with the paving brick business, it is desirable that there be a better and more practical understanding of the nature of the raw materials adapted for the manufacture of paving brick, the characteristics of good pavers, and the principles governing their manufacture; and it is in the hope of reconciling some of the apparently contradictory statements, and restoring order out of the discord of opposing opinions, that the writer ventures to contribute one more to the many articles that have been written on this subject.

One principal reason for this diversity of opinion on brick questions is, that so many look at it only from the standpoint of their own experience, and are like the travellers in the fable, who, on approaching a shield from opposite di-

rections, began to dispute over it, one saying it was gold and the other that it was silver, and came near fighting over it, forgetting that there were two sides to it, like many other much disputed questions.

In the discussion of this subject at the Convention, one member declared that paving brick must be made from pure clay, others stated it must be mixed; some stated that they should be made of fire clay, others that it was impossible to make good pavers from fire clay, and that shale only was the material. Many of the speakers demanded that they should be vitrified, while on the other hand, it was claimed that to



E. B. HALL, Brick Manufacturer, TOLEDO, OHIO.

vitrify was to spoil them. One member claimed that the admission of air into the burning kiln was injurious, while another stated the very opposite, and that it was too much heat that damaged them. These are specimens of a few of the incongruities that were indulged in, and, be it remembered, the speakers were not novices, but mostly old hands at the business. Recall the incident that took place in the elevator at one of the Hotels, of the old gentleman's sneer at the brickmaking fraternity, related by Mr. Ed. Callaway, and may we not cease a little of our surprise.

The great need of the brick business

in every branch to-day, is more science and less guess work, and unless the signs are deceptive, the twentieth century will not pass its first decade before the manufacture of clay products in general, is reduced to a science. Our business has entered upon an era of progress, and expansion of ideas, and is surely leading us in the direction just stated, although unobserved by many. The existence of our National Association is a standing proof of this. Twenty or thirty years ago a national association of brick manufacturers would have been an impossibility.

## SCIENCE IN BRICKMAKING.

The very suggestion raises a storm about our ears. Stuff and nonsense, we want no science in ours, say some of the old hands, (and some of the new ones too), we want some practical experience, a man who has rolled the warp and sat up nights with a kiln. The trouble is, science is often confounded with theory. Of all pitiable objects, the theoretical brickmaker receives the least sympathy, and perhaps deserves the least, but let not the two terms be confused. *Science may evolve theories, but theories are not science.* Science is the knowledge of any given subject, based upon facts demonstrated by practical experiment. There is a wide difference betwixt this and theory, and yet theories are stepping stones in the pathway of science. Experience is the best teacher, it is often said; true, in one sense, but he keeps a dear school, and some one has said, only fools learn in it. Brick are often made on paper, and it is a pity they are not more substantial, for they cost so much less, as a rule, than those made in the factory. Experience

is indispensable to a successful operation of any business, and emphatically so of the brick business, but is it necessary that *everything* shall be bought by hard, costly experience? Is it necessary for a child to put his finger in the fire to find out that it will burn?

The variations in the quality and nature of clay often necessitate a corresponding variation in treatment, but are not the general principles the same all through? And are there not many things that are practically the same everywhere? For instance, a kiln of dry press brick set direct from the machine, or of tempered clay brick set



as wet as they will stand up, started off on full fire at once, without taking time to steam or dry off, will be a dead failure in any State in the Union. The old hands will say, "Why! any fool knows that," and yet, almost every day in the year, somewhere in the United States, some one is learning the sad fact in the hard school of experience, and using some other men's good standard dollars to pay for it with. What is the early record of a large proportion of successful establishments of to-day? Months, often years, of continued failures, broken down machinery, spoiled kilns, discontented stockholders, no dividends, further calls for additional capital; until finally, the difficulties are gradually surmounted, things begin to run smoothly, profits are satisfactory, and everybody is happy. Was it absolutely necessary to have this costly first experience? Answer NO, and say it out loud.

Who are the men who are in most demand to-day, as superintendents and managers of brick plants? Not the novices, who have just gotten into the business and think they know it all, but the men who have had experience, with different clays and by different methods, and have made a success. Such men will tell you that if they had had the knowledge they now possess ten or fifteen years earlier, it would have saved them from mistakes, so stupid that they are actually almost ashamed to tell what they were. Oftentimes a man is hired as superintendent of a new brick plant who has been remarkably successful in his old position, which he has held for years, but who makes just as conspicuous a failure at the new place. What is the reason? Simply that his technical education was too narrow. He had thoroughly mastered the peculiarities of one clay bank, and knew just how to treat it, both in the yard and in the kiln. He knew just exactly how much heat it would stand, how quick to raise his fires, and when and how much air to give it to get the right color. He knew the exact layout of the plant, and had it all at his fingers ends. In fact, he was all right so long as he stayed at the old yard, but outside of that he knew little or nothing, and when he got to a new works, where the whole arrangement was on a different system, new machinery, new kilns, and a clay bed that required different treatment, he was entirely at sea.

There are two classes of men who hinder the brick business from getting

on to a scientific basis. One is the old fogies, who make brick the old way and don't want to hear any new-fangled ideas. The other class is the novices, just starting in and know it all already, who think brickmaking is just as easy as rolling off a log.

#### BRICKMAKING AS A SIDE ISSUE.

It is surprising what a simple thing the brickmaking business is anyhow. One of those little diversions that a man can take hold of when he wants a change from the more serious pursuits of life. Dry goods merchants, architects, doctors, schoolmasters and many others, who have had years of study and training for their particular avocations, and who would laugh at the idea of any man undertaking them without such training, plunge red-hot into brick manufacturing, with the utmost confidence of success, and with no idea of any technical knowledge being required. Of course, sooner or later they find out their error, but it is surprising how many otherwise sensible men make this mistake. Only recently, a gentleman of the writer's acquaintance, whose business is that of bridge building, and who has been very successful, accidentally got interested in this question of paving brick manufacture, and with a view of taking stock in a company then being projected, went around to several brickyards to post himself somewhat on the subject. When he had concluded his investigations he announced his intention of going into the business on his individual account, and stated that he had already made up his mind which was the right way to make paving brick, which was just the reverse of the methods in use by successful paving brickmakers as the best in the light of experience up to the present time. If the situation had been reversed, and some man who had hardly ever seen a railroad bridge, had announced his intention of going into the bridge building business, and with ideas contrary to the best practice in that line, our friend, the bridge builder, would have thought the man a fit candidate for a lunatic asylum. But then, brick manufacturing is so much easier than bridge building, or any other business.

But, jesting aside, it is time the brick business is lifted to a higher plane, as its importance demands, and takes rank amongst the giant industries of the world, whose success is builded on the application of the principles of chemical and physical science. The higher

branches of the clayworker's art have been conducted on scientific principles for many years, and it is a notable fact that the world renowned production of Sevres, Dresden, Minton's, Wedgwood, and others, have attained their almost inimitable perfection under the direction of some of the most astute chemists known to the scientific world.

In the iron and steel and other metallurgical arts, the early operations, both in this country and in Europe, were conducted on empirical methods, and while continued practice brought about many improvements, yet the magnificent achievements in these arts at the present day, have only been rendered possible by the aid of science. A daily furnace production of 250 tons of pig iron was not dreamed of but a few years ago, and the making of steel from phosphoric iron was considered a settled impossibility.

The manufacture of aluminum on a commercial scale has been only brought about by the persistent efforts and experiments of scientists, and the exploits of modern electrical science are among the greatest wonders of the nineteenth century.

The young man who is ambitious of success in any of these pursuits, does not have to wearily learn everything in the school of experience. Both in Europe and America, there are institutions where the principles of these special branches of science can be studied, and text books wherein the rudiments of knowledge in these subjects are stored. But where shall the student in the science of brickmaking find his text books, that shall instruct him in the elements of the art, and give him the benefit of the knowledge already acquired by generations of experiment and practice? Alas! we have, as yet, only the crude *beginnings* of a distinctive literature, and a reliable compendium of the principles and practice of this most ancient art has yet to be written. That there is a great and growing necessity for such work is well known, for no matter how much is acquired by study and long practical experience on the part of individual members of the craft, nor what new discoveries are made, they are practically unavailable to the trade at large, and remain with the individual and his immediate friends. Hence every man has to travel the rugged road for himself, and under such circumstances the best part of a man's life is gone before he can become, in any sense, a master in the art of brickmaking.

(To be Continued.)



Written for the CLAY-WORKER.

## HINTS ON BRICKMAKING.

No. 78.

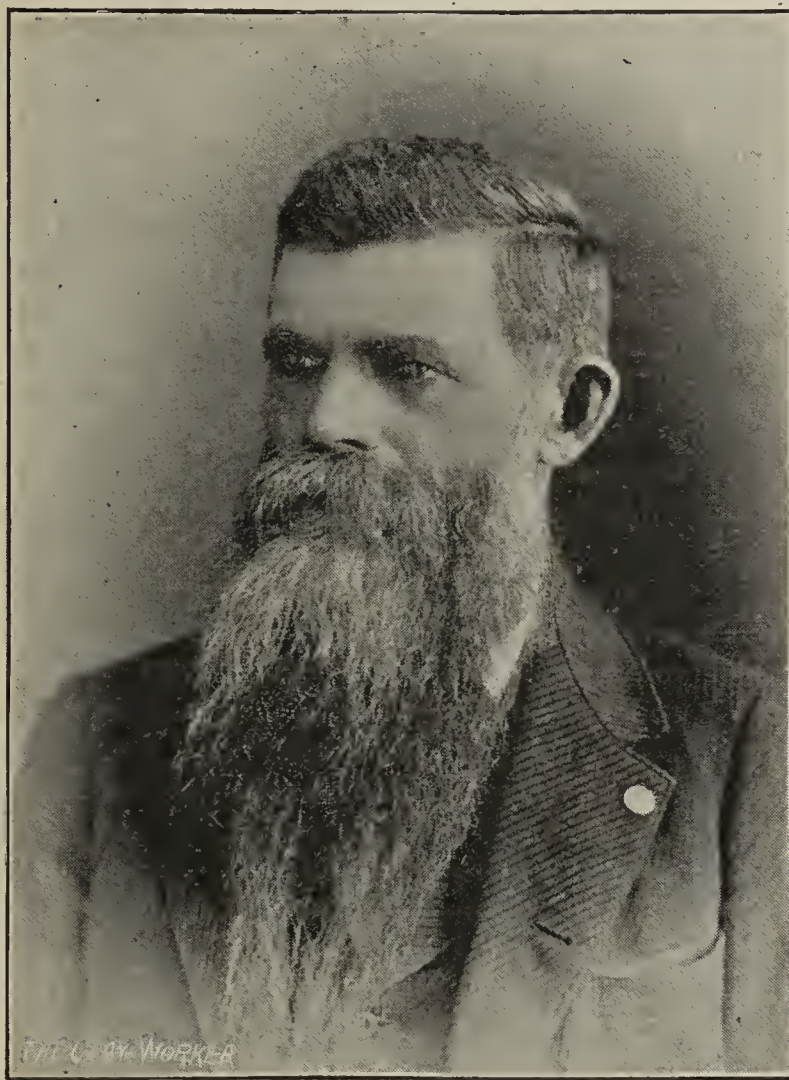
BY R. BRICK.

WHY is it that there are so many failures in the business of manufacturing building bricks? Within my personal knowledge, a majority of all the new plants erected within the past seven years have failed and either abandoned their works entirely or have realized no profits from their enterprise.

There are several causes that are responsible for these effects. Men rush into the business of making bricks without properly investigating the details of the business, thereby failing to count all the cost. When a man gets the "brick fever," he is sure to suffer from an aggravated case. It is usually acute, and in some cases become chronic, and even comic. His friends then give up all hope. He goes to some successful, well regulated brick works and sees the bricks coming from the machine at the rate of *five thousand* an hour, and coming from the dryer and into the kiln at the same rate. At the other end bricks are being loaded on cars or wagons and everything moves with military precision. He then goes to the town office to see the proprietor or general manager. If he chances to strike Philadelphia or Chicago, he will find him dressed in broadcloth, wearing fine linen, a high collar, and a shining two story beaver. If it should chance to be in the latter city he might find him arrayed in full evening dress before breakfast. This is a convincing argument with the novice.

His heart swells until he is obliged to take off his hat as he thinks of the golden time, when he occupies this dizzy position. He decides at once to "Go to" and make brick, and burn them virrified. He next lets it be known that he desires the services of a first-class brickyard man. He very soon finds him, and learns from him that "There is millions (of brickbats) in it;" that bricks are selling at six dollars per thousand, and they can be made, burned and delivered on wagons or cars at the works for two dollars and fifty cents per thousand, leaving a profit of three dollars and a half per thousand, with an output of

fifty thousand per day. Profits are one hundred and seventy-five dollars per day, but he says, to make sure of it we will allow fifty cents per thousand for contingencies, etc., which leaves a net profit of one hundred and fifty dollars, or nine hundred dollars a week, or thirty-six hundred dollars per month—this on common brick alone, to say nothing of what we will make on repressed and ornamental and paving and enameled brick. His practical man understands how to manufacture any and all these lines of clay products. Of course the demand is unlimited. No trouble at all about that, because of the



J. G. SHEA, Brick and Tile Manufacturer, DANVILLE, ILL.

superior quality of the bricks we will turn out. Then, with visions of sugar plums dancing in his head, he goes into the enterprise. He fails to investigate the record of the man that makes for him this rainbow hued promise, to see if he has accomplished as much for some former employer. He cannot demand from him a diploma, for our craft has established no standard of excellence for its professionals; they are free and independent.

In this reckless manner, men enter into the business of making brick. They see a well regulated brick plant and fail to comprehend, that connected with that

plant, there is a skillful, competent, careful manager, and that without such a manager the plant would be a failure. If men like the one mentioned, who are eager to go into the business would only stop and figure rationally. It has been said that figures won't lie, but liars will figure—how true.

First, let us see something about a thousand bricks. The average weight of one thousand bricks of standard size when burned, is five thousand pounds. They are worth from five dollars to seven dollars per thousand at the works. The raw material must be dug or blasted from the clay mine loaded onto carts or cars, and conveyed to the machine. Here it is moulded into bricks. Here again they are loaded onto barrows or cars and taken to the dryers. They are dried at considerable cost for fuel. When dry they are taken to the kilns and piled up ready for burning. This item of expense is a large one, fuel costing a large sum, also labor of burning, and unless great skill and care is applied at this point, a large per cent. of your ware is either damaged or entirely ruined. When they are burned they must be taken from the kiln and loaded on cars or wagons for shipment. It is plain that a vast amount of labor and fuel is required to accomplish this result.

Now let us see what the brick-maker gets for his manufactured product, provided he gets it to the car, or for as much as he does get there. He gets the magnificent sum of from two dollars to two dollars and fifty cents per ton. Think of that—an average price of two dollars and twenty-five cents per ton. Let all who have had no experience in this business

think over this point; think of the price per ton he is to get for his manufactured product.

In addition to the expense of operating the plant, there is the town office, where the finances are looked after.

After the ware is put on the cars, in some cases, the trouble has just begun. The buyer may reject the brick, or, what is still worse, the contractor who used your bricks, in some instances, fails to pay for them, and, expense of collecting consumes the profits.

Again, men are misled as to the amount of capital necessary to build and operate a plant where he expects to



put in one dollar, two, and in some cases, three dollars, are required. The amount required varies, somewhat, with difference in cost of material. It has been pretty well established, that in putting in a plant with modern appliances, the capital required is at least one thousand dollars for each one thousand bricks daily capacity of the works. A plant, to turn out twenty-five thousand bricks per day, requires twenty-five thousand dollars capital stock; this applies to plants that run all the year and dry by artificial heat.

So long as men go into the business blindly, overproduction and low prices will rule. If it was practicable to procure reliable statistics of the number of brick plants in our country, the amount of capital invested, giving the per cent. that earn good dividends, the per cent. that earn practically none—very small profits, and the per cent. of complete failures, it might have a salutary effect on the would-be brickmakers, and when we found a man threatened with "brick fever" give him a dose of statistics. An ounce of prevention is better than a poor, busted brickmaker.

Written for the Clay-Worker.

#### DRY PRESS HINTS.

##### Sixth Paper.

##### BURNING A DOWN DRAFT KILN.

It may be that the bulk of my remarks are already known to the average brickmaker, but I am not considering them, my remarks being addressed principally to brickmakers who are young in the business, who have found by a sorrowful experience, that something was wanting in their process or mode of manufacture. I would not have you lose sight of the fact that *we* are using a down draft kiln, if *you* are using an up-draft kiln, let me recommend you to read and carefully digest the article on "Settling a Kiln of Bricks," by "R. Brick" in the June issue of our trade journal. It tells you just what you want to know, in all that applies to up-draft kilns, but it does not help *us* out any, so we must proceed to describe the operations of burning a down-draft kiln of dry press bricks.

In my last paper we had just got through drying off or watersmoking, and as we were doing this by the up-draft system described in that paper, we have now to close up the holes used in that operation, and turn our heat down through the bricks. We will, if you please trans-

fer the coals from the aforementioned holes to the regular kiln furnaces, leaving the sight holes in crown open until the drying holes are all stopped. It may now be presumed that we are commencing on the all important operation—burning our bricks. I have often been asked for "directions" that is, to lay down some code of rules, which would enable some younger brother to carry this operation to a successful termination. To do this completely, so that it would cover all contingencies is an impossibility, so the most and the best we can do, is to lay down some general principals, by the following of which our Y. B. may benefit both his credit and his pocket book. No writer, be he the proud possessor of a national reputation, or only the admired of a select few, ought to announce his views, or theories, or deductions, as infallible, because in so doing he is also announcing his own fallibility and also may be leading some Y. B. into a costly error. Rules to be efficacious ought to be made on the spot, to order, and changed as often as circumstances demand. I am of opinion, that if we conducted our business more on principle and less on rules, success would oftener crown our efforts. So by your permission we will let rules "slide" and announce that there are certain principles that must be followed to attain a desired end. We will endeavor to bring a few of these to your notice, hoping that the knowledge may benefit you as it has the writer. They are not theories brother, but hard-shell proven facts.

Before commencing to fire in your furnaces, see that the grates are entirely clean of clinkers, for you must understand that when the calculation for grate-surface area was made, no allowance for "clinkered" or defective grate bars was included, so to be economical (and that means a heap) see that they are clean. This point attended to, you can start up your fires. Leave open the caps on kiln arch for about an hour so that the steam absorbed by the arch when watersmoking may be carried off and not returned to the bricks. As soon as you are satisfied that this has taken place, cover up the holes and start the heat down through the bricks, using a *full damper*—i. e. having damper wide open. I fully explained the wisdom of this course in a previous article on "drafts." If your furnaces are fitted with doors on ash-pit, as well as furnace doors, it is well to keep them partly

closed, or only the air holes open to prevent the too rapid consumption of fuel, and consequently keep down the heat at this early stage. As a part of this plan do not close the furnace door, but allow sufficient air to pass through to keep up circulation.

Now get your "guage rod" or "settling rod" as some call it, and measure the distance from the top of sight hole to the bricks as set, making a note of each measurement and its section. It will be well to lay a brick flat (fire brick preferred) under each hole to measure on. The amount of settle necessary to a perfect burn will depend on the nature of your clay, and the height you set your bricks. Take an example, I set my bricks twenty-eight (28) high. To burn them hard I must shrink each brick one quarter ( $\frac{1}{4}$ ) of an inch, making seven (7) inches total settle. A true settle on this measurement ensures one a good burn. A false settle is like a false balance, an abomination to the Lord (of the brickyard) for it puts the true balance on the wrong side of the ledger. Care and watchfulness are the best preventatives.

We will now proceed to manipulate our fires, to work up a heat sufficient to burn the bricks, and it must be our care to do this as quickly as possible without damaging the bricks. I am not an advocate of slow burning. It is a practical belief with me, that a brick is better for any purpose, and especially for fine work, ornamentals, etc., if the process is carried to completion in the shortest possible time. This can only be determined by experience, and the limit either way is well worth the discovery. In common parlance I believe in giving bricks all the heat they will stand, and as fast as they will take it. One very fatal error we must guard against, is both common and costly, and that is overburning the top before the bottom is hot. You ask how am I to avoid this? Easy enough, by firing carefully and steadily, and by the admission of the necessary air, at the proper time, and at the proper place. It is *not* the correct thing to get the top so hot that you have to throw the furnace doors wide open to prevent a "melt." It is costly as regards damaged bricks and wasted fuel. It is a *mistake* to admit air into a kiln of brick, during burning at any place beyond the throat and bog chamber, but the *principal* place for its admission is through the grate bars, entering at this point, it will aid, instead of retarding combustion. This means, keep your fires *thin, level and clean*.  
PRESS.





THESE Summer months, there are a thousands things to make a visit to the Exposition a pleasure long to be remembered. Jackson Park is blessed at all times with a cooling breeze from the lake, and it is sufficient to temper the warmest days of the season, and that is something, for the thermometer in this clime is as energetic and industrious as elsewhere; and there are periods when the heat seems almost too great to be born. But at Jackson Park, comfort is obtainable even upon such days, but only at the expense of a certain amount of self containment upon the part of the visitor. One must beware of too much excess of movement, and the sun is to be avoided as much as possible. The great buildings are grateful havens of shade, and care upon the part of the visitor will so arrange the sightseeing, as to be under the roofs as much as possible.

Perhaps out upon Midway Plaisance more than anywhere else, is seen the effects of the sun. Umbrellas are the go, and only the Dahomey warrior seems to appreciate the virtue of a sun bath. Their skins glisten in the sun and lead us to suspect that some of Armours butterine has been employed in their decoration

But if the warm sun adds some to the discomfort of energetic "doing" the Fair, it has brought to perfection the natural beauty of the place, and added the charms of flowers to the decorations of man. The various buildings are all adorned with lawns and foliage plants, for the landscape gardener has been ambitious to do justice to the palatial buildings, that bid defiance to the canons of ancient architecture, and stamp modern achievement with the glory of advancement. Beauty in buildings is not a lost art. Some of the best critics of Europe have marveled over these buildings, and admit if they had not seen them with their own eyes, they would have laughed at their specifications, for

such bold designs are entirely opposed to the theory of art, and are essentially innovations.

A beautiful spot in this place, where all scenes are charming, is upon the Wooded Island. It is in the Lagoon, and upon all hands rise the beautiful palaces of white, shimmering through the green of the trees that reach to the very marge of the rippling water, and dip their leaves into its cooling surface. The wooded island is given up to the gardener, and to the display of all kinds of foliage, shrubs and trees. However one fails to deem it in the light of an exhibit, and is apt to enjoy it as a charming piece of nature, so cunning has been the hand of the decorator. It is a popular spot, and the benches that are placed in the shady nooks are seldom empty. Very often may be seen little family groups, that have assembled here to open the lunch basket. A very old but winsome faced man asks if there is a

quiet place where he can eat his lunch. Indeed there is, back a few rods under a great oak there is a splendid place. A little indentation of the shore acts as a haven for some of the water fowl, and they pluck their plumage and bask in sunshine. I notice that my white haired friend shares morsels of his lunch with them, and in a few minutes he has sealed a firm friendship with the ducks and pelicans.

From many of these nooks, are to be obtained the most charming views of the great buildings of the Exposition. Elsewhere one fails to obtain the perspective that goes so far to make a splendid picture, and the general effect is lost in the study of detail. And again, the addition of nature's foreground is a great feature in the scene, and together, they add beauty to each other. Then the frequent passing of a gondola with the bright colors of the rower's garb, and the brilliant boats themselves; these too are features in the little vistas that present themselves at all hands. Then in the island itself are some spots of particular interest. The Rose Garden is in bloom at all times, and the perfume from it is very sweet indeed. Some of the varieties are very rare, and a few are shown in this country for the first time. Other plants add their brilliant colors to the scene, and the enchantment is made perfect by the little temple to be found at the north end of the grounds.



THE HORTICULTURAL BUILDING AS SEEN FROM THE WOODED ISLAND.



## JAPANESE ART.

This is the Ho-o-Den as it is called, a structure built by the Japanese and presented to the city of Chicago. Even brick people find it interesting. It represents an architecture that finds expression in paper and bamboo. The name Ho-o-Den means in good English "the Temple of the Phoenix." The Ho is a fabulous bird long known in the religion of the Japanese and from its supposed qualities of mercy and holiness has become a favorite motive for the decoration of all things pertaining to their religion or its rites. We have often seen it in the Japanese paintings, a bird with a beak of a sparrow, and the head of a cock. The neck is long and



the colors brilliant.

In the land of the rising sun, a notable temple has stood for many ages in Uji, near Kiota. The temple on wooded island is a copy of that famous Uji temple. The several rooms in this temple are furnished after the designs of temples and palaces of the native land, and are meant to typify the three periods of Japanese art. It is an interesting thing to note the style of architecture, and the interior decorations, these latter having been painted by some of the most noted painters of the Japanese Capitol. Upon the walls and ceilings there are a host of designs and motives that would prove a treasure house of pattern for the tile decorator, and even for chinaware. In many cases, if the colors could be fastened in the kiln, the motives would be extremely brilliant for tilings. A careful selection would have the additional feature of a romantic interest that could not fail to follow even the designs from the temples of that strange fantastic land. For in many instances there are strange stories and folk lore that is closely connected with them.

This is one of the old temples, and the dust of centuries alone makes it sacred in the eyes of the present age. Its use is lost, and there is nothing about it that adds to the welfare of mankind. The history of man is divisible into three epochs or eras. That period of his existence when the great question asked of him was "Are you?" marks the beginning. Then came the question "What are you," but to-day the point is, "What do you do?" Viewed from this standpoint and measured by this standard, the little temple of Uji must take the last seat beneath the gallery. It does nothing but arouse a thought of the past.

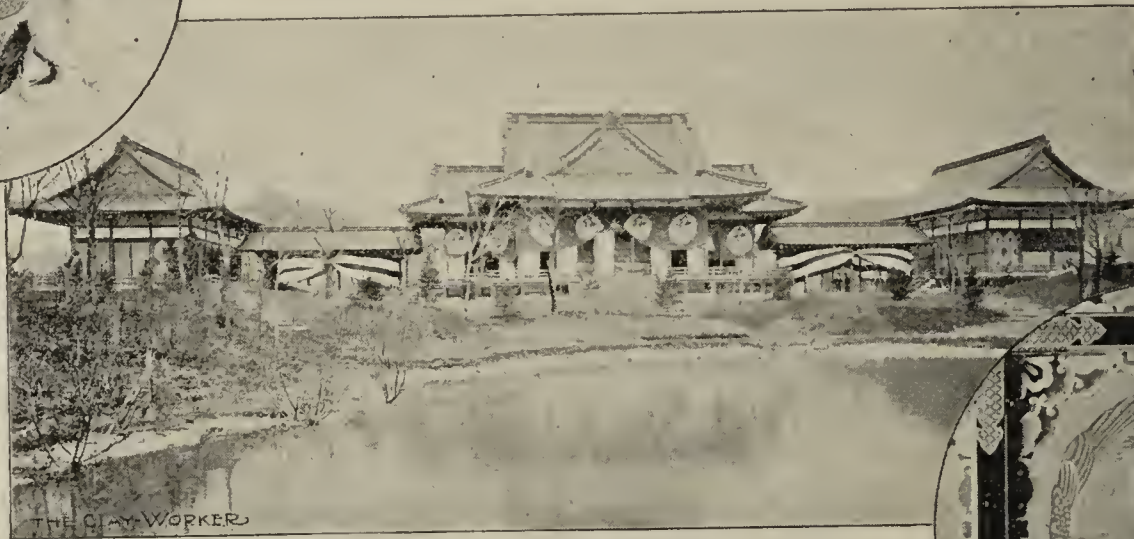
## CLAY THE FIRST CONSTRUCTIVE MATERIALS OF THE ANCIENTS.

The nations of Europe have for centuries used glazed tiles for the purpose of roofing their structures, but it has remained for this age to see the perfection of the art. And it is interesting to

be her age. She is in a splendid state of preservation, though not the belle that she was in the days of yore. A number of other skeletons are added to the collection, and surprisingly enough, some of the skulls not only show a splendidly developed form, but have traces of blonde hair upon them. The princess was found wrapped in soft sea island cotton and a cloth of yucca fibre, and elsewhere in many ways are shown evidences that the people were well acquainted with weaving and spinning. But of metals there has never been found a trace, and every thing is tied with fibred strings.

But the artistic talent of these mysterious races seems to have found greater scope in the pottery, thousands of pieces of which have been discovered in every stage of its development. And it has been found in every state of preservation as well. But enough of it remains unbroken to show that some advance has been made in the decorative art.

Geometric designs of many kinds are worked out and even an attempt has been made at figures of men and animals, these however bearing



THE JAPANESE TEMPLE ON WOODED ISLAND.



pass to the extreme end of the Exposition grounds, south of the Agricultural building and by the shore of the South Pond, and there find the types of another civilization of a people who were as conversant with the properties of clay as their fellow mortals of this day. I refer to the cliff dwellers, which people of old are brought to the attention of the Fair visitor by a replica of the cliffs in the Moncos Canon in Colorado. The structure is built of sheet iron, but by means of the knight of the Brush, a veritable cliff has been consummated and with a slight effort of the imagination, we can realize the real article. In the interior of the erection is a veritable museum of the unknown people, a great collection of relics such as have been found in the explorations of a number of years. There is shown a princess who is 10,000 years old, the scientists having computed that to

every appearance of having been constructed with a rule, as they are decidedly angular.

Besides these relics in the interior, a portion of the exhibit is made to represent the rooms as they are in actual size. The stones of which the houses up in the cliff caves are made have been brought and replaced as they were in the original. The fire places are shown, fires that burned when the early events of Genesis were not yet dreamed of. In other places by means of paintings and miniature fore ground, one is made to appreciate the construction of the cave towns, and to see the detail of the work and to imagine the home life of these remarkable people.



The use of pottery in the every day life of these people brings us to the fact that it was baked in the fire and further more was capable of containing liquids which would indicate some sort of a glaze. However this is not apparent to the superficial glance, as it has much the appearance of a light terra cotta. Thinking of the things that are shown here, we are reminded of the fact that in the industrial arts, clay was about the first substance to make itself a power in the daily life of man. In all probability it was the beginning of the very fundamental principle of the artizan, the forming of something. Clay as the only substance naturally capable of being moulded without the intervention of preparative thought, in all probability was the first material that men made into something.



THE LIBERTY VASE.

We are surely not far wrong to deem it the beginning of civilization and the first mile stone in the progress of man. Not the first, but certainly some of the first milestones are those clay utensils that are to be found in the exhibit of the cliff dwellers.

## SOME BOHEMIAN VASES.

In the Austrian section in the Liberal Arts Building, there is shown among a great many other interesting things made of clay, and in the line of ceramics, a pair of vases known as the Liberty and Progress vases. They are made by the Victoria China Works, at Carlsbad, Austria, and the designing was at the hands of M. Griel, chief artist of the Imperial Theater at Vienna. The detail of the paintings have been made with the greatest care, and the museums of art and history in Europe have all been called upon to furnish truthful

costumes, faces and surroundings. For this reason the vases become of more than ordinary interest, as they take to themselves the value of historical paintings.

The pottery, although the youngest in Bohemia, has taken a place in the front rank, and at this time 750 people are employed within its walls.

The two vases mentioned are tall and graceful in form, the pedestal upon which they rest being high and part of the ceramic. Upon each one of them are pictured five events in the world's history, these being chosen because of their great moment in the passage of events. The vase Liberty gives, in the main panels, the signing of the Declaration of Independence, and Lincoln's cabinet discussing the abolition of slavery. The first is a spirited picture of the council chamber, in which Washington is the central figure, and about him are grouped the other noted men who appended their names to that famous document. The group of President Lincoln's cabinet is equally interesting and true to life. Over the martyr president stands a figure of Liberty, holding a drawn sword which is symbolical of the fact that freedom must be guarded jealously and with a strong hand. The smaller panels in the lower portion of the same vase represent the discovery of steam power by the early engineers, and the discovery and use of electricity. In the latter, Gilbert, Boyle, Franklin and Edison are the presiding geniuses. At the neck of the vase is represented the landing of Columbus. This latter theme is now in every one's mouth, and requires nothing to bring clearly into the mind the struggles of the navigator up to the final cry of "Land" from the mast head of the Pinta.

The other vase is that of Progress, and the main panels are given to the depicting of the signing of Magna Charta, and the taking of the Bastille. The former event is pictured as taking place in a pavilion of the battle field, and above the central figure of the King, is a figure of the Fruits of War. Stephen of Langton, the other prominent figure is urging the signature of John. The taking of the Bastille is a picture of great spirit and power. The Arisians are making the attack upon the walls, and are gaining the portals.

The smaller panels of the base symbolize the inventions of gun powder and printing. The former is a martial

representation of the Gods of war, while in the other is shown the famous hand press of Guttenberg, and a medalion portrait of that genial old man.

The upper portion of the vase is given to the battle of Sempach, the battle that perpetuated the Swiss confederacy in its struggles against the yoke of Austria. In one place is shown Arnold Winkelried, who has pressed forward and siezing as many spears as possible has born them down so that his followers can reach over with their shorter weapons. On the reverse is the Duke Leopold of the Austrians who loses his life in the attempt to retrieve the defeat that is inevitable.

Both of these vases are intensely interesting, for the reason that they bind closely into the development of the world, many of the triumphs of the new world. Washington, Lincoln, Franklin, Watts,

Fulton and Edison take their places with the patriots and artizans who assisted in the development of Freedom and Progress.

Then, as a ceramic, they are notable, and it is a proud thing for the young firm of Bohemia to take such a prominent place among the clayworkers of the world, of whom the most noted are represented at the Exposition.

## A TERRA COTTA TEMPLE.

Among the exhibits in the Building of Liberal Arts, there is one by the Northwestern Terra Cotta Co., of Chicago, that covers that firm with glory. Upon all hands and by those who are experts in the trade it is admitted



THE PROGRESS VASE.

to be one of the finest little pavilions that was ever constructed of the material. It might very well be called a miniature "Minster," for it is very much like some of the old cathedrals in the type of its design. The design was,



by the way, the work of a young man, Mr. Heun, and much of the credit of the exhibit is due him, while the faultless workmanship with which his idea has been carried out, speaks well for the company.

The terra cotta cathedral is next door to the brick palace that was illustrated and commented upon in the July CLAY-WORKER, and is dividing honors with that structure. The ground plan of the terra cotta pavilion is an octagon, and the walls rising for the distance of about nine feet, are finished in a long sloped tower. Each one of the sides is pierced with a window, two of which are continued into doorways.

The style is an old Gothic, and the details are in strict conformity to the type. Over the doors and windows, all is open arabesque work and in the upper portions are introduced the beautiful rose windows devoted in the old world to rare stained glass. Each corner near the roof is deeply niched and standing in them, industriously moulding mural ornaments with their deft little fingers are half Cupids, half children, these being the good genius of the trade. Their modeling is skilfully done and the interested, intent expressions of their countenances do honor to the sculptor.

All of the columns in the miniature cathedral are richly ornamented, and the capitals are beautifully elaborate. The interior is as richly and carefully wrought as any portion of the outside. The ribs that strengthen the corners of the roof, the portion which in the real structure would be the rafters, are supported by well modeled female heads. The walls are relieved with a raised

tracery and the panels are ornamented with geometrical designs.

The firm has been a singularly successful one in their many years spent in the manufacturing of terra cotta materials for decorating and fireproofing. Since the new era of skeleton construction, the field for such work has grown to be an immense one. The doctrine has been spread in the circles of eastern architects that the artistic treatment of

a text book for the eye in this class of structural material. Some of them are the "semi glaze," which is one of the features of the company's manufacture. This material is the best terra cotta, with a weak glaze, the latter eliminating all chance for efflorescence and dirty tints that often occur in the plain surfaces. However, it is perhaps true that the dull surface is the more popular with the architects. There is

also a most excellent imitation of sgraffito, or, as it is better written, scrafito. This is a colored design upon a tinted ground, all being perfectly flat. This latter material makes possible an imitation of the old German renaissance types, and is destined to become popular in the course of a few years.

In another place it is noted that some handsome terra cotta is introduced in the British Building. It will be of interest to know that this is the work of the company we are considering. They also made the handsome portals of the Wisconsin Mineral Exhibit which will be taken up in another place.

A prominent specimen of glazed work, is a column placed before the little cathedral above spoken of. It is a perfect Corinthian, and is surmounted with a bust of one of

the founders' of the concern. Thus is honored the pioneer.

#### WISCONSIN CLAY AND CLAYWORKERS.

In the Wisconsin pavilion in the Mines Building there are a number of interesting things in the clay line. The portals have already been spoken of as being the work of the Northwestern Terra Cotta Company. It is a very handsome piece of work, by far the handsomest thing of its kind in the



EXHIBIT OF THE NORTHWESTERN TERRA COTTA CO.

terra cotta is in a measure confined to the East, and to New York and Boston, but the exhibit of the above mentioned firm is of such a nature as to brand the doctrine a false one.

In close connection with the same exhibit, are shown some samples of the overpieces that have been utilized in many of the great sky-scraping buildings in the city of Chicago. A dozen or more are shown, and it is essentially



Exposition, and Chicago people are proud of it.

Another interesting thing in this pavilion from Wisconsin is the display made by the Frackeltons of Milwaukee. It is claimed, with some show of reason, that the Frackeltons know more about clay than any other two people in the United States. At any rate they have some very handsome pieces of special makes in a variety of wares. As a specimen of the Milwaukee clays, they have made an irregularly crimped bell shaped piece out of the natural clay as it comes into the factory without any admixture. The machinery utilized in the making of this particular specimen was a coffee mill for grinding the clay, a rolling pin for rolling the sheet out in the manner of a pie crust, and the fingers for moulding it in the irregular bowl form. This as it has been baked in a sagger placed over the arch of the oven, gives upon being tapped lightly, a tone similar to a pure copper bell. It is a remarkable sample of the material, and stamps the product of the Milwaukee fields of superior quality. Beside this piece are some others of equal interest, one a colored tile that was complete in 24 hours from the taking up of the ball. It is an over glaze and fired once, but has the appearance of the finest underglaze tile.

A splendid imitation of the Allahabad ware of the East Indies is shown, being in fact, the same in material, so far as the true constituency is concerned. There is a piece that cannot be told from the Royal Worcester, and a long necked vase in gold bronze is particularly beautiful. A number of magnificent pieces are shown in salt glaze, the results being very attractive. Of course all of the characteristics of the ware are preserved, and a large growler and punch bowl carries a pleasant thought. The latter is decorated in blue with a flowing design in grape vines and fruit, and is to be presented to the Caravels in the near future.

Frackelton himself is at the same time an expert in clays, and a very interesting conversationalist upon the topic. Those who are interested in such things will find him most entertaining, and a world of anecdote and information is, in a manner, constantly upon tap.

The Wisconsin brick people did not make the display that they ought to have done as the industry is a noted one in the state. As a matter of fact they have only a few styles of plain and

ornamental building bricks, these being from the kilns at Menominee. The clay that has entered into the portals of the pavilion was brought from Milwaukee, and the people who have charge of the state mining section claim that the beauty of the structure is due to the clay. However, that is necessarily a question of minor consideration. The portal itself is a grand archway, the outside being flanked with square columns decorated with relief. The inside is flanked with classic pillars, fluted and capped in the Corinthian style. The designing of the entire structure is handsome in the extreme.

[To be Continued.]

Written for the CLAY-WORKER.

#### A DIFFICULTY ARISING FROM SULPHUR COMPOUNDS IN CLAYS.

THOSE who have inspected and studied clay deposits, are not only familiar with the pure material as it exists in different strata in the ground, each representing a particular grade of clay in appearance and composition, but learn to observe foreign substances which present themselves occasionally. In localities one might find in limited quantities, shells, stones, liquites, pyrites, etc., all rendering the clay useless for particular purposes.

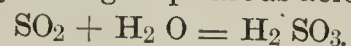
It is quite bad enough for these impurities to destroy the value of a clay which is excellent in other respects, without giving rise to further difficulties.

Pyrite seems to make itself doubly troublesome at times, by not only affecting the refracting quality of a fire clay, but by decomposition yielding a substance which contaminates all the water in its locality to such an extent that it cannot be used for boiler purposes.

If you cannot bear witness to the fact of having seen pyrite, the sulphide of iron, in clay banks either in the form of a sharply defined cubical crystal, perfect in its shape, and of a rich yellow color or slightly decomposed, you will certainly admit of having seen such statements in literature. In the kiln a brick, made of clay which contains pyrite, before the burning is complete, will be covered with black holes, showing that a part of the pyrite, the sulphur, has volatilized leaving the iron which has fused with the silica of the clay, yielding a glassy substance. These crystals, when in the ground and subjected to the chemical

action of the air and moisture, decompose and gradually lose their lustre.

The two component parts of the sulphide of iron, the sulphur and the iron, separate, and upon close examination we find them in different places and completely changed in their chemical combinations. The oxygen of the air has caused this separation. In the presence of moist air these two elements having yielded to their respective affinities for oxygen, united with it, thus forming two distinct compounds, sesquioxide of iron ( $F. 2 O_3$ ) and sulphur-dioxide  $SO_2$ . When first formed the oxide of iron might be in the "ous" state, or proto-oxide of iron, though it would be converted into the sesqui-oxide almost immediately. The moisture in the clay would take up the sulphur-dioxide ( $SO_2$ ), yielding sulphurous acid.



The sulphurous acid unites with an atom of oxygen and the result is sulphuric acid, which has been formed from the sulphur of the iron pyrite.

If any water procured about clay banks, shows a great tendency to corrode iron and destroy boilers in which it is used, the assumption that the water has been made acid by the above mentioned decomposition is a fair one, and tests should be applied to determine its presence or absence.

Boiler inspectors may talk to you about the mysterious galvanic action which, in their opinion, is making the trouble; but, before you adopt their theory as a reasonable explanation, be very sure that the action is not purely chemical.

CHARLES FERRY.

#### THE KEY TO SUCCESS.

THE inspirations of life—what are they? High as the heavens they may be, but this is the exception. Sordid and narrowing they too often are, and another dollar, or another bottle, or another horse is too apt to be the highest inspiration of the average man.

Each age, each year, each week, has its own variety of inspirations. Fashions form themselves out of the tendencies of the hour. A wise advertiser is he who wins success by taking a broad view of human ambitions as a whole, but who does not overlook the passing inspirations of the day. The theatre is successful when it follows the trend of the hour. The statesman is successful who measures the tendency of the age; and whether he is conscious of it or not, the advertiser is only successful in so far as he succeeds in catching the spirit of the times.—*Flame*.



Written for the CLAY-WORKER.

HINTS FOR AMATEUR CLAY-  
WORKERS, No. 2.

**P**RESUMING that some of the young readers of the CLAY-WORKER have gone to work after my suggestions in my first paper, and possibly find themselves in possession of a plaster paris toad, they might most naturally be looking for a little advise as to how



best to treat him, for a plaster paris caste is a very perishable substance, compared with the genuine Terra Cotta article.

Well, gentle reader, if my last instructions were carried out and I succeeded in making myself understood, I must congratulate you upon your success. I find that some of my young friends who are under my immediate supervision; are more anxious to seek unbeaten paths, to arrive at some possible result, than to first accomplish the desired result by the old groove; and even when master of that, to look for the short cuts and improvements. In producing any article that might be classified with the artistic, it is never measured by time. The great artist, Lancia, when asked to inspect the work of a young artist, who excused his work as having been done quickly, said "We don't measure quality or genius by time, if it is a good thing and cost you years, it's a good thing yet, and if done in an hour and done well, its value is the same as if it had taken years."

Now this poor little "Nibs" that you have by you, must look rather fragile just sitting on a leaf, (if you have tried and did not get him correct, and want further information, just ask through the CLAY-WORKER). So if you have no idea of how you would like to mount him I will suggest one. Say we choose an oval pedestal, draw the profile of a suitable moulding distinctly on paper and paste it on to a piece of sheet Zinc, take a fine chisel and cut it out neatly and file up distinctly with a fine file, take and mount it on a small piece of half

inch wood, cutting out the same pattern in the wood about an eighth of an inch smaller, tack down to the board and adjust a little stay, or what is called a horse to steady the mould, put a screw in the top of a small piece of wood, and fix this center on a board, which you give a wash of thick soap suds. Soap is the most convenient separator for plaster and will also prevent the plaster from adhering to any other substance you don't wish it to adhere to, so soap your bench, mix your plaster of paris and pour out on your working bench, if you have two of these centers on your bench, you can run two with the same gauge or mixture of your plaster; start by building the soft plaster around the center, if the plaster sets before you get the circular moulding run up fine enough, remove the superfluous plaster that is set, clean your mould, gauge some fresh plaster and run to a finish, continue if you have to gauge again. Now two circulars make an oval, or its one of the ways to make an oval, (see

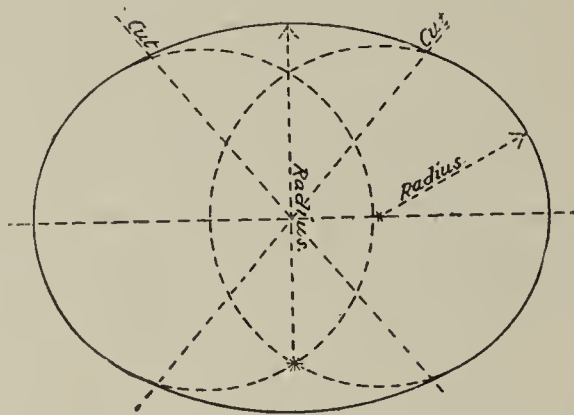
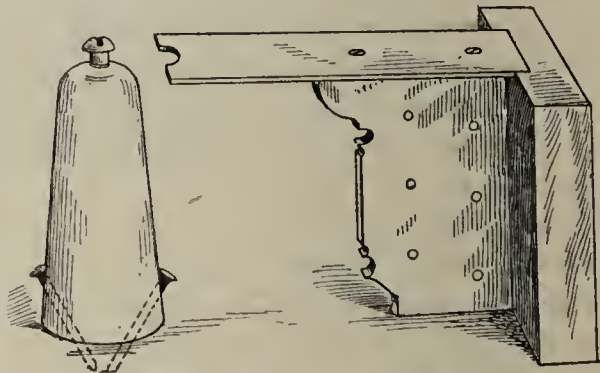


figure). When you have that formed in, run plaster and cut to the exact size, per diagram, its necessary to make two pieces of plaster, stick thoroughly together, where the pieces are to be joined, cut an under cut or dove tail into each, and thoroughly soak both pieces in clean water. You can mix sufficient plaster, as directed before, and in this case avoid stirring the plaster whatever, and while in soft condition fill the dove tails and compress the pieces together, laying on a well soaped bench, stop up joints with the plaster, and tool up to a perfect finish, thoroughly soak the toad that you have on the plaster leaf and stick him on the now oval pedestal that you have; when thoroughly stopped and cleaned, soap him up with a thorough lather of soap to stop up all his absorbing propensities, you can remove the lather with a dry brush, set him on the bench and he is ready to mould.

Now, the purpose of the mould is to enable the moulder to make any number of reproductions in clay of the sub-

ject, and to admit of this the mould must be made in sections or pieces; you must now draw on your inventive genius to see how large a piece you can take off of your model without damaging your clay caste, that you presume later on to have in it, and at the same time avoiding any dead locks that would prevent your plaster mould from coming apart easily. Good practical moulders would all start at some other point of the toad than you might, and still produce a good mould, so suppose we start to make a piece under his chin. We will first roll out a piece of clay. The old whiskey bottle you had to give his "Nibs" his medicine, will do for a rolling pin. Roll out to about one quarter of an inch thick and cut into strips, quarter by quarter, lay a strip over his nose down the side of his fore legs and to the edge of the pedestal, gauge your plaster, (a tea cup full will be found sufficient for all you require to mould his "Nibs"). When thoroughly gauged apply your plaster into the apartment inside your little clay wall, taking great care to avoid air holes, and plaster it up about three quarters of an inch thick. You may possibly have to pull this mould off so many little toads, every imperfection will show each time. Bend a piece of wire into an eye, leaving the ends of the wire eye embodied in the plaster and the eye so it can be hooked, but bringing the entire piece of plaster with it. Continue putting in alternate pieces like this, trimming each piece down with a knife. Cover all the eye holes with a piece of clay, and when you can see that you can take off, in one piece, the entire balance of the mould; that there is no piece which will hold under cut, having thoroughly soaked every piece that might adhere to it. Mix a final gauging and make an en-



velope that will hold all other pieces. When set, carefully remove the envelope or last piece. Continue taking off the small pieces and replacing them into their case or envelope of plaster. Stop any imperfections up with plaster. Your mould is complete, ready for the application of clay, of which we will talk in next month's CLAY-WORKER.

M. JAY.

[To be Continued.]



Written for the CLAY-WORKER.

## HOLLOW BRICK.

**I**N the year 1863 I had, as a branch line of my main business, the superintendence of a small brickyard near to the Russian border in Europe, and I remember that my foreman used to make a small amount of hollow brick by means of a very rude machine which was run by three little girls about fourteen years old. Those brick cost the least for production and brought the highest price in the market. They were of exactly the same size as common brick, but the stretchers had two holes, each about one and a half inches square, extending through the whole length of the same, and the headers had four holes of the same size extending through the whole width of the brick. I do not remember for what purpose those brick were sold and used, but in 1866 I was engaged in a larger city, building large business blocks with big cellars provided with arched ceilings. Property was very high in that city; building ground very poor; only fire-proof buildings allowed. The climate was very severe, subject to very sudden changes. The reader will ask what has this to do with hollow brick, but I must ask him to have a little patience. At that place I learned for what purpose hollow brick were to be used, and, I must say, I was surprised to find that the farther west I wandered, the less hollow brick were used, and, crossing the ocean, coming to the highly civilized American states, I hardly found a trace of them. But to-day the use of hollow brick commences to be more frequent in this country also, and I believe, if architects and builders would not be in such a great hurry, and would figure out the great strength of those brick and consider the great usefulness of the same, one-fourth of all the common brick used for building purposes would be made hollow. The question arises, what are the advantages of hollow brick for building purposes and what position has the brickmaker to take in regard to the manufacture of the same? And, finally, the filling of our pocket-books and increasing of our banks accounts, being the main objects of our business transactions—How does the manufacture of hollow brick pay?

The hollow brick of the manufacture described above weigh about one-third of common brick of the same size; therefore are easier handled, cheaper to

transport, and can be used for constructions where solid brick would add too much to the weight of high structures. For the construction of cellar-arches, arches between  $\pi$  iron girders for ceilings or supporting fire-proof stairways, the hollow brick are unsurpassed on account of their light weight not interfering with strength or solidity. A hollow wall built of hollow brick is the best non-conductor and a house built of such will be warm in winter and cool in summer. A chimney built of hollow brick, joints well filled with mortar, will always have a better draft than any other, because, sudden changes in the outside temperature don't interfere with the temperature in the chimney flue. This reminds me of a ridiculous misunderstanding of the quality of hollow brick.

All farm and country houses in the eastern part of Europe are provided with permanent heating stoves which are a part of the structure. In the cheaper houses they are built of brick and make a house very comfortable and warm especially giving the rooms a very even temperature all day long and not cooling very much at night time. I told one of my farmer friends that a brick building constructed of hollow brick was very much warmer than a house built of common brick. He owned several little houses where his working men lived. Some of those houses needed new stoves, and he thought to do a wise thing, to build the same of hollow brick. Meeting him after some weeks again, he said to me: "All your theory is humbug." First I did not understand him, but he added: "I had to break off all my new hollow brick stoves because building the largest fires in the same they always kept cool, and the poor people in those houses nearly froze to death." The reason was, the hollow brick of the surrounding wall of those stoves did not allow the heat created inside to pass through to the outer surfaces, consequently had no effect upon the temperature of the rooms.

At the first glance, without figuring, it seems as if the hollow bricks would be very weak but not going into particulars in regard to calculations about the resisting strength of hollow brick, I will mention a practical case of construction of my own experience. I had a contract to build a vault of eighteen feet span, with very light resisting walls, and with only two feet pitch, moreover circumstances did not allow more than

five inches thickness of the arch. Finally we wanted that arch to be as light as possible. Theoretical calculations showed that good burnt hollow brick had twice the resisting strength necessary, nevertheless I was afraid to use them; but an architect of vast experience confirmed my calculations. I built that arch of hollow brick and the same stood after ten years, as good as new, notwithstanding a brick pavement was built over it, and heavy wagons passed through the room over it frequently. I would recommend to use hollow brick everywhere, where transportations of long distances would increase the price of heavy solid brick too much; for all kinds of country houses, barns, stables, etc., not over two or three stories high; for cellar arches, ceilings, supporting arches of fire-proof stairways, all kinds of chimneys, not over fifty feet high, inside partitions and numerous other purposes, and in very many cases the introduction of hollow brick would replace the use of high priced lumber and would make buildings more durable, healthy and fire-proof.

The manufacture of hollow brick should be very much more enforced by the brickmakers to their own benefit. It takes less material to make them, less power and less fuel; they can be burnt to perfection in places of the kiln where a solid brick would turn out salmon; consequently they are very much cheaper in production, and if we add to this the easy handling and cheap transportation of the same, and, considering the fact that hollow brick everywhere carry higher prices than common brick, we must say, that it should be the main object of the craft, to introduce the use of hollow brick for the benefit of the community and the manufacturers purse.

AN OLD BRICKMAKER.



PROTESTED NOTES.—Truth.



Written for the CLAY-WORKER.

## DOWN IN MEXICO.

4th Paper.



LEAVING Zacatecas in the early morning, we took the train south, the city of Mexico being our objective point. We wound gradually down the mountain, and emerged into the valley spreading out on each side and presenting the most beautiful landscape. The view is grand beyond description.

Although in a valley, we are at a very high elevation; the atmosphere is clear and one is deceived very much in the mountains, which appear so near and yet so far.

At one particular point a discussion arose between the passengers as to the distance to a certain mountain, whose rugged sides with projecting rocks and deep gulches were perfectly defined; some said it was twenty-five miles, and others declared it could not possibly be over ten to twenty miles; when the conductor came along the matter was referred to him; he stated it was just 120 miles. It was amusing to see the look of disgust that fell upon that crowd; they actually pulled the curtains down and refused to look upon any object so deceiving. This valley, of course, is not that wide at all points; the mountains at times come together, when we pass through long tunnels, then emerge again into the same lovely rich productive country.

Everything, almost, is raised in this section; almost all the fruits and vegetables of the known world grow and mature to perfection in this valley. The prickly pear is seen on every hand, the fruit of which is relished by the natives. The pear is about the size of a small orange and is covered with sharp spikes or stickers, so that it is impossible to take hold of them with the hand. The native has a sharp stick which he thrusts through the pear, and then with a sharp knife peels off the outer coat, when he can eat it with safety and with a relish.

About noon we arrived at the city of Aguas Calientes, just at the foot of the mountain, a place of nearly 100,000 inhabitants. As we came into the city we run alongside of a beautiful stream of water about the size of our canal; as we were taking in the landscape and the beauties of nature, general'y, the

conductor came along and pulled down the curtains on the side next the stream; not knowing any particular reason for this move, and not feeling that the sun was bothering us in the least, we deliberately flipped them up again, and then discovered it was all on account of that conductor's modesty, which caused him to *pull down the blinds*. The stream was full of men and women in swimming, and the bank was lined with beautiful Mexican *Mermaids*, washing and just ready to go in swimming; it was a sight fit for the gods; being a charter member of the N. B. M. A., we did not disgrace that body by turning our backs on such a sight; we never wanted to go in swimming so bad in our life. This stream of water comes directly out from the foot of the mountain, and is so hot when it emerges from the ground that it will burn your hand. Aguas Calientes is the dining station and here we fortified ourselves on hot tamolies and other peppery dishes for the afternoon journey.

About eight o'clock in the evening we arrived at Silas the supper station; this is a neat, thriving looking place, of about 40,000 inhabitants. The supper table was particularly tempting, on account of the fruits and vegetables, especially the strawberries. Strawberries fresh from the vines in January, was a new sensation, but we learned that at this place, they bloom and ripen the year round, as do also oranges and many other things, so that twelve months in

the year fresh strawberries and oranges are on the table.

It seemed certainly that this ought to be a delightful place in which to live, but our time was limited so we could not remain long enough to decide whether we would want to try it for a life time or not.

From Silas until far into the valley of Mexico is a blank to us, as we spent the time stretched in our Pullman berth, dreaming of strawberries, hot tamolies, broad valleys, and flowing streams, where lovely black-eyed Mexican maidens with long Mermaid-like-hair, were swimming and sporting in the sun.

We arrived at the City of Mexico about 8 o'clock next morning, we will not attempt any description of the city in general, as we did not remain long enough to post ourselves; in its newer parts, especially, it has much the appearance of a Northern city.

All of the beautiful lakes, with floating gardens, canal streets, and Aztec Temples described by Cortez at the time of the conquest are gone. We found no brickyards of any note, nor of a magnitude to deserve description; we visited the grand Cathedral, which occupies the same ground as did the great Aztec temple described by Cortez, and which has taken, they say, over two hundred years to build, and at a cost of over twenty million dollars; it is grand in every respect, its paintings are by the greatest masters, and are not surpassed anywhere



DOWN IN MEXICO—A PUBLIC WATERING PLACE.





DOWN IN MEXICO—NATIVES CARRYING HAY TO MARKET.

in the United States. Armed with a pass we went out to see President Diaz at Chepultepec, a few miles from the city; Chepultepec is a walled and fortified high plateau of 20 acres or more, containing the State buildings. To reach the top you pass up long winding stairways, and through numerous gates guarded by soldiers.

I remember when a boy, hearing a Mexican soldier tell about the battle at this place, and about riding up to the top of the winding stairs on his horse.

While on the street my attention was called to a peculiar train passing along the street railway; we found it was a funeral, and that it was the customary procession. The hearse is a street car built for the purpose. On the flat platform of the car is raised a pyramid shaped Catafalco, about four feet high, and just wide enough to hold the coffin. An ornamental post at each corner holds a canopy top, making a very attractive looking hearse. Cars follow with the family and friends, and as the car tracks wind all through the cemetery, the train moves to any point just as carriages do in this part of the country.

Leaving the city early in the morning we took the train for Pueblo, about fifty miles S. E. The route lay through a continuation of the rich valley of Mexico, and the trip was most delightful; we

had left cold winter at home, but here we were in the midst of a summer, harvest was in full blast, all along the road the reapers were at work gathering in the wheat and barley, not self binders, but men reaping with the old fashion reap hooks, such as were used in the States fifty years ago. Off to the west but a short distance was old Popocatepetl and Iztaccihuatl, called the Spanish Peaks. The first is an active volcano, and the Aztec meaning is, "Smoking Mountain." It is nearly 18,000 feet high and up to 13,000 feet above its base is a dense forest; above that it is bare, covered with pumice, sand, and ashes, the top being perpetual snow. The crater is about one mile wide and a thousand feet deep. It was here that Cortez found the sulphur with which to make powder to replenish his wasted supply; he sent ten of his men to the top of this mountain, when one of them was let down into the crater 450 feet by ropes to get the sulphur. The business is still carried on quite extensively, a number of men residing permanently inside the crater, ascending and descending by ropes.

*To be continued.*

Stockton, Cali., Terra Cotta Co., desires to correspond with contractors who have had experience in paving streets with vitrified brick.

Written for the CLAY-WORKER.

## BRICK BURNING AND SETTING.

Serial No. 2.

BY J. W. CRARY, SR.

IN MY first article, I spoke of the importance of setting and burning brick in the best way practicable. Then I said something about my first experience in trying to improve on the old methods of setting and burning brick. It will be seen by those who take and read our journals on clay working industry, that very few who claim to have improvements for making, setting and burning brick, have given the reasons or philosophy of the improvements they claim to have made.

Most of the claims for improvements are based on mere assertion. The true scientific reasons are not given, and the only proof of the merit of the invention is to be found in a full and thorough test of it. This is often a very costly operation. If we look over the whole catalogue of advertised improvements, not only in clay work, but in all inventions and specialties, we find that every manufacturer, inventor or seller of improvements claims to have the very best; he knows but one degree of comparison, that is, the superlative. Sometimes we find modesty "out in the cold," saying, "I think I have a very excellent labor and money saving thing, come and see it, and judge for yourselves."

We find brick machines all through the catalogue that are better than all other brick machines. We find brick kilns that will burn every brick hard, with less than one-half the fuel and labor of any other kiln. We also find great big companies who never soiled their clothes with the dust of brick or the smut of fuel, or lost one hour of sleep in watching a brick kiln at night, gravely asserting, in finely displayed advertisements, that, "All the inventor claims for his machine or his kiln, is strictly true, and that the only mistake he has made is, that he did not claim enough."

The business men, the law makers and givers of the world, act upon the assumption that human nature loves humbug better than naked truth; therefore it pays to humbug. This syllogistic proposition is slowly losing its force, and the time is not far distant when humbug will be quoted below par. With the electric light of thought, and the press, the "Bears," vs. the "Bulls" of



lumbbug, seem to be getting the best in the contest for supremacy.

#### WHAT IS A BRICK KILN BUT A STACK OF COUNTLESS CHIMNEYS?

But let us try and figure it out, and see if we can approximate to the number of chimneys in one arch of a brick kiln, set with 5 brick in the bench, and 2 brick in the arch, between benches. We will suppose the kiln to be  $33\frac{1}{2}$  brick in width, and say 40 brick (on edge) high. Now, we will say that the brick are set 3 over 3, crossed at right angles. This gives 4 open spaces or flues for each length of brick. If the brick are set  $\frac{3}{4}$ -inch apart, we have flue spaces in every length of brick, which are equal to a flue  $1\frac{1}{2}$ -inch square; that gives us 50 more inches of flue space in every course of brick, and if an arch be 6 brick wide, (including bench,) we have 300 square inches of flue room to each arch of a kiln, which are equal to 1 single flue, 2 feet square, but are, in fact, about 800 flues  $\frac{3}{4}$  of an inch square.

Now, say that our cold air entrance to grates is about one foot square, we have two furnaces to each arch, and if we burn on both sides of kiln at the same time, we have just the same cold air inlet that we have for hot air or carbonic gas outlet. Now the *riddle* propounds the question. Are the brick thus set—40 brick high, with open space enough to afford the necessary draft for the heat and most economical combustion of fuel? As the air is expanded in proportion to the amount of heat it furnishes in combination with hydrogen and carbon, it follows that the outlet for gas and smoke must be greater than the inlet for air, in order to create a sufficient draft for the perfect combustion of the fuel used. If, therefore, the spaces between brick set in a kiln, added together, have an area no greater than the inlet of cold air to the furnace, we must conclude that the brick are set too close for the best and most economical burning.

#### A STRONG FREE DRAFT IS ESSENTIAL FOR BEST BURNING.

If the draft is not strong in the furnace of a brick kiln, the gases generated are not consumed, and hence a languid heat and loss of time and fuel.

Brick should be set so as to make the room of the spaces between them at least twice as large as the area of the furnace doors. This may be done in setting brick transversely, five over the length of two, or by setting the brick *zigzag* or *skintling*, which is, by far, the

best way to get the best draft and distribution of heat; and by all odds, the best way to set the overhangers of an arch. An expert hand can set brick a third faster by the *skintling* process, and the brick stand much better, and the gas and smoke escape freely, while the heat up through the kiln takes a serpentine course, and is thoroughly absorbed by the brick, with no impediment to the draft.

The common way of setting overhangers for an arch, is fatal to good draft, and is probably the cause of the "Down draft" idea for burning brick. What brick setters are doing now to get a free draft up through the overhangers and benches, I do not know, but the old practice was, to set the brick in arches, about a half to  $\frac{3}{4}$ -inch apart, then cover the space with the next course on top. This gives them an arch full of ovens, or spaces between brick, with no possible escape for smoke or gas, only through the small crevices, accidentally made between the brick. With the *skintling* process the setting is perfect, both in practice and principle. The fire freely plays around every brick, at the ends, as well as sides and edges. The brick can be set close or open, to suit all conditions, and a perfect draft and distribution of heat assured.

#### THE ONLY REASON MORE SKINTLING SETTING IS NOT DONE

Is the fact that there are very few experts in that art. It takes a man with a "straight eye" and a "level head" to do it. I have given directions in my former writings how the art of setting brick *skintling*, can be easily and quickly mastered. It will be found in my book on "Brickmaking and Burning," and in other writings in *CLAY-WORKER*. But I will say here, that all you have to do to learn *skintling* is to lay a straight edged board down at a convenient place, then let a hand pitch you some dry brick, which you will set next to the straight edge, about  $\frac{3}{4}$  of an inch apart, at an angle of about 16 degrees, with the straight edge, so that when two brick are laid down on edge, one brick will set diagonally across the two, covering the ends, so that the *skintle* will look in shape like the letter X, you will have no trouble in setting the first course straight against the straight edge, but when you start a course on top of the first course you will be surprised that your eye is so blind and crooked, for at your best, you will not set more than 6 or 8 brick before they want to get

away from the under course, or else so awkwardly skintled that the boys will make fun of you. But don't be discouraged, set out your course, then adjust it and put your straight edge to it, then proceed to put on another course, and so on, until you have 4 or 5 courses high, then start a course at the bottom next the first course you set; this will start diagonally with the first course, so that no two brick range with each other in the same horizontal course. Two brick set end to end on the ground will heat an angle of about 16 to 18 degrees. You can thus practice setting *skintling*.

(To be Continued.)

#### LUCKY BOYS.

##### The Machine Company Gives Their Employes a Trip to the World's Fair.

THE Wellington Machine Company announce that they will give all of their employes who have been with them six months or more a free trip to Chicago and return, wishing all to see the World's Fair. The officers, the Messrs. Bennett and McDermott, have been to the Fair and, believing it the sight of a lifetime, and that it will be of great value to their employes, have made them this pleasing offer. They have a splendid corps of workmen, most of whom have been with them for quite a number of years, and who will appreciate this favor from their employers. Wellington is fortunate in having such a successful enterprise, conducted by men of a liberal spirit, and we commend their example to others.—*The W. O. Enterprise*.

#### ONE WAY TO BRING BETTER TIMES.

WE cannot too strongly urge the advertising classes, and, indeed, all the merchants and manufacturers in the country, to empty the pigeon-holes of unpaid bills as rapidly as possible. The putting of money in circulation by paying debts does more to benefit the community than the loaning of money from a bank, or the production of currency or of coin at the mint. Pay Smith what you owe him and he can pay Jones, Jones in turn can pay Brown, and the money goes around liquidating dozens of debts before it is hoarded away somewhere to do less good. Hundreds of men in business circles are complaining that the banks are so unreasonable in locking up their funds, and if they turn to the desks in their own offices they will find the pigeon-holes, to which we respectfully refer, stuffed to overflowing with piles of unpaid bills.—*Fame*.



## A PRACTICAL BRICK DRIER.



THE artificial Drier needs no special introduction to the clay-working interests; suffice it to say that the advanced and scientific methods, machinery and appliances of manufacture now in use have rendered it absolutely necessary to the modern plant, and the question at issue is solely what Drier to obtain. In the selection, it is necessary for the manufacturer to thoroughly understand the properties of his clay and choose the Drier that offers the best facilities for drying as its nature demands.

In view of the approaching Fall—the period of improvements—and in anticipation of the manufacturers' needs, we submit a short description of the Standard Forced Draft Brick Drier patented and manufactured by The Standard Dry Kiln Co., of Louisville, Ky.

The accompanying illustration represents a four tunnel, eight track Drier of the ordinary construction and equip-

is extensively used, many insurmountable difficulties have to be overcome in drying by reason of its inability to control the hot air currents, which on entering the tunnel, immediately seek the highest plane and rise to the top. This condition if permitted to remain—and in the ordinary drier there is no remedy for it—results in a loss of time, increase in expense of operation and a serious injury to the clay drying.

To obviate these difficulties the manufacturers equip the Standard Drier with a patented system of floor piping extending longitudinally through the tunnels, above the floor and directly beneath the product drying. This being supplied with steam, generates a temperature at the floor line of any desired degree. The air currents entering the tunnel are thus equalized and the same degree of heat is maintained at bottom and center of tunnel as at the top. The most perfect results in drying follow.

One other important feature possessed by the Standard Driers is the method of ventilation. Two or more large, or a series of small, ventilating flues are so constructed with dampers that the water-smoke or moist air may be ex-

## THE LAST, THE BEST OF ALL THE GAME.

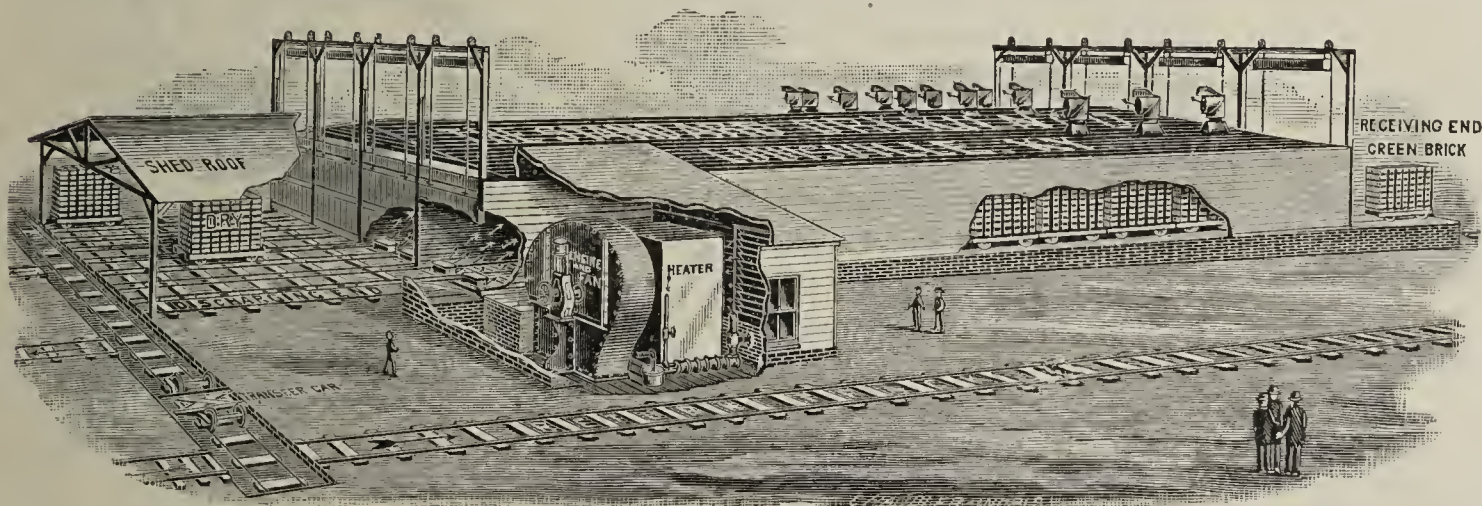
ADVERTISING is a struggle for prominence. It may be acquired in such a way that it becomes a struggle for mere notoriety, or it may seek through a higher aspiration for reputation which is fame. If prominence in comparison with other surroundings is acquired, the advertiser can be considered successful.

The man who is too conservative in his advertising expenditures forgets that the struggle is for prominence, and tries to keep his outlay down to the same level as that of others about him, when if he increased his outlay to make it appear remarkable, it would be the additional portion that would count more than the original sum, just as with the man seven feet high, it is the seventh foot which attracts the attention of every observer, rather than the first six, which, without the seventh, would make him only an ordinary mortal.—*Artemas Ward in Fame.*

## MORE SCARED THAN HURT.

AMONG the facts that are more or less problematical in the present financial stringency is, that there is more money in the United States to-day than there was twelve months ago. According to the *Financial Times* the actual deposits in the various banking institutions of the country aggregate about \$5,000,000,000, the deposits in national and State banks alone amounting to upwards of \$2,500,000,000.

It is evident that the spirit of thrift has, by no means, vacated the vest of the average American citizen, or that caution and economy have dissolved partnership. Idle money is not alone laid to rest in banks and safety deposit vaults, but a vast amount must be stored in the traditional stocking and trunks and pouches unsuspected of any relationship to the Treasury department. This available currency withdrawn from circulation cannot fail to leave a hole in the public pocket. Adding to this fact that many thousands of citizens have been hoarding cash for a visit to the World's Fair, we have a large amount of currency withdrawn from circulation, that when the panic fever is cooled down the nation will be by no means the financial corpse some would make us believe.—*Ex.*



ment. The Drier is situated so that the receiving end is next to the machine, from which the brick are loaded on cars and placed in the tunnels; on reaching the discharging end they are then transported to the burning kiln.

The system of drying is the steam heated forced draft and the method of application together with various patented improvements for the even distribution and control of the air is effectual in the highest attainable degree.

A steel plate fan of the blower type in connection with an improved sectional steam pipe heater form the heating apparatus and furnish the air, temperature and circulation necessary to effect the desired results.

While the forced draft system of itself

pelled at any point in the tunnel or retained the desired length of time, as the driving of either tough or tender and refractory clays require.

The Drier is under the absolute control of the operator at all times, and as the drying agencies are subject to perfect regulation, the system affords a most practical and scientific treatment for the various clays of manufacture.

Great pains, much study and years of experience with every phase and feature of the subject are embodied in the construction of the "Standard Drier," and its record for efficiency well merits the success it has attained.

For illustrated and descriptive catalogue, endorsements, and estimates address the patentees and sole manufacturers.

THE STANDARD DRY KILN Co.,  
Louisville, Ky.



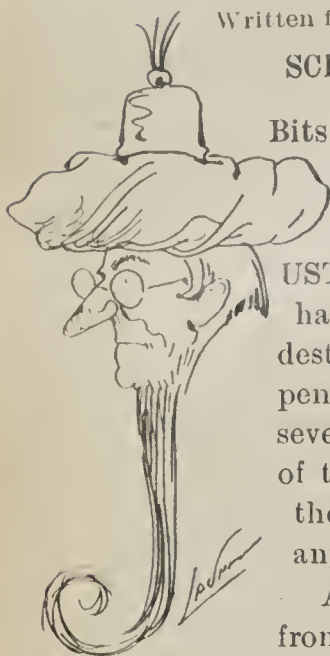
Written for the CLAY-WORKER.

## SCRAPS FROM THE FAIR.

Bits of Passing Interest Deposited With Faber and Gillott.

JUST now, for the first time, I have to record one of the saddest accidents that has yet happened at the Fair. It occurred several days ago, but the details of the disaster have not found their way into the columns of any Chicago newspaper.

A leading society young man from the north side was leisurely strolling along the Midway. He weighed, when stripped of his high collar, just one hundred and three pounds troy. While he was strolling



he wore, besides an ultra long frock coat and sundry, other trifles in the men's furnishing and clothing line, a Ferris



wheel hat. He was attached to the hat by bonds of sympathy and a silken cable.

Suddenly a strong stockyards wind arose, and the north side society young man, oh! where was he?

The cold-storage facts are that he blew away, far above the Turkish Synagog—I mean Mosque, and his favorite haunts, and creditors know him no more. The moral of which is that 103 pound troy



young men should not parade around attached to 36-inch diameter hats or vice versa.

The smart visitors to the Fair are not confined to the adults. There was a six year old Columbian youth permitted to accompany to the Fair, his grown-up sister and her Sunday-go-to-meetin' attachment in the shape of a blonde young man with a reddish mustache.

SIX YEAR OLD: "Say, what do



them Sedan chain Turks wear such baggy trousers for?"

(Deadly silence on part of grown-up sister.)

BLONDE YOUNG MAN: "I'm sure I don't know, (changing subject). Ar'ent those Persiun rugs simply superb?"

SIX YEAR OLD: (Insistent,) "I'll bet I know. They carry their lunches in them, I guess."

*Exeunt Omnes.*

The same six year old mescreant drew the cartoon which depicts a portion of the visit to the Fair of the parties of afore said.

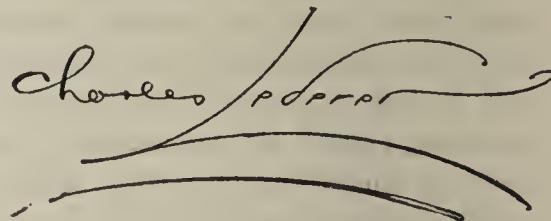


One result of the Javanese invasion of Jackson Park is the production of a number of Javanianiacs who persist in wearing hats that bear a close resemblance to inverted chopping bowls.

Among the sad perplexities of the fat visitor to the park is the practicable



solving of the question—How to be comfortable on one of the rented chairs when the seating surface of of said chair is about the width and breadth of a soda cracker?



## BUT THEY WON'T.

Will a merchant who is wise  
Ever cease to advertise?  
Yes, when trees grow upside down;  
When the beggar wears a crown;  
When ice forms on the sun;  
When Johnny gets his gun;  
When gold dollars get too cheap;  
When women secrets keep;  
When Satan sings a hymn;  
When fish forget to swim;  
When girls go back on gum;  
When small boys hate the drum;  
When a drummer has no brass;  
When these come to pass,  
Then the merchant who is wise,  
May neglect to advertise.

—Exchange.



## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## The Size of Brick.

*Editor Clay-Worker:*

Mr. Crossley, whose name I am sure all your readers were glad to see again in your columns, says in May issue: "English brick are much larger than American, being, in fact, nearly double in cubic contents. Once for all, let me put myself on record in favor of the American size, not only on account of their being better and more profitable to manufacture, but also more artistic and beautiful in the wall."

Whether the small sized brick are "More artistic and beautiful in the wall," is entirely a matter of taste; whether they are "Better and more profitable to manufacture" is a question upon which facts and figures can be brought to bear.

A brick is valuable almost exactly in proportion to the cubic contents of building material it represents. A contractor when estimating the cost of a building does not calculate the number of brick required; he calculates the cubic contents, and how many brick of a given size, are required to make up said contents. The question then before the manufacturer is, how he can most satisfactorily and economically produce a given number of cubic contents. Is it by the manufacture of large or of small brick? I unhesitatingly say *large*.

It will perhaps be argued that more labor and fuel are required in the production of large sized brick. This is, of course, true and in the natural order of things, but I hold that the extra expense incurred in their manufacture, is small in comparison to the gain in cubic contents.

If all this is so, and I invite refutation, it won't appear that "The advantage of small brick to the manufacturer," which Mr. Crossley, very innocently, "Never disputed, even when venturing to argue in general principals in favor of the English sized brick," is just exactly the other way about.

I made, in small quantities, three different sizes of brick— $8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{1}{4}$ ,  $9 \times 9 \times 2\frac{3}{8}$  and  $14 \times 9 \times 3$ , the latter sizes only when special orders, and at very high prices, as I find the small size more suitable for the only purpose for which

I manufacture brick at all, viz., to protect roofing tile in the kiln. The largest size brick, while measuring nearly five times the smallest in cubic contents, costs less than three times the amount to produce.

Mr. Crossley supposes "The brick-makers of England would have little chance to work a reform in the direction of small brick." I think it much more likely that the brickmakers of America will first reform in the direction of large. Is it not possible that the "Greater stability of brick building there," may not have something to do with the larger brick? There is quite a large percentage of difference, when you calculate it, between the strength of an eight and of a nine-inch wall.

Mr. Crossley then goes on to draw a comparison between the quality of English and American brick, which can best be given in his own words: "It can hardly be questioned that the English brick are superior, very much so." This, in spite of the numerous references frequently made by uninformed writers as to the "Inferiority of English brick," seems to be the conclusion arrived at by all competent authorities who have given the matter consideration and investigation. Mr. Louis H. Gibson, whose ability to judge I think no reader of the CLAY-WORKER will question, after a thorough investigation, wrote in a series of letters published in last year's CLAY-WORKERS, warning the American brickmakers against imagining that their ware was equal to the English, and advising them rather to recognize the inferiority and "Get down on their marrow-bones and go to work."

Referring to the wire cut brick machine, Mr. Crossley further says: "It is not, perhaps, generally known that nearly all the improvements in this class of machinery in America in recent years, have been introduced from England, or copied from patents there which have run out." I candidly confess to being one of those to whom this is "Not generally known." My ideas on the subject are exactly the reverse; so far from copying old worn out patents. I think the great advance which has been made in clayworking machinery is due almost entirely to American inventive genius. Mr. Crossley admits that the English dry press machines do not compare with the American. I think the same can be said in every line of clayworking machinery. The English themselves do not deny that the American

machinery of this class is superior. In a letter this instant received from perhaps the very best authority on the subject in England, I read, "I must say that people here are quite willing to give the palm to American machinery."

It is a marvel to me that American manufacturers do not even try to introduce their clayworking machinery in England.

If the English ware is superior, as I think there is no doubt that it is on the whole, it is because more care and time are given to the preparation of the clay, and perhaps more attention, as a rule, paid to the burning—the two principal things in the production of good ware. In the intermediate processes of moulding, drying, repressing, etc., etc., there is no doubt, whatever, that America is very far ahead.

The wonderful advance which has been made in the clayworking interests of the United States during the last few years, I attribute mainly to three things. First, the very excellent journals with which the trade is supplied, a thing of which until lately England was entirely devoid; second, the National Association and third, the local organizations.

The CLAY-WORKER was the parent, *prototype* journal of the trade; all the rest have been started in consequence of its success. The National Association was largely the creation of the CLAY-WORKER. There is no doubt, whatever, that but for this Journal the N. B. M. A. would not be in existence, and the local organizations, in their turn, sprang from the National Association.

Following this train of thought, I do not think I am paying any exaggerated or undeserved compliment to the CLAY-WORKER, when I say, that it is chiefly due the marvelous advance which has been made in the art of clayworking during the last few years.

*"Palmas qui meruit ferat!"*

R. M. GREER.

P. S.—I am glad to see, in June CLAY-WORKER, just received, that your Veteran contributor, Father Crary, agrees with me in according to the CLAY-WORKER the credit of the formation of the National Association.

## A Small But Busy Factory.

*Editor Clay-Worker:*

Herewith find check for \$2.00 for CLAY-WORKER. We are young in the business and small, and we think small youngsters had better listen and not be heard too often. We have a capacity of



25,000 brick per day, have eleven 18-foot round down draft kilns, use Brewer & Co's. machine. We use shale altogether, no mixing with other or top clay. We get the shale 280 feet below the surface, mined as we mine coal, have a vein 15 to 30 feet thick. We make pavers principally, though we make some building brick. Our shale we think, is very good vitrifies through and through, and is not very hard to burn. We burn in about four and one-half to five days and cool them as quickly as the weather will do the work, and take the door down in twelve hours after we are through burning. We are more cautious about the tile. The large tile, 10 to 15-inch, will check if we expose them while they are red hot. We make tile about half the year. Have been making tile since January, excepting about three weeks when we were doing some repairing. Have made since then, about three-fourths of a million, and have none on the yard now; could not fill a car load order for one-half the sizes now.

BRONAUGH BROS.

Verdin, Ills.

#### An Exchange of Courtesies.

*My Dear Randall:*

Last summer, you favored me by sending me samples of your photographic work, the excellence of which prevented me from reciprocating favors and making me feel mean as well. I resolved a short time ago to at least try to do the square thing by you. In my rambles as an amateur photographer, I came across an old brick machine which I thought would make an interesting picture for the readers of the CLAY-WORKER. I very much regret that my camera cannot show the machine working, for there is where it would touch the brickmaker. It reminded me of the present premier of England—"The Grand Old Man."

I got permission from Mr. Eugene Carroll to photograph it, but as I could not do so while it was in operation, had to wait for a holiday, when he assisted me and gave me statistics, etc., concerning it. I do not present it to you and your readers as an art picture, but I think it has sterling merit as an interesting curiosity.

Mr. Eugene Carroll, who operates the yard, is quite an ingenious brickmaker, and, among other contrivances, has a means of supplying water to temper his clay, that may be of use to others. During the dry season last year, when his wells gave out, he had to buy water

from the city. This year he has attached to the exhaust pipe of his engine, a long piece of galvanized iron pipe which discharges into a tank. This pipe has surface enough to condense the steam into water, so that there is running constantly into his tank a small stream of water, which is not only somewhat warm, but carries with it more or less grease from the cylinder oil used in the cylinder of his engine. This supply has thus far proven sufficient for all water necessary to moisten his clay for this large machine, and Mr. Carroll thinks the fact that the water is slightly greasy does not detract at all from the quality of brick made.

In speaking of the old machine, Mr. Carroll said to the writer: "I bought

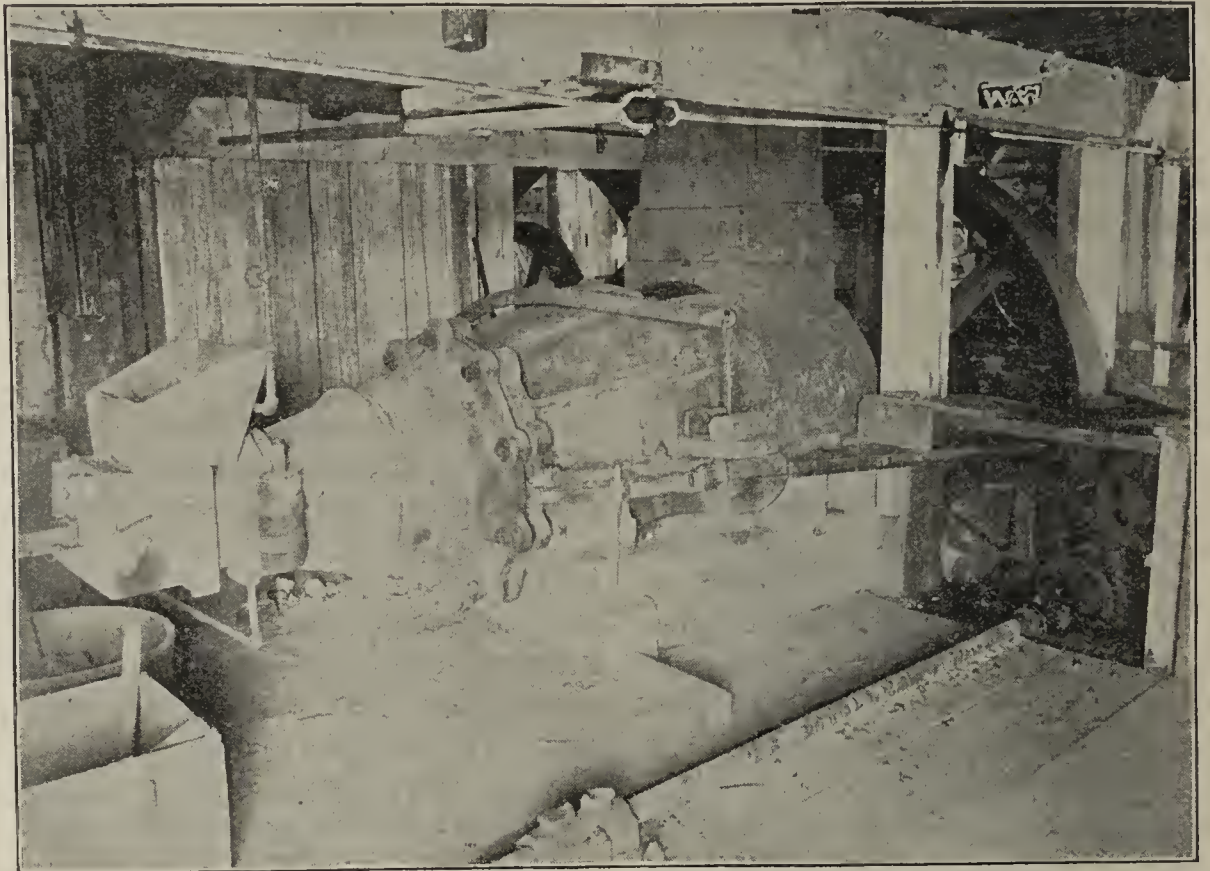
only been idle 2 hours in the last 45 days, and that through a breakage in the engine—no fault of the machine. I run my plant with 12 men, three boys and an engineer. I will be pleased to show the 'old timer' to any brother brickmaker who wishes to see it."

This report and photo. was made on the 21st of May. From the start up in the spring until this date is the 45 days referred to.

As Mr. Carroll could only give its history for the last 17 years, I had to apply to Messrs. Chamber's Bros. Co. for its history prior to that time. It is about as follows:

#### AN OLD TIME BRICK MACHINE.

The brick machine shown in the accompanying engraving has a record



AN OLD TIME CHAMBERS BRICK MACHINE.

the yard and machine from two brothers named Chambers, about 17 years ago, and I have run them both ever since. I would not trade it for any machine I have yet seen. I can make 50 thousand brick in 10 hours on day work. I have no trouble with it from morning to night. It works the clay direct from the bank. I have no pug mill, no clay rolls, nor granulators, neither have I an elevator. The machine is in a very strongly built shed, and I drive the carts on the top of the shed and dump them direct into the hopper of the machine. The bricks in the kilns and shed are evidence of the perfect performance of the machine, and will compare favorably with any of the Philadelphia made brick. The machine has

seldom equalled, having been in use almost continuously for nearly a quarter of a century. It is now running on the yard of H. C. Carroll & Sons, and is one of the original pattern of the Chambers Machines.

It was first put in operation by William and James T. Chambers, at the corner of 58th and Vine Streets, about 1868. When the clay there was all worked out, the firm moved the machine to 58th Street and Haverford Road, where it now stands.

It was sold in 1877 to Carrolls & Sons, who continued to use it as it was until this year, when they had the new automatic wire cut off put on the machine, removing the first automatic cut off that Chambers ever had in use. This cut off



consisted of a knife or thin blade of steel, secured by a hinged arm to the periphery of a large wheel, which made one revolution while the bar of clay passed the length of a brick, the knife cutting through the bar of clay, after which the brick were separated from the bar in the usual way.

This, and a machine used by Augustus Reeves, of Camden, N. J., are the only remaining machines of the original pattern in use.

"PITCH RING, OR DINNER HOUR DIVERSION."

The other picture I send you is an attempt at composition, but it will strike the average brickmaker in quite another way. Some of these faces will be recognized in nearly every State in the Union. They are a portion of the mechanics who build the brick mach-

Philadelphia News.

Editor Clay-Worker:

Financial troubles throughout the country continue to unsettle confidence in all business circles. Mills and factories are either closed, or operating on limited time, so that mechanics find little to do but walk the streets, with but small hope of early re-employment. This condition of things has given rise to great anxiety as to the future. The mid-summer dullness, together with the disturbed condition of trade, has penetrated even the massive walls of the Eastern Penitentiary, where half of the convicts are sitting idly in their cells, without occupation for hands or brains.

Except in financial affairs, the conditions are good. The crops are large,

busy season, however, and prices have been more remunerative than they were last year. Still, they feel they ought to realize wider margins.

The adoption of vulcanite and vitrified brick for street purposes has stimulated that branch of the trade to renewed activity, as nearly all of the streets now occupied by the street railroads will require an overhauling, previous to placing the trolley system, which is being very generally adopted here.

The Brandt Clay Product Company, of Susquehanna County, Pa., with a capital of \$75,000, has been chartered at Harrisburg.

J. Henry Darrah, of Trenton, N. J., has been appointed receiver of the Burrough-Mountford Pottery Co. The application was made by H. Nelson Burroughs, of Philadelphia, a creditor, and Joseph Burroughs, a stockholder. The total amount of the Company's indebtedness is about \$134,000.

About fifty well-known citizens and capitalists of Media, Delaware County, Pa., and Philadelphia, have inspected the mine of the National Kaolin Company, at Brandywine Summit. Collector of the Port, Thomas V. Cooper, president of the Company, guided the party. The object of the visit was to inspect the methods of procuring the material and producing kaolin, and to ascertain the proportion of refuse clay that can be utilized in the manufacture of vitrified, silica and other bricks. Heretofore, vitrified brick have been made east of the Alleghenies, as it has not been known that the necessary materials for their manufacture could be obtained in our Eastern countries. The National Kaolin Company, however, has made many experiments during the past year with the product of its mines, and proven that excellent vitrified brick can be made from the material on the property. Specimens of the brick made were shown to the visitors. It is proposed to issue additional shares of stock and erect a plant for the manufacture of the brick.

At a special meeting of the Master Builders' Exchange, resolutions of appreciation and regret for the late Col. Richard Auchmuty were adopted. He had been an honorary member of the Exchange, and a patron of the trade school. He was a pioneer in the work, and it will prove his most lasting monument.

Murrell Dobins, one of our large brick manufacturers, has bought about twelve acres of clay ground near Norwood, Delaware County, on the old Gesner estate, and will erect an extensive brickmaking plant there, in conjunction with his Gray's Ferry plant. In the vicinity of Norwood, building operations have been quite extensive during the past year, and by the building of trolley lines through that section, it is thought that the erection of suburban residences will have a sort of boom. ANON.



A GAME OF "RINGERS."

ines, pug mills, granulators, dry pans, clay rolls, etc., etc., at Chamber's Bros. Works, and are sent out afterwards to erect same in the brickyards. I was very much disappointed to find so many "Out of the shop" when I took this group. Upon inquiry, I found that Pete was down in Carolina, Rowley in Ohio, Richardson down at Washington, Evans in New Jersey, Skillman and Hamilton Baker attending to the wants of the city machines, etc., etc.

The game needs no description. In short, it is miniature quoits, and if merriment during or after meals assists digestion, none of these clay machinery mechanics will ever be dispeptics. Their chaff, jokes, and uproarious hilarity for either good or bad playing, keeps the whole shop alive. WM. WAPLINGTON.

and should the action of the coming Congress be such as to restore confidence, business would soon recover its normal tone and proportions.

Building operations have been a good deal affected by the depression, but a considerable amount of suburban building is going on, and the prospects for fall work are encouraging. Labor will be lower for the rest of the year, notwithstanding the agreement between employers and workmen as to fixed wages.

The closeness of money is having a depressing effect upon the brickmaking industry. Most manufacturers are not pushing sales as energetically as usual, and are very careful as to whom brick are shipped. They have had a fairly



## Not Easily Discouraged.

*Editor Clay-Worker:*

We noticed a communication in the CLAY-WORKER sometime ago in which it was stated that some of the great markets were badly demoralized, the price of common brick running as low as \$4 a thousand. This, to our mind, is not such a dreadful state of affairs, as your correspondent seemed to think. If modern machinery is used and careful, economical methods followed, brick can be made and sold at a profit at that price, in fact we are now selling at \$3.65 a thousand, and still live and are glad of it.

C. C. S. &amp; Co.,

Macon, Ga.

## Ohio Valley News.

*Editor Clay-Worker:*

The paving brick business of the Ohio Valley is very much depressed just at present, and on account of the extreme difficulty in making collections, many are satisfied with running at only about half their capacity.

The demand for sewer pipe however, is great, although collections with them are also very slow, and prices are at bed rock. The manufacturers in and about Toronto, have notified their employees of a fifteen per cent. reduction in wages to take effect August 14th, this includes all the workmen from the foremen down and there is a possibility of a strike.

The Furnace Fire Clay Co.'s plant at Salineville, Ohio, was destroyed by fire July 12th. By extraordinary efforts they are now running their new plant, and are shipping three and four carloads of brick each day. Only three weeks were lost on account of the fire. Their loss was estimated at \$13,000, and the insurance about half that amount.

The plant of the New Cumberland Fire Brick Co., at Brown's Station, Ohio, was offered at assignee's sale on July 17th but there were no bidders. The property is appraised at \$4,800.

The Western Sanitary Pottery Co., have decided to rebuild their burned plant at Tiltonville, Ohio. Zanesville, Ohio, made this company a flattering offer of a well-fitted plant as a bonus. Mr. John Sant of East Liverpool, Ohio, has organized a company of eastern capitalists and will accept the offer of the Zanesville parties. They will make sanitary ware a specialty.

The John Porter Co., of New Cumberland, W. Va., are only operating three of their six immense fire and paving brick plants. They are rapidly reducing their large stock of brick by shipments of about twenty-five cars a day.

The Royal Clay Manufacturing Co., of Uhrichsville, Ohio, employing about five hundred hands, paid them all off August 5th, and notified them there would be no more work until further notice. The stringency in money matters is ascribed as the cause. It is earnestly hoped that the shut down is only for a short duration, as much of the

prosperity of Uhrichsville depends on these works.

There is some talk that the Chelsea Pottery will be removed from New Cumberland to Hamiltontown, W. Va., as many of the stock holders own a large tract of land in that town.

The principal industry of Toronto, Ohio on August 3rd, went into the hands of a receiver. Mr. Geo. Pugh, secretary of the Toronto Pottery Co., filed in the Common Pleas Court, through his attorney an application for the appointment of a receiver. Inability to meet their obligations maturing, from being unable to collect claims and convert its paper into cash, was set forth in the petition as the cause. Judge Mansfield, appointed J. M. McClure, formerly manager of the pottery, as receiver, and he has given bond in the sum of \$50,000, and the court empowered him to resume operations, to finish up the ware on hand. The assets of the company are ample to meet all the claims in full, being \$175,000 including the plant, book accounts, notes and a large stock of ware. Their liabilities are \$80,000. Their bi-weekly pay roll averaged \$3,500 per week.

Judge McCarty of Canton, Ohio, on August 4th appointed I. B. Clark, of Wellsville, Ohio, receiver of the Pioneer Pottery Co., of Wellsville, Ohio. Stevenson & Co., creditors of the company made the application. The company's indebtedness amounts to \$45,000 and the assets are \$70,000. Inability to meet obligations soon to fall due was the cause of the trouble. The receiver will not close the plant down, but continue operations.

BUCKEYE.

## OUR NEW YORK LETTER.

## BRICK YARD CONSTRUCTION.

In the CLAY-WORKER from time to time, appear notices of the building of new yards. Some of them may be the old fashioned kind and we are still making and building sheds, not of the style of twenty-five years ago, but of the same shape. Some of your readers who are going to re-build, may be interested in the manner of building new sheds in this section and along the Hudson.

## BRICK KILN SHEDS.

There are probably but few of the old flat sheds in existence to-day; by that I mean the narrow ones that would set about 35 wide, and contain about 25 M. to the arch. the plates and rods would be just clear of the top of kiln. Haverstraw can claim the credit of being the first to introduce the use of the wide hearth, or kiln ground, it was a question of economy of space. Many of the sheds cover all the front on the river in length, and by making them wider they gained more room for storage, as a gain of eight or ten brick in width made quite an increase in holding capacity. Yes, but could you burn the wide kiln as well as the narrow, would there not be more pale and swelled brick from the inability to keep as uniform heat as in

the narrow kiln? This is an age of improvements and the foreman of to-day is an advanced number. The posts are set sixteen feet six inches from center to center, and are from twelve to fifteen inches in diameter. The lower side props are seven feet from the hearth and can be removed, the upper ones are thirteen feet from the hearth, and are spiked fast. The length of the posts varies, as some have the plates above the kiln so that one can walk under the rods. The average height of rod above kiln is about 4 feet. The rafters are 3 by 8, 23 feet long and all sheds are given a good pitch, so that the old familiar sights of seeing men with shovels and lutes on the shed after a snow storm removing the snow to keep the shed from breaking down, is seen no more. Shed boards 16 feet long with a 7 foot cap at peak and pocket for them to rest in, two lengths of 13 foot boards on each side, the ends of props are nine inches square, 40 feet long, four to a kiln and moved from kiln to kiln as required.

## THE HEARTH

Is 36 feet wide and is laid with swelled brick on edge, some are level other have a slight raise in center and some depress in middle, each have their advocates, but the level is in the majority.

## STARTING AN ARCH.

The first course is pale brick on account of dampness, the benches of green brick are six high, the jets five, the rest set three over one, double coal on flat on top, and platted with pale on flat generally, though some plat with hard on edge as it saves piling, and taking down as they will go in with the other hard. They are set fifty wide including the heading course, or double coal as kiln is drawn in some, it is narrower on top. About 60 pale or hard are set in each head of arch in the benches. The arches are fours with outsides of two's, at Haverstraw, outsides of three's is the rule, the hole is two brick or 16 inches wide.

## WALLING.

The double wall or brick turned end to kiln is run up 24 high and sets off at the bottom, the thickness of a brick and does not touch the kiln till the twenty-first course, as it leaves a space between the head of the kiln and wall for the heat to work through. No doubt some of your readers who have burned brick have felt of the corners of the kiln and found it cold and it remained so. When he come to strip his kiln he found the double wall piled tight against the kiln—result light brick in corner. The single wall is set up in blocks of four.

## ARCH IRONS AND SPY HOLES.

Some leave the spy hole the size of a brick, others about one by four inches, some a round hole about one and a half inches in diameter. Many yards use caps instead of the arch iron, as a matter of economy, as the irons of to-day must be heavy to withstand the



heat; thus there is iron used here that will weigh 100 pounds without the door.

#### DAUBING AND PROPPING.

Swelled brick are used in propping around the side and ends, the end props are well secured with off and on props so that there is no danger of a breakage when the kiln is swelling. Everything is made as secure as possible. The daubing used is lutings of the yard, or loam from bank if there is any.

#### SAND WORKS.

Differ in size; that is, if a yard is burning, say, twice a month, they will not make the sand works over five brick wide on edge, as the day of a sand house is a thing of the past. The sand boy gets his sand from around the kiln, and they do not put up any more than will last till the next kiln is burned. In the fall they make them about seven brick wide and higher.

The sand is put up above the bind, about two feet, and is an important factor in several ways. It keeps the cool air from outside and as is often the case where kilns are set close together, and no sand is put up at one end, but pile hard or green brick against it, when the kiln is striped, the one outside where the sand is will be burned hard, the other will have quite some light in it. It also insures a good dry sand that makes the brick slip well.

#### FOREMAN OR SECOND HANDS.

The major portion of our foreman set fire on Sunday night, some on Monday morning, others at midnight Sunday; not as one would suppose out of respect for the Sabbath, but so that they will be around when they turn fires, as it will always occur when he is around the kiln in the night, he will then know how much wood is put in the heads. Here and along the Hudson each yard has a foreman and second hand. The second is competent to take charge half a night and is around the kiln during the day while burning. Man is not made of iron, and to expect a man to give his strict attention to a kiln 24 hours a day for a week, as in some sections, it is the custom to have a foreman in charge from the time the kiln is started till it is finished, is risking a good deal. Man must sleep, and any one who has been around a kiln through the smoke and heating up and keep it up for a week, knows how trying it is, he is liable to drop asleep when "eternal vigilance" is dollars in the pockets of his employer. The men with him may do the best they can, keep her filled up or fail to put enough wood in as the result may be. He may wake to find it too hot or cold, as the case may be, and he will blame them for letting him sleep, when they felt sorry for him.

Many an employer has thought he would pay the foreman good wages, thereby insuring good work. If he had not paid quite so much and had some one to take half a night it would have been dollars in his pocket. Good burns

is where the dollars are in the brick trade.

#### BURNING.

When starting fires they always start on the side against the wind. After the fires have been worked in the length of a cord wood stick, they then start on the other side. It is but rare that when this course is followed that the fires will "smoke out," firing just as slow as possible while working the fires in and out to keep the arch brick from popping. From 24 to 28 hours the fires will be together, as they will then be all the way across the arch. As a good bed of coals is formed, they will fill up one nearly full by laying the wood on the arch iron, then fill the opposite about half full until the other side burns down, firing from the other head, throwing light stuff over to keep a uniform heat, rustling frequently to keep the coals even, so that there will be no hot spots. After firing this way for a while they will set the doors on very nearly tight, filling up one head and burning with door off on the other till she is ready to "Daub" up, which will be from 44 to 50 hours from the start. The kilns are leveled on top from rafters on each quarter and middle. After the fourth daubing you may look for a settle. As they always settle the heads and quarters first, it is always possible to get all the heat on the middle that is required, if there is any steam at all. The kilns here crack very much, as is sometimes the case, all the heads will not start at once. It is the custom to off hand or extra them at that time.

Some foreman use the sliding pole to slide wood on quarter and middle; others do not use it at all, keeping the quarter and middle hot by throwing over light wood. Some clay will stand more settle than others. With the Haverstraw clay about three inches settle is sufficient, here from four to five.

#### FUEL USED

Is wood here, and at Haverstraw, the Diamond Co. of that place used oil for several years, but as they went out of the business this season, there is no yard using oil there. Further up the river some of the yards use it. Coal has not entered into the burning of brick, outside of coal dust, to any great extent. The Excelsior Company of Haverstraw have used it and are satisfied. One of our manufacturers last fall thought he would look into the matter and see what he thought of it. He made a trip of a hundred miles to Rondout, on the Hudson, to see it used. He was favorably impressed with it as a fuel, but the times do not allow of any experimenting. The number of cords of wood used each year is large as each arch will use six or seven cords, according to quality, and as it comes by rail and has to be drawn in during the winter, each brickmaker has quite a sum invested and lying idle, as it takes some hundred cords for each yard. That is one advantage that Haverstraw has,

as they want wood to burn with, all they have to do is to choose from a dozen cargoes laying at anchor waiting for a purchaser. The vessel goes alongside the dock and when the wood is wheeled off it is put round the kiln and does not have to be moved. Here the larger part of the supply is on the outside of shed and has to be drawn in, and any man that has charge of a yard knows how much a man with horse and cart will haul a day.

#### MOULDING

Is going on without any rainy weather to interfere—steady time, each yard doing all it can. There is no increase in labor, rather a scarcity since the Fourth. The report was current that the up river yards were paying 15 shillings per day for brick wheelers, and some left for that section, where they could get the most money. One of our yards has dropped to one machine, probably they think the fall prices will not be so high—time will tell.

#### THE MARKET

Is hanging by the eyelids—yes; has fallen off, and if the good weather continues, there will be a big drop; cannot be otherwise, as most of the yards will have to ship for room. Each and every one is hurrying stock forward so as not to get left. Work has been going on in the building line in good form. When the building gets above ground it does not use brick so fast.

#### CHICAGO

Seems to be passing through some of our last year's prices, \$4.75 and \$5.25. If those are yard rates it is bad enough. If delivered prices, they can tell how our manufacturers felt to put brick on the New York market at those figures.

#### ST. LOUIS

Is the first to cut wages, and 10 per cent. is quite a cut. The Company deserves praise that it was horizontal, from president to water boy. If a manufacturer here should cut, there would be a strike. On one of our yards the bankman was paid, when running two machines, 15 shillings per day. When they cut down to one they informed him that his pay would be \$1.75; he said he would not work for it and he left.

August 5th.—On Monday of this week the market opened with fifty barges besides the sailing vessels, and was followed up the next day with additional arrivals, and a falling off in demand, as the large jobs had got the foundation up and will use less brick and not so fast.

As \$5.50 was a fancy top price, and some say that they have fallen 25 cents per M. They say if that was all, there has been concessions of very much "Larger figures" than that, as the buyers had it their own way. Grade has been of the best, on account of dry weather—no washed brick. Look for the reporting of the Ship Brick at this time for an early quit, so as to raise prices—all hands sending as fast as they can.

A. N. OLDTIMER.



## THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, AUGUST 15, 1893.

Entered at the Post-Office at Indianapolis,  
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### TERMS OF SUBSCRIPTION:

|                                             |         |
|---------------------------------------------|---------|
| One copy, one year (in advance)             | \$ 2.00 |
| One copy, one year (if not paid in advance) | 2.50    |
| Six copies                                  | 10.00   |
| Ten copies                                  | 15.00   |

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Subscribers when ordering a change of  
address should give both the old and the new  
address.

ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL & CO.,  
81 MASSACHUSETTS AVE., INDIANAPOLIS.

### EXAMINE THE GOODS.

Many manufacturers have learned by experiment that the most effective and economical method of reaching particular classes or trades, is by judicious advertising in trade or class journals; as a result, they have patronized well nigh every venture that professed to be of that order, with little, if any, regard to the real merits of the publication. Such a course has naturally led to the establishment of cheap periodicals, which are unworthy of the name, Trade Journal, but for which the publishers claim enormous circulation, and by all the maneuvers of scheming "Fakirs" endeavor to assume what they are not—influential factors in the trade, or profession represented. While business was good and trade easily secured, such ventures prospered, for in prosperous times ad's are many times ordered with little consideration. But with dull times, men are more cautious and considerate; consequently a weeding out process is now in operation that will, in a short time, rid the industrial trades of many barnacles that, instead of being helps, are, in fact, impediments to trade progress. Of course, the publishers of these fakes will continue to make great claims as to circulation and influence, but there is no need of any one being deceived by such statements. A trade journal, as well as any article or product, shows what it is upon its face. It is its own

best witness of worth. The advertiser who will examine even casually the matter and make up of the class papers soliciting his patronage, can readily tell the genuine from the counterfeit.

A legitimate trade journal is unmistakably educational in character. It secures, by purchase and contribution, the best practical information extant in regard to matters pertaining to the trade it represents. A trade journal that confines its matter largely to its own special field, and is conducted with ability will, each and every issue, bear the imprint of progress, and evince the co-operation of the tradesmen themselves to an extent that there can be no doubt as to its influence. Such a journal is invariably taken, paid for, and read by those interested, and is, therefore, of more real value than a dozen cheap imitations, which, in the nature of things, cannot command the slightest respect; so we say to advertisers, *Examine The Goods*, and take only that which is genuine, for in advertising, as in other things, the best is the cheapest.

### CONGRESS AND THE BUSINESS SITUATION.

Politicians, as a class, are a cowardly lot. For the most part their interest does not go beyond party, which is personal interest. In the present situation there is hope in the fact that politicians are cowardly. The very large majority of the thinking people throughout the country are in favor of the repeal of the silver purchase clause of the Sherman law. The voice of this sentiment is unquestioned, and the politician who does not heed it is lost. We have had some quick conversions in our own state,—Mr. Bynum, a free coinage advocate, and Mr. Vorhees. As a business journal, it is not proper for us to look at any of these questions from a political standpoint. All questions sink out of sight when compared with that which relates to our currency. No one can question but that the President's message is clear and concise on this point. What this country wants is a stable currency, a fixed and definite basis of action and then it wants it to be let alone. The same thing is true with respect to the tariff, a definiteness and certainty of procedure which will admit of no question. To the free trade advocate, protection should be better than uncertainty. To the protectionist, free trade is better than uncertainty. In the matter

of currency what is wanted is stability, as to tariff, a definite policy not subject to change. The situation during the opening days of congress was hopeful. A republican, well-known as a leader, advocates prompt action. A prominent democrat criticises him and wishes to give the democrats the credit of haste. Truly this is satisfactory. Congress knows what is expected of it. Now, if it is not done, Congress will hear from the people.

### ENAMELED BRICK.

There are a number of exhibits of enameled brick work at Chicago which will have an educating effect on the public mind. A material of this character which has inherent merit back of it makes its own way. At first it is looked upon as a luxury; having the decided merit, it soon comes to be regarded as a necessity. In as old a country as France, one in which tiles have been used for so many centuries, it was the French Exposition of 1889 which gave them a great impetus. The form of tile there presented was relatively new, and within a few years it has spread all over the country. It is one of the ways of these great fairs. A material is exhibited, the public is educated in regard to it, and immediately there grows up a flourishing business. While we have made limited use of enameled brick, it has by no means become general. The masses of the people who build have not taken them up. When they do we will find the industry profitable to such an extent that their manufacture will become general.

The fair is a great object lesson. It is a practical demonstration. Because of their influence, the section of the world in which any of these great expositions are held, always makes great strides forward in the various arts and sciences.

### TERRA COTTA.

Our first page illustration of the Cathedral at Ailly, is of interest to all clay workers. On the second page is given a picture of the porch. This porch is constructed in stone, though, as we have said before, this French stone work is made up of small bits and is exactly the kind of construction that is best adapted to terra cotta design. It may be known that much of the stone work possessing the fineness of detail which is common to the decorative work of these French constructions has been subject to great



decay, and hence large expense in keeping it in repair. All this could have been avoided through the use of terracotta, which, as we know, is the perfection of brickmaking. This material is not affected by changes of temperature, or other conditions, artificial or natural.

#### THE DULL SEASON.

Many of us are disposed to exaggerate the severity of these dull times. There is nearly always a slack period during July and August with the manufacturers of clay working machinery. An examination of the books of any one of these concerns will show this to be true. At this particular period we are prone to assign all dullness to one cause—money stringency, which is not really the case.

#### KEEP IN SIGHT.

Wise forethought preceeds complacent and satisfactory after thought. At a time like this, when most of us who are not hurt are frightened, there is an opportunity to completely lose one's identity. An architect well known in the section of country in which he lives has closed his office because business is not profitable. He says he will open up again when business gets better. This is a suicidal policy. The business man who does not push his business at this particular time, because trade is dull, is reasonably certain to suffer. One who is pushing for business now is sowing the seed for the future good times. One who, in a measure, draws out of business for the present, or lets up in his display of energy will be in that same measure out of business in times of activity. One of the most original and successful of inventors recently woke up to find himself comparatively unknown because he had failed to keep himself before the public.

This journal takes its own medicine. It advertises itself in every legitimate way, but most effectively by its display of good, practical, original matter and attractive illustrations. The spirit which suggests to many the reduction of present expenses, would if followed, lead us to the use of scissors and paste pot, to lessen the cost of producing the CLAY-WORKER. This might not be noticed by many; however, in the end we would suffer. During these times of depression it is our purpose to continue to produce the best magazine possible without regard to immediate return. It is our belief that this is wise forethought,

and it is reassuring to note that many of our patrons are of the same opinion. One of the heaviest brick concerns in this country says it is now the time to look wisely into the future, and to push for business. Said the manager: "We shall not decrease our advertising account, and our travelling men will continue to do all they can to keep in touch with the trade. We are going through all of the motions of hustling for business, because we believe that many of our competitors are doing just the other thing, and that in a few months when business revives, we will be on top." A large advertising agency claims that they have not received a single order for curtailment, from those whom they know as successful advertisers. Now is the time for wise forethought.

#### ONE CAUSE FOR DULL TRADE IN A SEASON OF PLENTY.

Senator Stewart says that the country is going to hades. We think he is mistaken. It may be that some of the financiers of our great country will reach a financial hades. If they could rest there long enough to reform their present notions, we would be content. The country, we think, is not going to hades. If we may judge, we would say that the financial heresies of the past are moving in that direction. We are suffering from the sins of our financiers. If we can rid ourselves of them and of their methods at the expense of a time like this, we are getting off cheaply. A country less wonderful in resources, less elastic than our own, could not stand up under the avalanche of accumulated ignorance which has showered its false ideas and theories upon it. The people have been thinking about this question, and the public demand is too well known and too clearly expressed for politicians not to heed it.

Edward Atkinson, in the *North American Review*, voices the ideas of the majority of the people. His expressions are graphic, plain and precise; he says: "It is the quality of the money and not the quantity that is of the greatest importance. The quantity of money now in circulation would not suffice for a single week's transactions if money were required in their purchase and sale. When a doubt exists about the quality of money trade is checked; for credit cannot be given even to those who are entitled to it, if the money is doubtful. The doubt of the quality of money has

been caused by the attempt to put a dollar made of silver into circulation under an act of legal tender, which dollar is not worth as much after it is melted as it purports to be worth in coin. Bad money which is legal tender drives good money out of circulation, trade is checked, men fail in business, banks are subject to ruin, distrust prevails everywhere. The only definition of good money is that it consists of coin which is worth as much after it is melted into bullion as it is purported to be worth in coin. Gold dollars are good money because they are worth as much in bullion as they are in coin. Silver dollars are bad money because they are not. They serve the purpose of good money only so long as the Government redeems them in gold or its equivalent. How long can the Government continue to do so?"

#### TIMELY SUGGESTIONS.

On page 193 our readers will find some good practical advice, though in the form of an advertisement. Many could profit by heeding the suggestions offered. Take advantage of the present slack times and put your house in order for the busier times to come.

#### THE GENUINE AND THE COUNTERFEIT.

Wherever there is a successful serviceable, genuine production, there is always a counterfeit. There is a counterfeit for good dollars. There are those who ape the respectable manners and methods of good men. They are counterfeits. There are counterfeits of all successful proprietary articles. If an inventor or manufacturer develops a new machine for any purpose, there are counterfeiters who come in to make something which looks like the machine, operates measurably like it, but which can be sold cheaper and at a larger profit. This is always the purpose of the counterfeiter—to take the ideas of other people, make a cheap, common imitation which can be sold at a low price and a high profit. They form a semi-respectable class of green-goods manufacturers. We find this element in the manufacture of books. A successful book has its name and its general scheme counterfeited by unworthy people. Such a thing is always possible. The worst fake of this general character is the book which assumes to



give technical information in an unprejudiced manner, but which for the sake of a little profit, prints as unprejudiced technical material, that which is paid for by the manufacturer of special machinery. Such books are veritable catalogue productions. They are paid scrap books. In catalogues issued by the manufacturer, this material is legitimate; but, as forming a part of a book which pretends to be educational and unprejudiced, it is illegitimate, and a counterfeit. When matter of this quality is worked into the columns of a trade journal, that journal partakes of the character of a counterfeit. The character of such material eventually shows for itself and those who contribute to its support are the dupes, the losers. The character of the matter in such a journal does not command respect and hence, the advertising service is not effective, and is of little value.

#### AN OLD NAME IN A NEW FIRM.

We introduce a new firm and a new repress on page 178 of this issue. The cut of the repress speaks for itself, it is new and original in design. As to the firm its newness may not be so readily noticeable, for no name is more familiar to brickmakers throughout America than that of Frey. The senior member of the new firm, Mr. F. E. Frey, has been intimately connected with the clay machinery trade for many years, in fact he is one of the pioneers. The junior member is *a son of his father*, and together they will certainly achieve an enviable success, for they are well equipped both as to a knowledge of the needs of the clayworking craft and an ability to supply same.

Imperial Friction Clutches is the subject of a special catalogue issued by J. W. Penfield & Son Willoughby, Ohio. The pamphlet clearly sets forth the utility of Friction Clutches in general and the merits of the Imperial Clutch in particular. Write them for a copy.

We are indebted to the Iron Clad Dryer Co., Chicago, for a copy of their new catalogue, a handsome pamphlet which contains some valuable pointers to those who are interested in drying brick artificially. One attractive feature of the book is a series of photographic views of some of the many brick works, where the Iron Clad is now in successful operation. A copy will be mailed to any of our readers who write them for it, mentioning the CLAY-WORKER.

Many manufacturers are now arranging for various improvements in their works for the fall season. The putting in of new machinery of large capacity will leave them with small machines and appliances that are, to all intents and purposes, as good as new, which may be easily disposed of by a small "ad." in our "For Sale, Wanted, Etc." columns.

#### EDITORIAL NOTES and CLIPPINGS.

Zumbrota, Minn., is to have a brickyard.

The new brick plant at Roseville, Ohio, will manufacture buff brick.

Fire entirely destroyed the Privett's brick plant at Anderson, Ind.

Simon's brickyard at Pasadena, Cal., was damaged by fire recently.

Chas. Burket and Frank Martin will erect a new brickyard at Sharon, Iowa.

The cement works at Wayland, N. Y., were burned. Loss \$30,000. They will be rebuilt at once.

T. B. Ripy, of Lawrenceburg, Ky., has purchased the Harrodsburg (Ky.) Pressed Brick plant.

Citizens Brick Co., of Fairmount, Ind., has been incorporated with a capital stock of \$15,000.

Huntingburg (Ind.) Dry Press Brick Company was incorporated August 11th. Capital stock \$30,000.

A company is being formed at Eddy, N. M., for the manufacture of brick. H. A. Wood is interested.

The Uhl Pottery Company's plant at Evansville, Ind., was destroyed by fire recently. Loss about \$20,000.

The Eureka Brick, Tile and Electric Co., of Eureka, Ill., has been incorporated. Capital stock \$50,000.

Jno. Brindley, one of the proprietors of the Egyptian Pottery, at Trenton, N. J., died at his home in that city.

J. B. Owens' Pottery Co., at Zanesville, Ohio, will erect an addition to their plant that will double the capacity.

The buildings in the brickyard at Stillwell, Minn., were demolished by a cyclone that swept over the town.

Frederick Rice, a well-known brick manufacturer, of Baltimore, Md., died at his home in that city on the 29th ult.

A fire at W. H. Perot's brickyard, Baltimore, Md., caused a loss of over \$10,000, which is nearly covered by insurance.

The I. L. Stiles & Son Brick Co., at North Haven, Conn., are making arrangements to burn their brick with coal.

A new brickyard has been started on Hawley Heights, Santa Barbara, Cal., by Rev. Peter Grant and Mr. J. M. Holloway.

The brick factory of D. W. Townsend, at Cherokee, Iowa, burned the 26th of July. Loss \$2,500. He will rebuild in a short time.

A new brickyard will be established at Nealeton, Pa. Messrs. W. H. Berente and S. C. Martin, of Pittsburgh, Pa., are interested.

Vandalia Fire Brick Works, Mexico, Mo., have been purchased by the Vandalia Coal Co. Mr. Dixon will still retain the management.

If you want anything you haven't got, or have something you don't want, read or advertise in our "Wanted, For Sale, Etc." columns.

J. H. Brown, while at work at Bond's brickyard, Philadelphia, Pa., was caught in the machinery and had one of his arms almost torn off.

Geo. W. Vanderbilt recently brought suit against O. B. Wheeler, Jr., Superintendent of the formers' Brick Works at Biltmore, N. C., for \$10,000, claimed to have been embezzled. The total amount of the stealage according to the *New York Advertiser*, is \$16,000, a portion of which has been recovered. Mr. Wheeler's crooked transactions began some years ago, it

is claimed, when he placed fictitious names on the pay rolls and has been pocketing the wages paid ever since.

When writing to an advertiser our readers will confer a favor on both the advertiser and publishers by mentioning the CLAY-WORKER.

Ed. Johnson, employed at Brown Bros. brickyard, Washington, D. C., to dig clay, was quite seriously injured by the bank caving in on him.

The sheds at the brickyard of the South Bend (Ind.) Construction Co. were burned on the 3rd inst. The loss will amount to several hundred dollars.

James Beatze sustained severe injuries by a cave-in of the clay bank at Ferd Eggers' yard, at Cleveland, Ohio. His right leg was broken in two places.

The tile mill of Curtis McCoy, at Richmond, Ind., operated by Jas. Murphy, was destroyed by fire the 2nd inst. Loss is about \$13,000, with no insurance.

The brick factory of Parry Bros., Cambridge, Mass., was partly destroyed by fire, which started in the dryer. Loss is \$15,000, with an insurance of \$7,000.

The Emplre Pressed Brick Co., Albany, N. Y., has been incorporated. Capital of \$50,000. The principal office will be at Rochester and the works at Canadaigua.

The Kewaunee Brick Co., Kewaunee, Wis., has been incorporated, with capital stock of \$15,000. Incorporators are Albert Boettcher, Jno. Borgman, and Marie and Mary Borgman.

Carl Krausby, a shoveler employed at the brickyard of Clippert & Spaulding, Detroit, Mich., was buried under a fall of earth, July 25. The only injury sustained was a broken leg.

Dan'l J. Thomas, a well-known brick manufacturer and contractor, of Turner Falls, Mass., died on the 26th of July. He was 40 years of age and commenced the manufacture of brick when quite a young man.

The plant of the Diamond Brick and Tile Co. on the Missouri Pacific railroad in the Blue valley, near Kansas City, was almost destroyed by fire Saturday night, causing a loss of about \$8,000, which was well covered by insurance.

The Barnes Vitrified Brick Co., Duluth, Wis., has been incorporated with capital stock of \$75,000. The incorporators are Noble T. Barnes of Buffalo, N. Y.; Joseph M. Morrison and Fred S. Parker of Superior; Wimer W. Davis, W. C. Bond, Benj. E. Baker, Coryate S. Wilson and H. R. Volton of Duluth.

An unusual accident occurred at the brickyard of John Hoasman, at Norwood, Cincinnati, recently. Over 50,000 brick were laying out in the sun to dry when the frames upon which they were resting collapsed, and the brick were broken. The loss, including lumber and bricks, amounted to \$2,000.

All advertisers like to know the source of inquiries and are grateful to those, who, when writing for information relative to machinery, etc., mention the paper from which their address is taken. It is no trouble. All that is necessary is to write the name of the paper as a postscript. Just the words THE CLAY-WORKER tells the whole story.

The McGregory Brick Co., St. Louis, Mo., have during the past year erected a fine plant, equipping it with modern appliances and machinery, everything being completed on July 11th. All preparations having been made to start up on the 13th. On that morning, however, a fire broke out, and within a few hours the entire plant was consumed. The works will be rebuilt at once.



## WORTER-MELON TIME.

JAMES WHITCOMB RILEY, IN "NEIGHBORLY POEMS."

Oh! D worter-melon time is a-comin' round again,  
 And they ain't no man a-livin' any tickleder'n me,  
 Fer the way I hanker after worter-melons is a sin—  
 Which is the why and wharefore, as you can plainly see.

Oh! It's in the sandy soil worter-melons does the best,  
 And its thare they'll lay and waller in the sunshine and the dew  
 Till they wear all the green streaks clean off of theyr breast;  
 And you bet I ain't a-findin' any fault with them; air you?

They ain't no better thing in the vegetable line;  
 And they don't need much 'tendin,' as ev'ry farmer knows;  
 And when theyr ripe and ready fer to pluck from the vine,  
 I want to say to you theyr the best fruit that grows.

It's some likes the yeller-core, and some likes the red,  
 And it's some says "The little Californy" is the best;  
 But the sweetest slice of all I ever wedged in my head,  
 Is the old "Edingburg Mountain-sprout," of the west.



WATERMELON TIME.—Taken by F. T. Harman for Judge.

You don't want no punkins nigh your worter-melon vines—  
 'Cause, some-way-another, they'll spile your melons, shore;—  
 I've seed 'em taste like punkins, from the core to the rines,  
 Which may be a fact you have heered of before.

But your melons that's raised right and 'tended to with care,  
 You can walk around amongst 'em with a parent's pride and joy,  
 And thump 'em on the head with as fatherly a air  
 As ef each one of them was your little girl er boy.

I joy in my hart jest to hear that ripplin' sound  
 When you split one down the back and jolt the halves in two,  
 And the friends you love the best is gethered all around—  
 And you says unto your sweethart, "Oh, here's the core fer you?"

And I like to sliee 'em up in big pieces for 'em all,  
 Espeshally the children, and watch theyr high delight  
 As one by one the rines with theyr pink notches falls,  
 And they holler fer some more, with unquenched appetite.

Boys takes to it natchurl, and I like to see 'em eat—  
 A sliee of worter-melon's like a frenchharp in theyr hands,  
 And when they "saw" it through theyr mouth sich music can't be beat—  
 'Cause it's music both the sperit and the stummick understands.

Oh, they's more in worter-melons than the purty-colored meat,  
 And the overflowin' sweetness of the worter squshed betwixt  
 The up'ards and the down'ards motions of a feller's teeth,  
 And it's the taste of ripe old age and juicy childhood mixed.

Fer I never taste a melon but my thoughts flies away  
 To the summertime of youth; and again I see the dawn,  
 And the fadin' afternoon of the long summer day,  
 And the dusk and dew a-fallin', and the night a-comin' on.

And thare's the corn around us, and the lispin' leaves and trees,  
 And the stars a-peekin' down on us as still as silver mice,  
 And us boys in the worter-melons on our hands and knees,  
 And the new-moon hangin' ore us like a yeller-cored slice.

Oh! it's worter-melon time is a-comin' round again,  
 And they ain't no man a-livin' any tickleder'n me,  
 Fer the way I hanker after worter-melons is a sin—  
 Which is the why and wharefore, as you can plainly see.

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## "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

## "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of  
 them to one address for \$5.50. Address T. A. Randall  
 & Co., Indianapolis, Ind.



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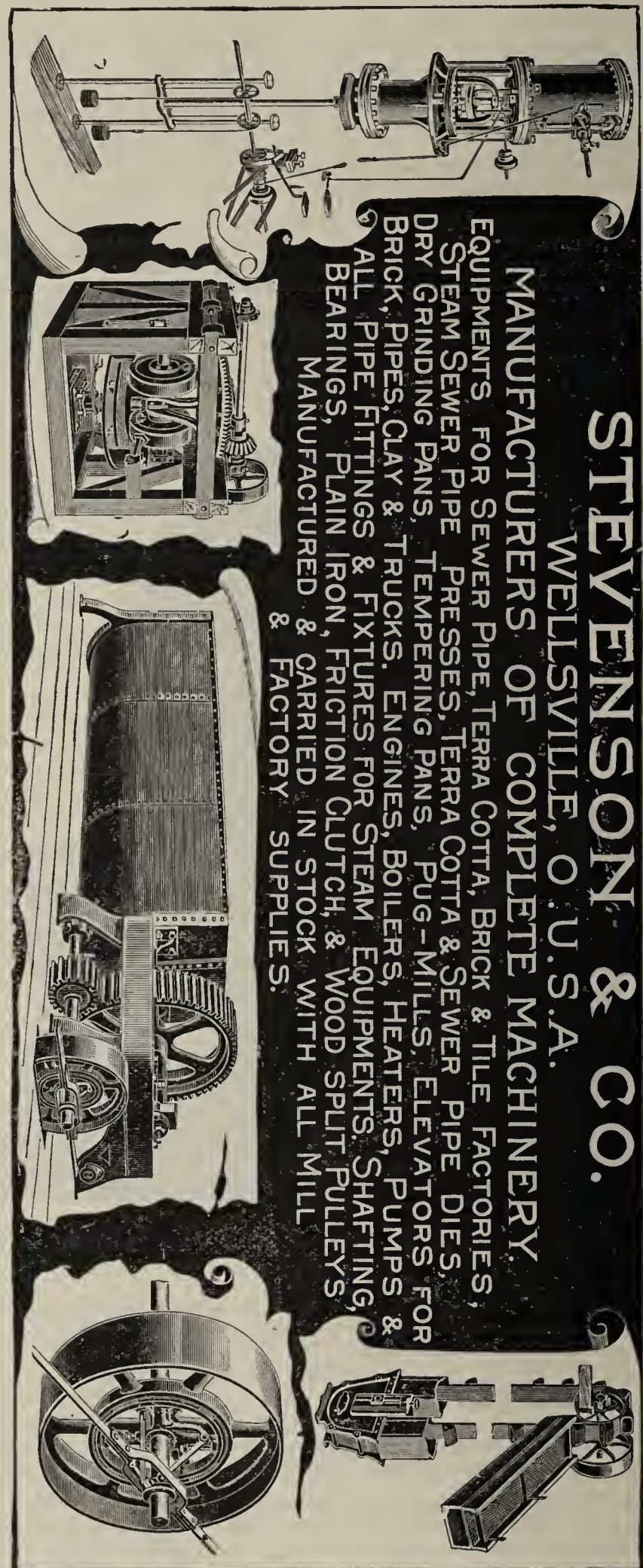
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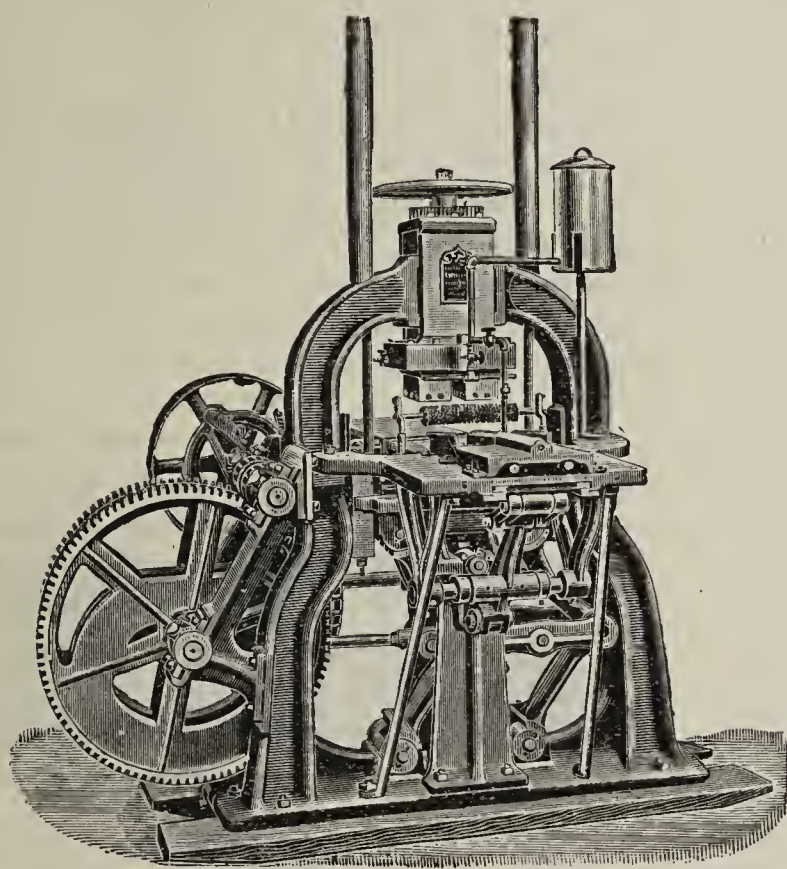
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WELLSVILLE, O. U.S.A.

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THE LARGEST LINE AND GREATEST VARIETY OF  
RE-PRESSES IN THE WORLD.

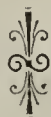


✧ The Columbian Special ✧  
RE-PRESS.

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The No. 1 Perfection,  
The No. 2 Perfection,  
The No. 3 Perfection,



The Columbian,  
The Columbian Special,  
The Columbian Grand.

C. W. RAYMOND & CO., Dayton, Ohio.



## IN AND ABOUT ST. LOUIS.

*Editor Clay-Worker:*

Business is dull. There is no gain-saying that fact. One of the first effects of a monetary panic or stringency is a let-up in building operations and at many points in the city can be seen deserted excavations and foundations which are prima facie evidence that money is entirely too scarce for the buildings originally planned to be carried on to completion. Still, St. Louis stands out as the only large city in the country which has not suffered serious disaster as a consequence of the silver flurry. The banks have remained as solid as the rock of Gibraltar, and though there was a great withdrawal of funds in the early days of the scare, checks were honored so promptly and with so much courtesy that the depositors felt ashamed of themselves, and over 75 per cent. of the money was replaced in the banks, where it remains to-day. As a further evidence of the financial solidity of the Mound City, shortly after Secretary Carlisle's induction into office, when the gold reserve was invaded by the money kings of Wall St., St. Louis led the west in its contribution of gold coin, turning in \$3,000,000 of the yellow metal to the local sub-treasury in exchange for currency. When the symptoms of the panic first began to obtrude themselves on the public notice, the merchants and bankers of St. Louis, with that conservatism which has brought upon it no end of "guying" from rival cities, but which, nevertheless, has given it a reputation for solidity second to none in the country, began taking action to prevent any serious break. To borrow money from one of the banks became an impossibility for those men whose business was of a speculative nature, while mercantile concerns, customers of the bank who were known to be absolutely solvent were readily accommodated. The merchants, on their part, curtailed purchases to the immediate needs of their business, and, as a consequence, St. Louis has been a poor centre for news of failures.

Some concerns, whose business was affected, found it necessary to retrench, either by discharging employes, or by a reduction of wages. The Hydraulic Press Brick Company decided it would be better to keep all hands employed, but as the business would not justify this at full pay, a temporary cut of 10 per cent. was ordered, to apply to every

one connected with the company from the president down to the water boys. The men understood the situation, and philosophically accepted it. There was not the slightest murmuring, or any intimation of trouble. Outside of this the business has remained in excellent condition. The orders on hand at all yards keep the hands employed, but future business has shrunk away. There are no big jobs in prospect, everything being apparently kept in statu quo until money becomes more plentiful. As soon as there is relief in sight, quite a building boom may be looked for and brickmakers and contractors alike are resting on their oars and keeping their eyes skinned for the big jobs as soon as they begin to materialize.

The Thomas Press Brick Co., of Thomas Landing, whose buff brick have met with so much favor, is enlarging its plant. New kilns, new presses and new sheds have been added, increasing the capacity over 50 per cent., and the company proposes to cut quite a large figure in work next spring. Its business has been excellent all year, with, of course, a slight let-up when the financial storm

broke over the land, but the lost trade of the present, it is expected, will be fully made up when the clouds have cleared away.

Evens & Howard have completed the additions to their Cheltenham yards, and will be prepared to handle half as much business again when the demand is resumed. For the present everything is quiet, the company not urging sales, it being deemed best to keep credits in a safe limit.

The Winkel Terra Cotta Company is completing some very handsome jobs, among them the 14-story Union Trust Company building and the new St. Nicholas Hotel. It also has the contract for the new Puritan building, but work on that has been temporarily stopped, presumably on account of the "tightness." A court house at Waukesha, Wis., also gave their artists opportunity to display their abilities, and the work, to judge from the samples in the office is of the highest grade.

The kilns and two of the sheds of the Superior Brick Company, at Kings Highway and the Oak Hill Railroad, were destroyed by fire early on the



.... SEND FOR CATALOGUE ....

OVER 20000 IN USE

**PULSOMETER** **BEST AND CHEAPEST STEAM PUMP KNOWN** **STEAM PUMP**

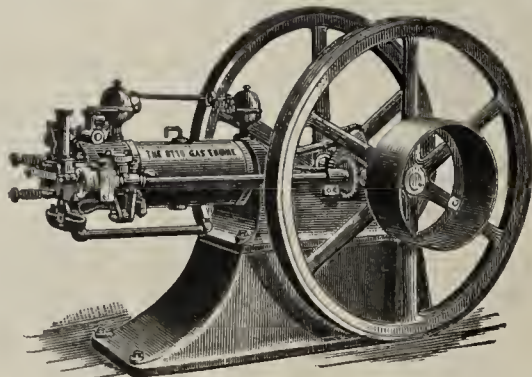
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**PULSOMETER STEAM PUMP CO. SOLE OWNERS-NEW YORK.**

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**ESPECIALLY ADAPTED FOR UN-WATERING CLAY PITS.**

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**OTTO GAS ENGINE WORKS, 33d and Walnut St., PHILADELPHIA, PA.**

## GASOLINE

Direct From the Tank.

**Cheaper THAN Steam.**

No Boiler. No Steam. No Engineer.

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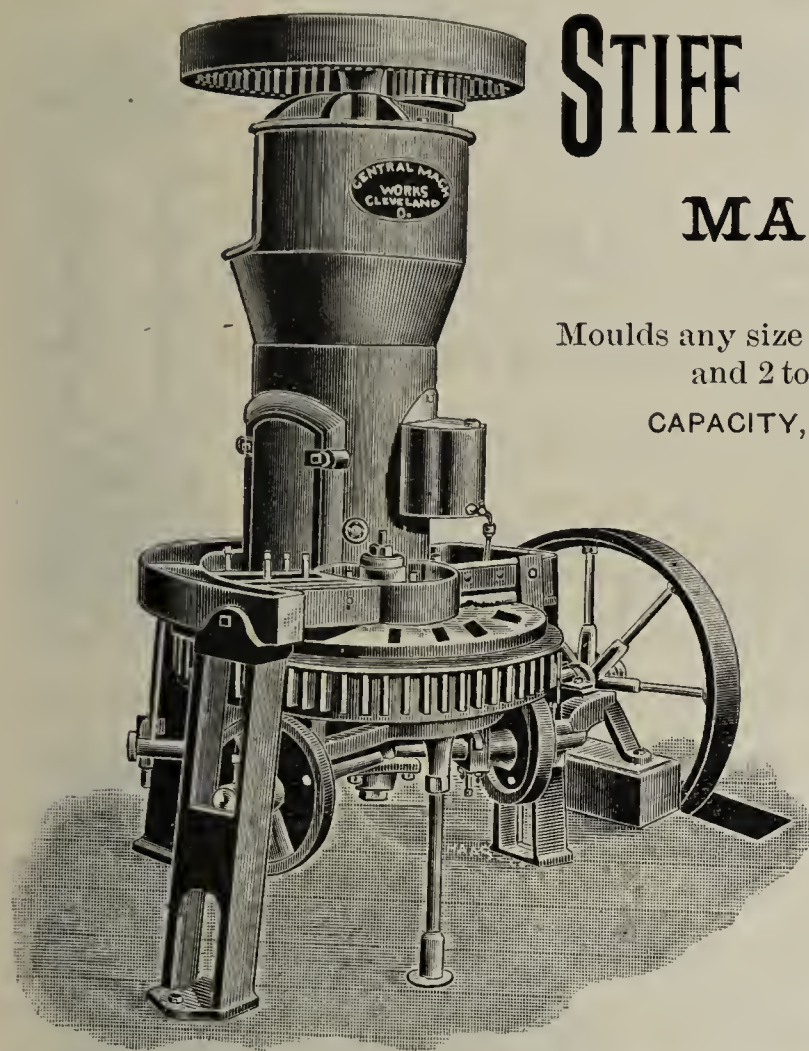
STATIONARY OR PORTABLE.

1 to 50 H. P.

8 to 20 H. P.

Send for Catalogue, Prices, etc., describing work to be done.





## STIFF MUD BRICK MACHINES.

Moulds any size from  $8\frac{1}{2} \times 4$  to  $9\frac{1}{2} \times 4\frac{3}{4}$  inches, and 2 to 3 inches in depth.

CAPACITY, 30,000 BRICK PER DAY.

## POWER RE-PRESSES,

15,000 PER DAY.

For particulars address

**CENTRAL MACHINE WORKS,**

Cleveland, Ohio.

## FIRE BRICK.

Below are analyses of the **PLATT BRICK & FIRE PROOFING CO.'S** Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

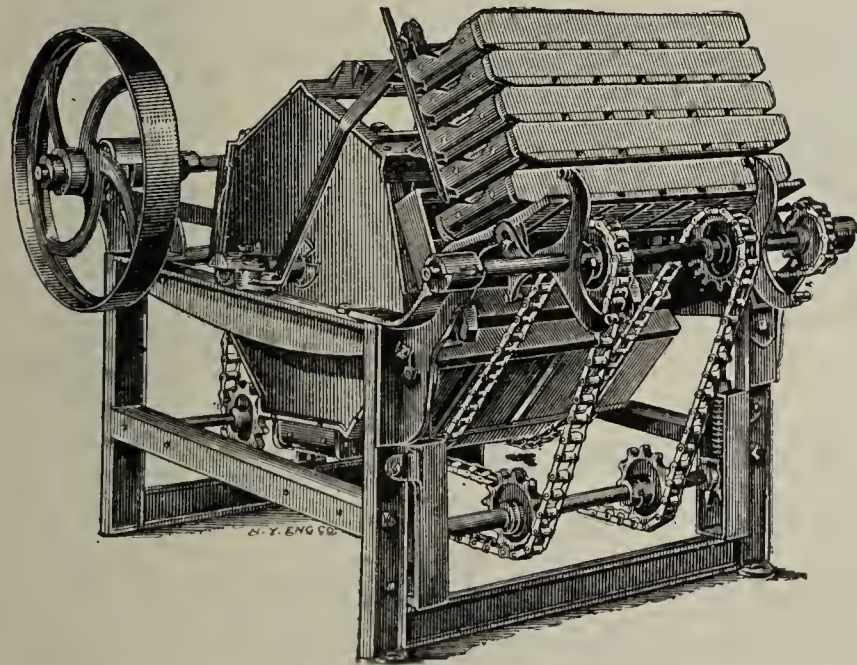
Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick.

Address

**PLATT BRICK & FIRE PROOFING CO.,**  
706 Youngerman Block, Des Moines, Iowa.

## J. A. BUCK'S NEW CHAMPION BRICK MOULD

### SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine—having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letter patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications to

**J. A. BUCK,** No. 76 Oneida St., COHOES, N.Y.

morning of Sunday August 6th. The loss is estimated at \$7,500. The yard will be rebuilt.

Thos. P. Plumridge of the Hydraulic Press Brick Company is enjoying the wonders of the World's Fair. C. H. Chauvenet of the same company will visit the White City sometime in October, previously spending a few weeks in the Rockies. *TERRA COTTA.*

### SOUNDNESS OF OUR BANKS.

If you have any money in a bank that has always borne a good reputation, the best thing you can do, if you don't need it, is to leave it there. The percentage of banks that have failed in the present flurry is very small, much smaller than the other institutions. There has been failures in almost every line of business, even the brewery business, but the banks have more than held their own. And a most encouraging feature of recent bank failures is, that almost all will pay depositors in full. In fact, they did not fail. They only loaned on ample security so much of the money entrusted to them (for which purpose it was so entrusted) that they were unable to get it back in time to satisfy the unreasonable demands for its return. That has been done by hundreds of business men in private affairs. When people borrow money on real estate they cannot and will not promise to pay it back on demand. There is a time fixed for its payment. If every one who owes a bank should walk up and settle in full, regardless of the terms of the loan, no bank would fail. There are two sides to the bank question as now agitated. Money is probably as safe in banks now as it ever was.—*Scientific Machinist.*

### A Delightful Trip to the World's Fair.

The Cincinnati, Hamilton and Dayton R. R., have placed on sale, excursion tickets from Indianapolis to Chicago and return at rate of \$19.25, via the following route, C., H. & D. R. R., to Toledo steamers of D. & C. S. N. Co., to Mackinac Island Steamers of L. M. & L. S. T. Co., to Chicago, Monon Route Chicago to Indianapolis. The Steamers used on this trip are the regular boats of above named companies and are the finest run on fresh water. Meals and berths between Mackinac Island and Chicago included in above rate. This is really the nicest trip ever gotten up by a Railroad Company. For further particulars call on or address H. J. Rhein, General Agent, C., H. & D. R. R., Indianapolis, Ind. City Ticket Office, corner Illinois street and Kentucky avenue,

[Mention the Clay-Worker.]



## FOR SALE, WANTED, ETC.

**Advertising rates in this column** 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**WANTED AT ONCE.** A No. 1 Burner—steady, temperate and thoroughly competent. Address, with references,  
INDIANA PAYING BRICK CO.,  
8 1 c. Indianapolis, Ind.

**WANTED.** One second-hand Disintegrator or Newell Mill, also other brick and tile machinery. State conditions, price, etc. Address,  
TEXAS LIME CO.,  
8 1 c. Box 307, Baltimore, Md.

**CLAY LANDS.** For sale near New York City, fire brick clay lands, sewer pipe, paving brick, and red brick property. Water and rail.  
F. ROWLAND,  
8. 3. c. 171 Broadway, New York City.

**WANTED.** Position as Manager or Superintendent of brick or sewer pipe plant. Have had several years experience in manufacturing brick, sewer pipe, and drain tile. Address  
8 1 lp. C. S. C., care Clay-Worker.

**WANTED.** Position as Superintendent by an expert brickmaker and burner, one who understands the construction of a brickyard in all its details. Twenty years' experience.  
Address, WILL T.,  
8 1 lp. care "Clay-Worker."

**WANTED.** Position as manager of brickyard, by a practical brickmaker and burner. Can also construct kilns for either soft mud or dry press bricks. Or can fill first-class burner's place.  
Address, CHARLIE MAN,  
8 1 c. care "Clay-Worker."

**TILE FACTORY FOR SALE.** With two kilns. Shed room for eight kilns. Forty horse-power engine. Good Auger Mill. Machinery all in good condition. This property must and will be sold. If you want a bargain, address  
F. W. BEARDSLEY, Assignee.  
8 3 d. m. Gibson City, Ill.

**WANTED.** A situation as foreman or superintendent of brick works. Thoroughly competent to take entire charge. Understands various methods of manufacture, but would prefer a dry press plant. The best of reference as to character, ability, etc. Address,  
J. W., Box 7,  
8 tf. d. Care "Clay-Worker."

**FOR SALE.** One No. 8 latest improved Brewer Brick Machine with Pug Mill attached. Built January last. Run only two months. First-class order. New Mould Wheel, never been used. Full set of duplicate gearing for both machines.  
Address, Box 93,  
8 1 c. Summerville, S. C.

**FOR SALE.** To close partnership, the brick and tile works located at Kenney, Ill., consisting of four acres of good clay, three down draft kilns, building 316 feet long, with racks complete, good engine and boiler, Brewer machine and good house. Sale for all the brick and tile you can make, at good prices. Will be sold cheap. Address,  
B., Care Clay-Worker.  
5. tf-d

**SECOND-HAND MACHINES MUST GO.**  
1 Acme Brick and Tile Machine.  
1 Wallace Brick and Tile Machine.  
1 Centennial Brick and Tile Machine.  
1 Penfield No. 7 Special Tile Mill.  
1 Ohio Brick and Tile Machine.  
1 New Departure Brick and Tile Machine.  
1 Hoosier Brick and Tile Machine.  
Write for particulars. H. J. VOTAW,  
8. tf. d. Decatur, Ill.

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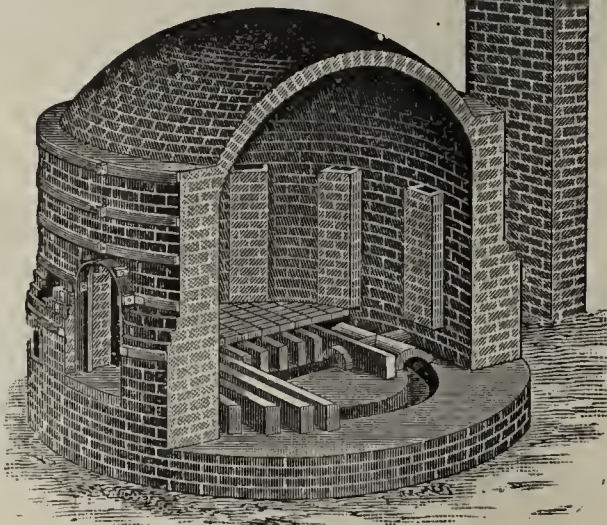
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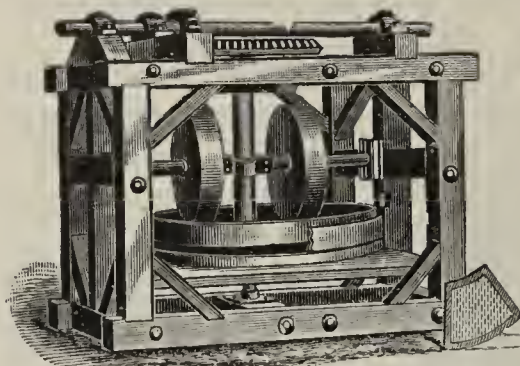
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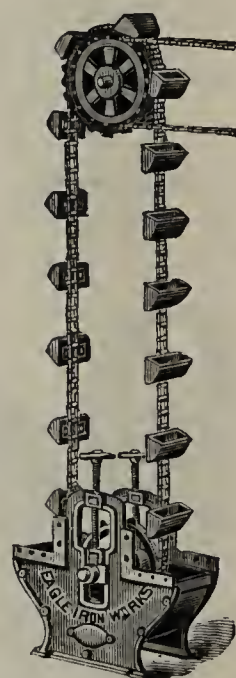


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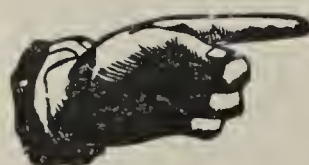
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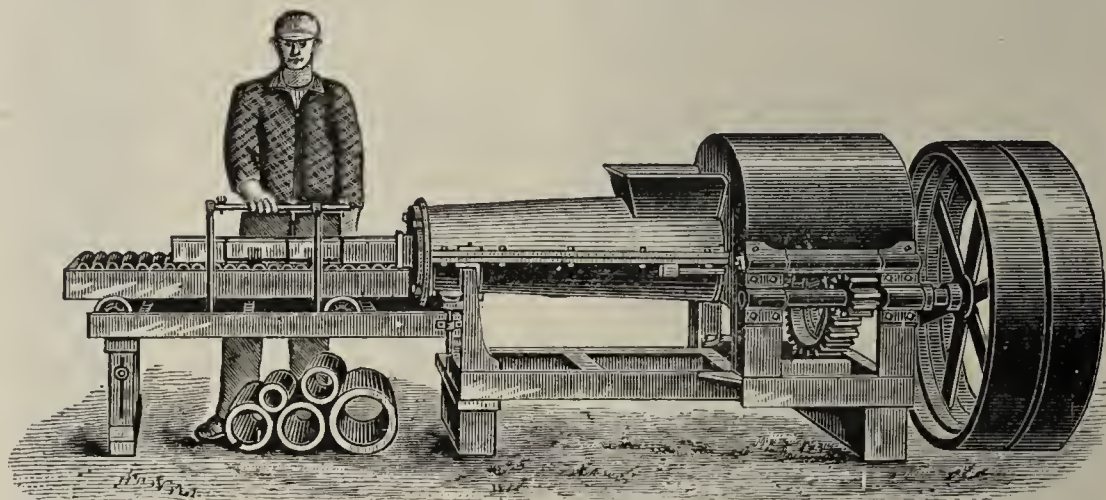
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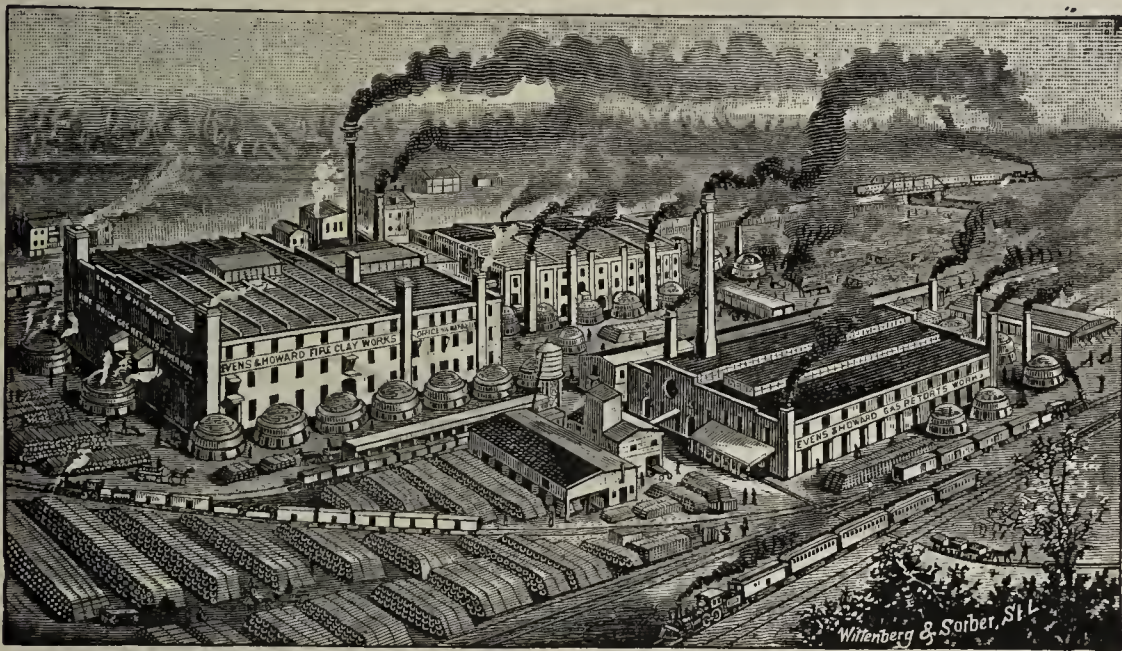




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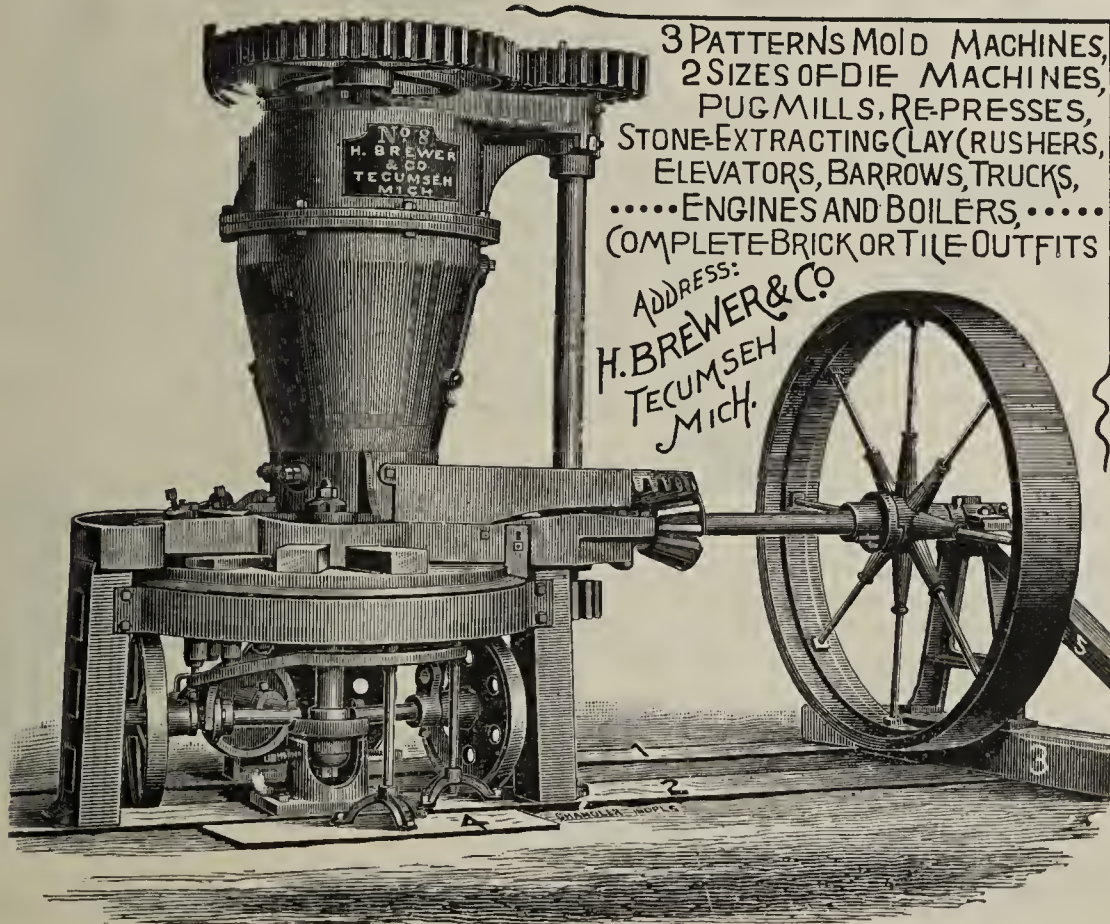
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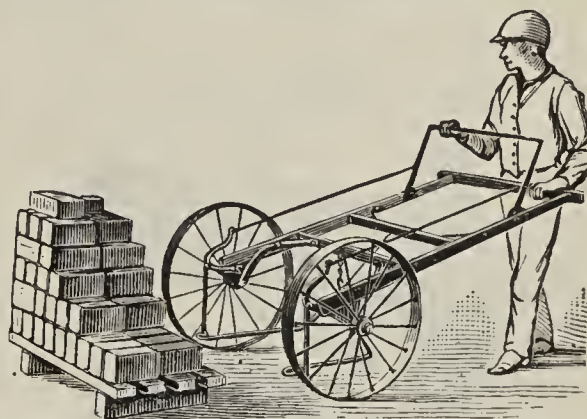
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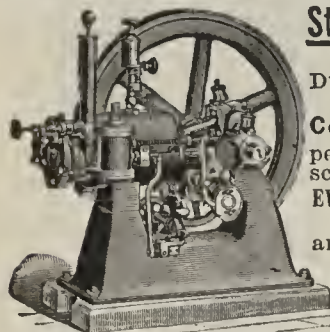


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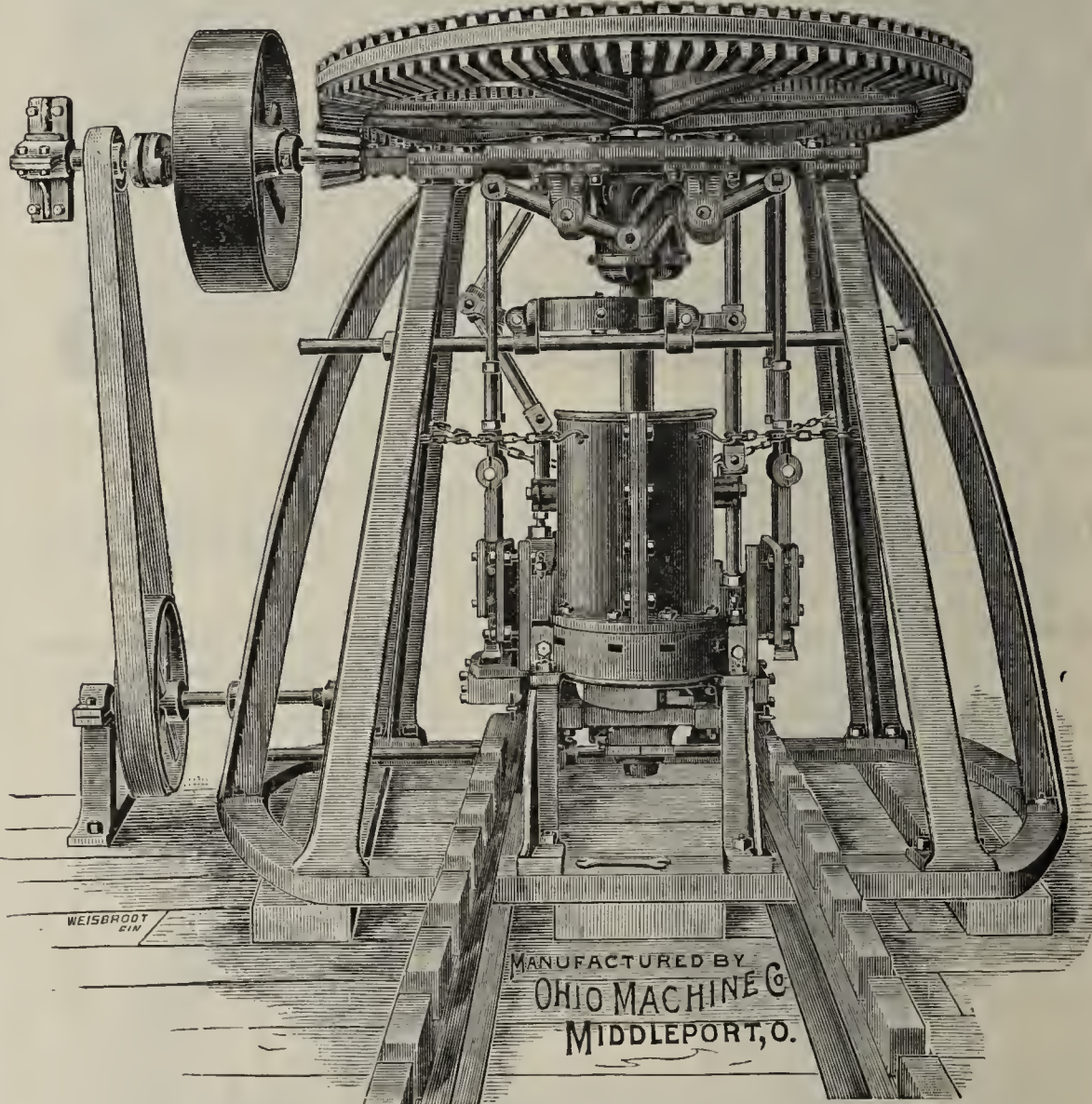
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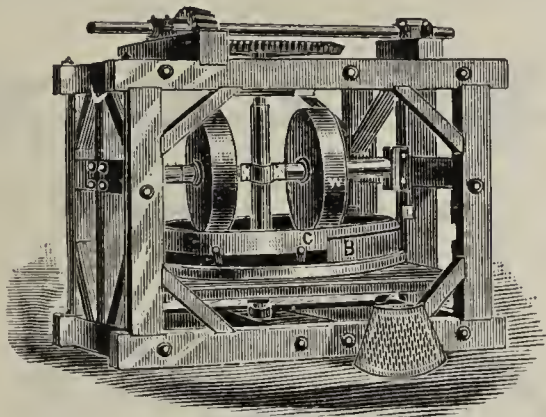
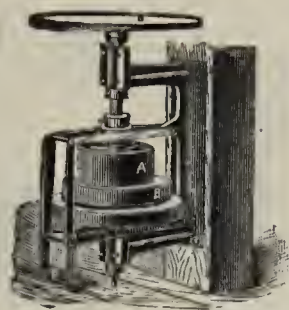
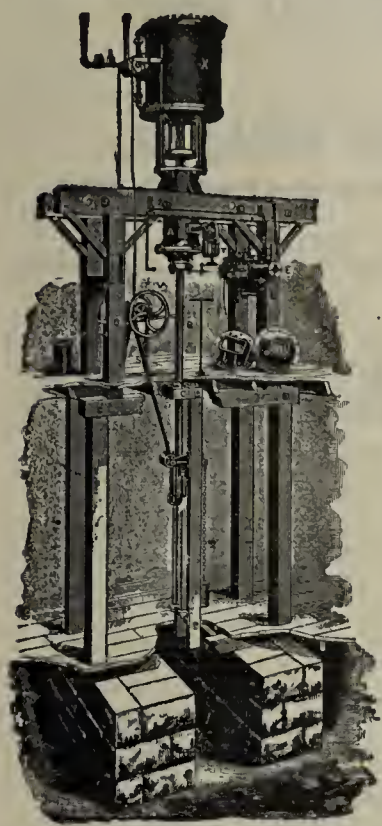


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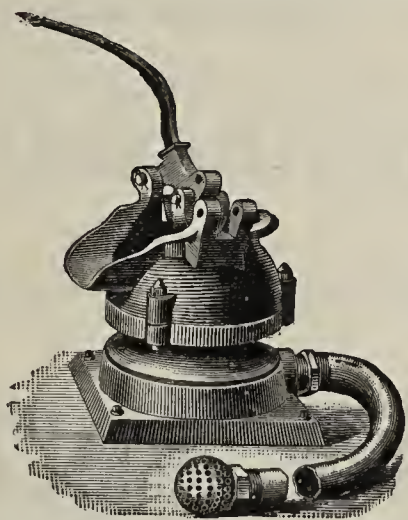
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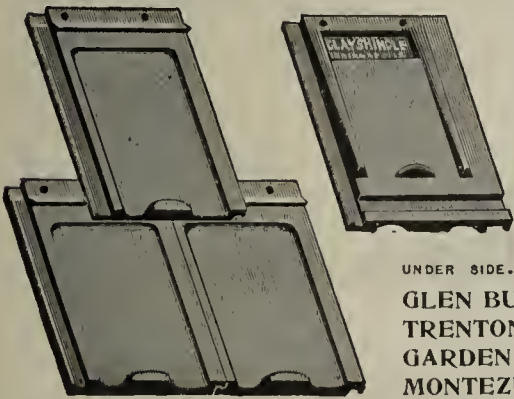
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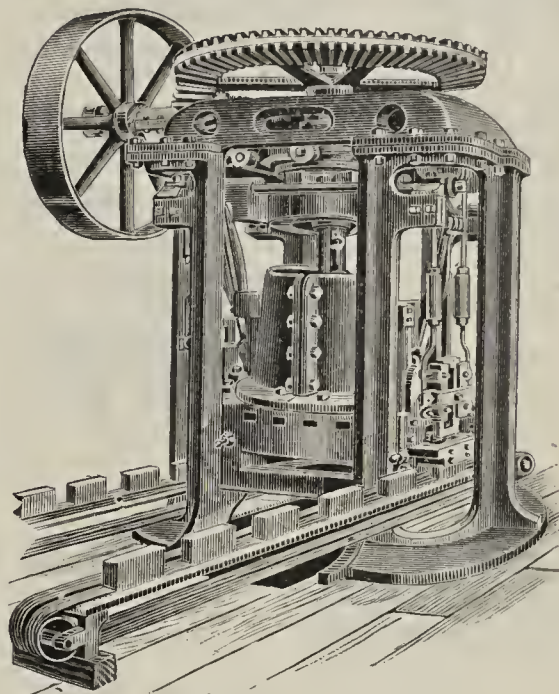
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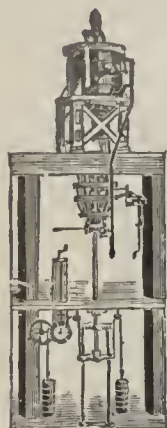
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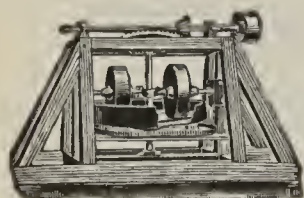
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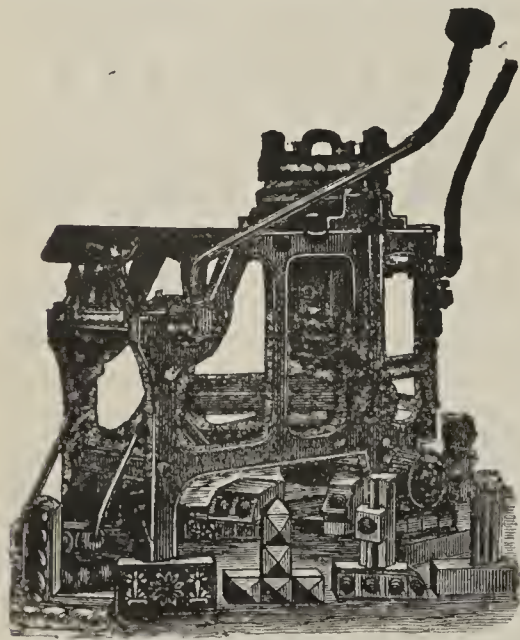
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PHILADELPHIA.

Mention the Clay-Worker  
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RIGHT HAND AND LEFT HAND, 15 to 250 Horse Power  
EAGLE BALANCED VALVE ENGINES.

Center Crank 15 to 40 Horse-power. Complete Steam  
Plants. Great economy in fuel consumption. All sizes  
kept in stock.

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Full Line and Ben Hur Bicycles.



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| BLACK HAWK.....  | \$135 |
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Yard Rights For Sale.

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Can be seen in operation at TIFFANY PRESSED BRICK CO.'S  
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Down and Up and Down Draft kilns can be remodelled.

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## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

**IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.**

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

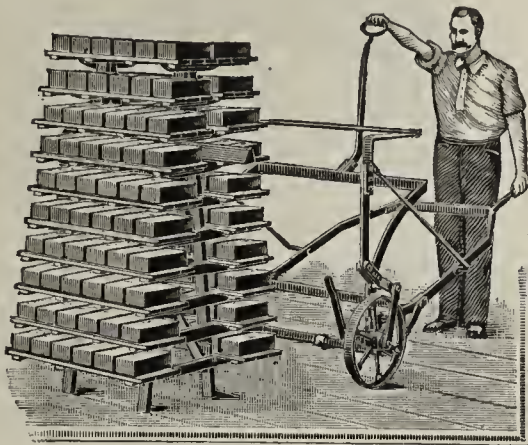
### WHAT USERS SAY OF THE MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."

We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

**MOCK BROS.,**  
**MUNCIE, IND.**

Mention the Clay-Worker.



## EAGLE BRICK MACHINE.

Steam and Horsepower.

THE BEST MACHINE IN THE MARKET.

The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

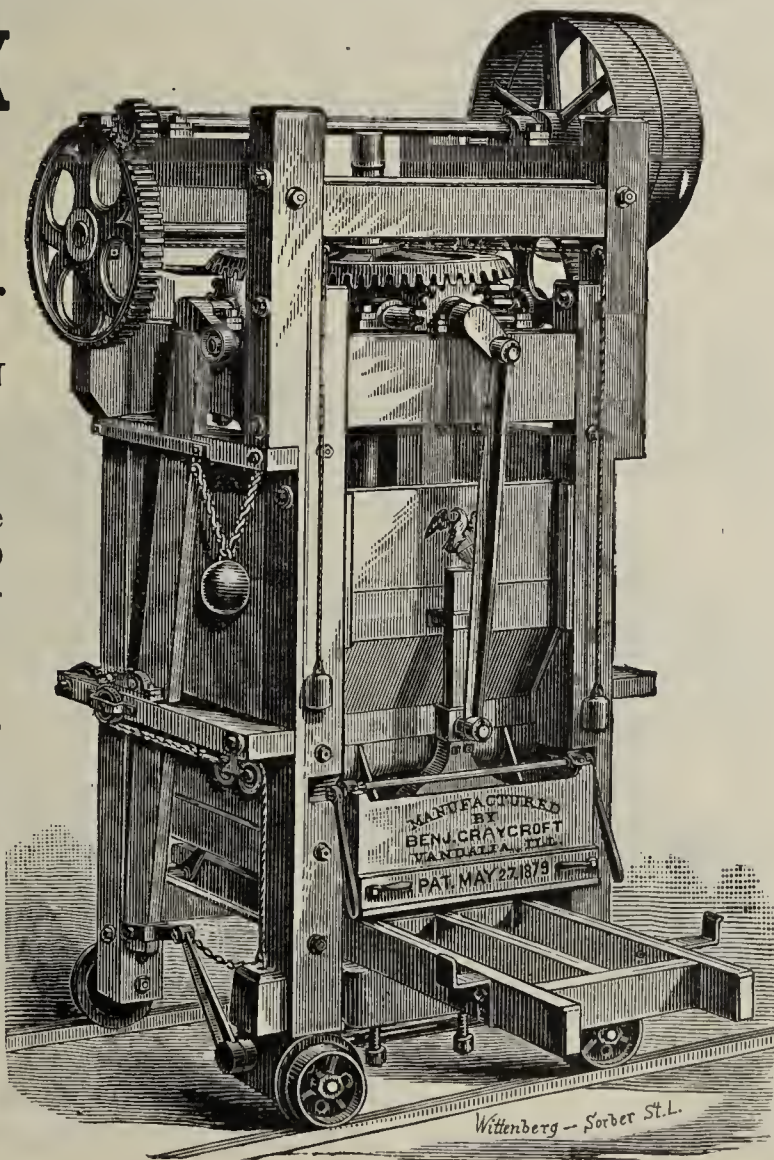
Send for Circular.

**BENJ. CRAYCROFT**

Manufacturer,

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C. J. CRAYCROFT, Fresno City, Cal., Gen'l Agent for Pacific Coast.



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**SLIP CLAY** { For Glazing of Pottery } **WORKS**

ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

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Is the direct and shortest route from Indianapolis to St. Louis and points in Missouri, Kansas, Texas, Colorado, California, the West and Southwest. It affords magnificent train service and superior facilities for the transportation of passengers. The physical condition of its property is fully up to the standard, making a journey over this route highly enjoyable. Prompt and sure connections are made with Western lines at St. Louis and other junction points. Trains for the West leave Indianapolis at 8:10 A. M., 10:45 A. M., 12:10 P. M. and 11:00 P. M. Arrive at St. Louis 5:15 P. M., 5:30 P. M., 7:30 P. M. and 7:00 A. M., respectively. In considering the many advantages offered by this popular route you will find it materially to your advantage to ask for, and see that you get, tickets over the Vandalia Line. Rates are always as low as by less important routes. Baggage checked through.

For detailed information regarding rates, time of trains, etc., address,

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District Passenger Agent,  
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## LOCATIONS FOR CLAY INDUSTRIES

Upon the lines of the Illinois Central Railroad Company and the Yazoo & Mississippi Valley Railroad Company, in the South, there are many

## LARGE DEPOSITS OF CLAY

Suitable for Fire Brick, Paving Brick, Drain Pipe, Tile, Terra Cotta and nearly every other manufacture of clay; some of these are being worked in a small way, but many of them have been untouched on account of lack of capital, knowledge and other reasons. It is desired to bring these fields to the attention of manufacturers and capitalists, and to that effect a pamphlet of 150 pages, entitled "Where to Locate New Factories," has been issued and will be sent free on application to the undersigned. Information will also be given upon application as to where the

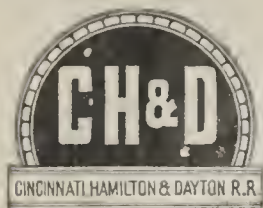
## BEST SITES

are located, and as to

## INDUCEMENTS OFFERED

to those in the above lines of industry who propose seeking a location. For further information, and for the pamphlet mentioned, address GEO. C. POWER, Industrial Commissioner I. C. R. R., 58 Michigan Ave., Chicago, Ill.





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Milwaukee, St. Paul, Minneapolis,  
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The only line running Solid Pullman Perfected  
Safety Vestibuled Trains.

The only line running Dining Cars between Indi-  
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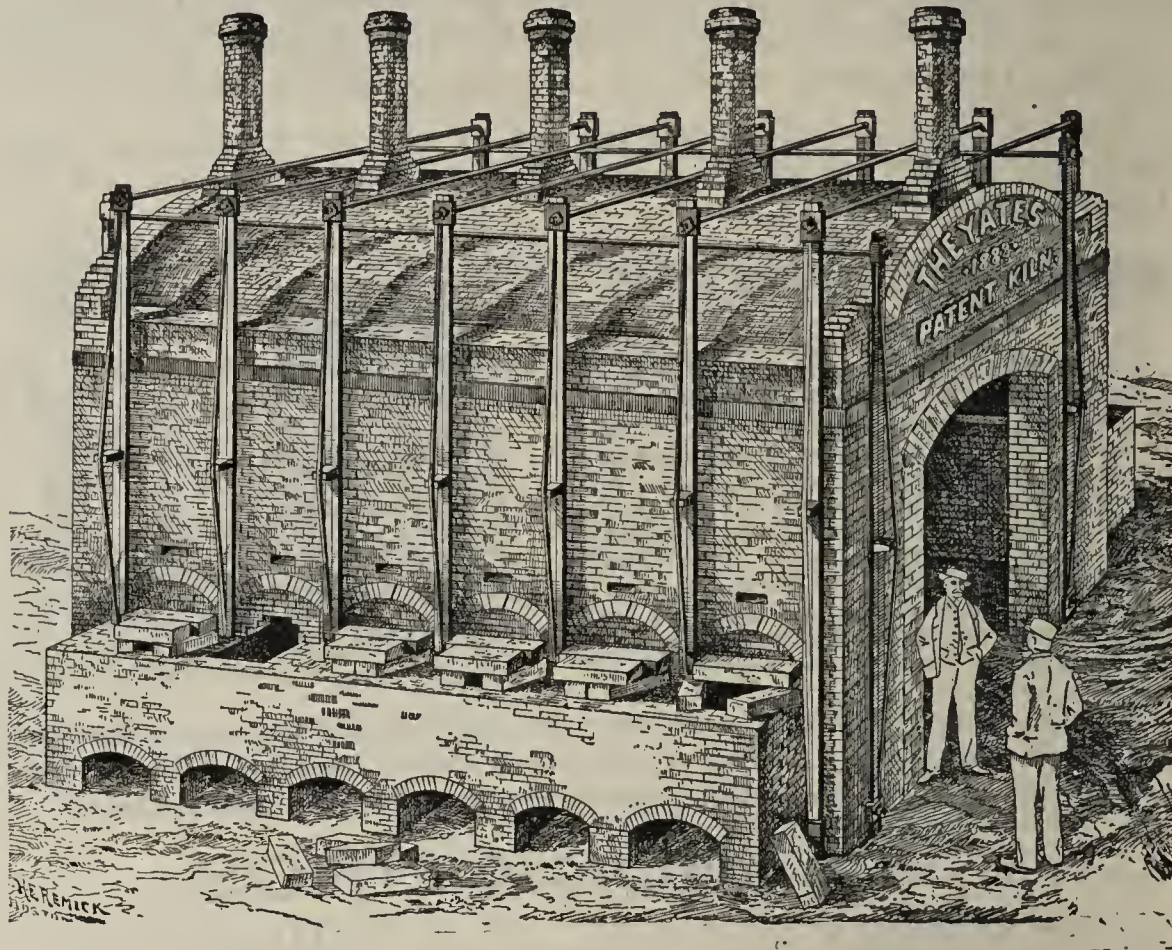
Magnificent Pullman Sleeping and Parlor Cars  
For rates, maps, time tables, etc., apply to

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## THE YATES IMPROVED DOWN DRAFT KILN FOR BURNING BRICK OF ALL KINDS.

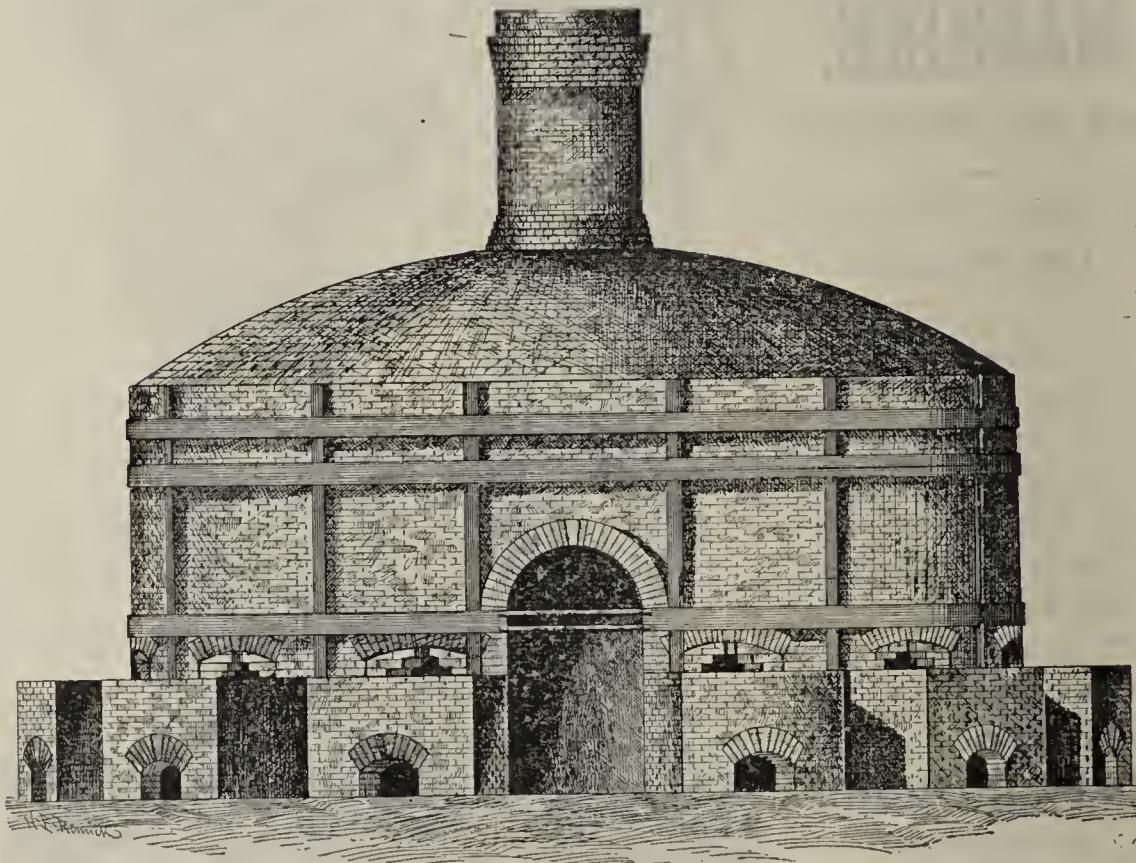


FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty. Waste heat utilized in watersmoking green kiln, and arranged to work continuous. Kilns built under guarantee at our own expense for responsible parties.

The YATES SAFETY and IMPROVED FURNACE HOT AIR DRYER in operation at the Anchor  
Tile and Clay Co., Sparta, Starke Co., Ohio.

❖ WE STAND ON OUR MERITS. ❖



**ALFRED YATES,**

Write for full description.

**NORTH CAMBRIDGE, MASS**

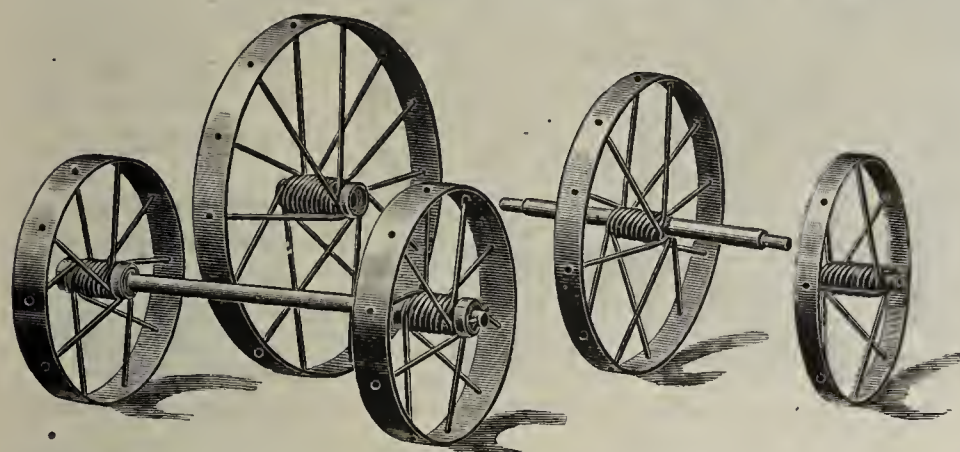


# THE MAN who put straw IN BRICKS

was an inventor. Were he living, I would procure a PATENT for him. As it is, I would be pleased to do your work. Write to me about your device and enclose stamp for reply.

EDWARD C. WEAVER,  
900 F. St., N. W., Washington, D. C.

## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,  
**THE ARNOLD METAL WHEEL CO., New London, O.**

Headquarters for Brickyard Supplies in 1893 will be at the same place it was in 1892, at

**New London, Ohio,**  
**ADDRESS. D. J. C. Arnold.**

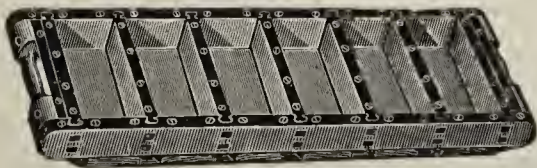
Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

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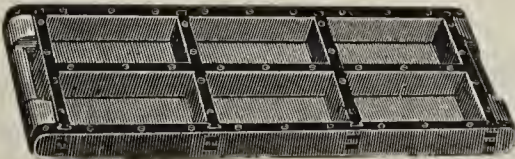
**See!** You can buy them for less money now than ever before. Prices reduced but the standard of quality is maintained. Order now for future delivery. Satisfaction guaranteed. Standard sizes carried in stock.

Some odd sizes at about half price. Send for list.

B. MACHINE MOULD.



C B. HAND MOULD.



3 B. HAND MOULD.



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## ENGINES & BOILERS

Stationary & Semi-Portable.

8 to 25 HORSE-POWER.

High in Grade.

Low in Price.

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The W. C. LEFFEL CO.

Greenmount Ave., Springfield, O.

## To CAPITALISTS: AND OWNERS OF CLAY BEDS, Etc.

WILLIAM CLAYTON,

Potter's Chemist,

60 Butler Street, TRENTON, N. J.

GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between, New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

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Gen'l Pass. Agent, CINCINNATI, OHIO.  
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## LOCAL TIME TABLE

In Effect April 15, 1893,  
Solid Train Between  
Sandusky and Peoria

—AND—  
INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

### DEPART.

No 10 Passenger..... 7:15 a. m.  
\*No. 12 Passenger..... 1:20 p. m.  
No. 14 Passenger..... 7:00 p. m.  
†No. 16 Express..... 11:10 p. m.

### ARRIVE.

\*No. 9 Passenger..... 10:30 a. m.  
No. 11 Passenger..... 2:50 p. m.  
No. 13 Passenger..... 6:20 p. m.  
†No. 17 Express..... 3:20 a. m.

Trains not marked run daily except Sunday, \*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west. Trains Nos. 16 and 17 have elegant free reclining chair cars to all passenger making direct connection at Peru with the Wabash fast trains for Fort Wayne, Toledo, Detroit and Chicago.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY,  
H. C. PARKER, General Pass. Agt.  
Traffic Manager, Indianapolis, Ind.



## Frey's Re-press

Delivers and takes Brick on edge.

Less working parts than any other Re-press.

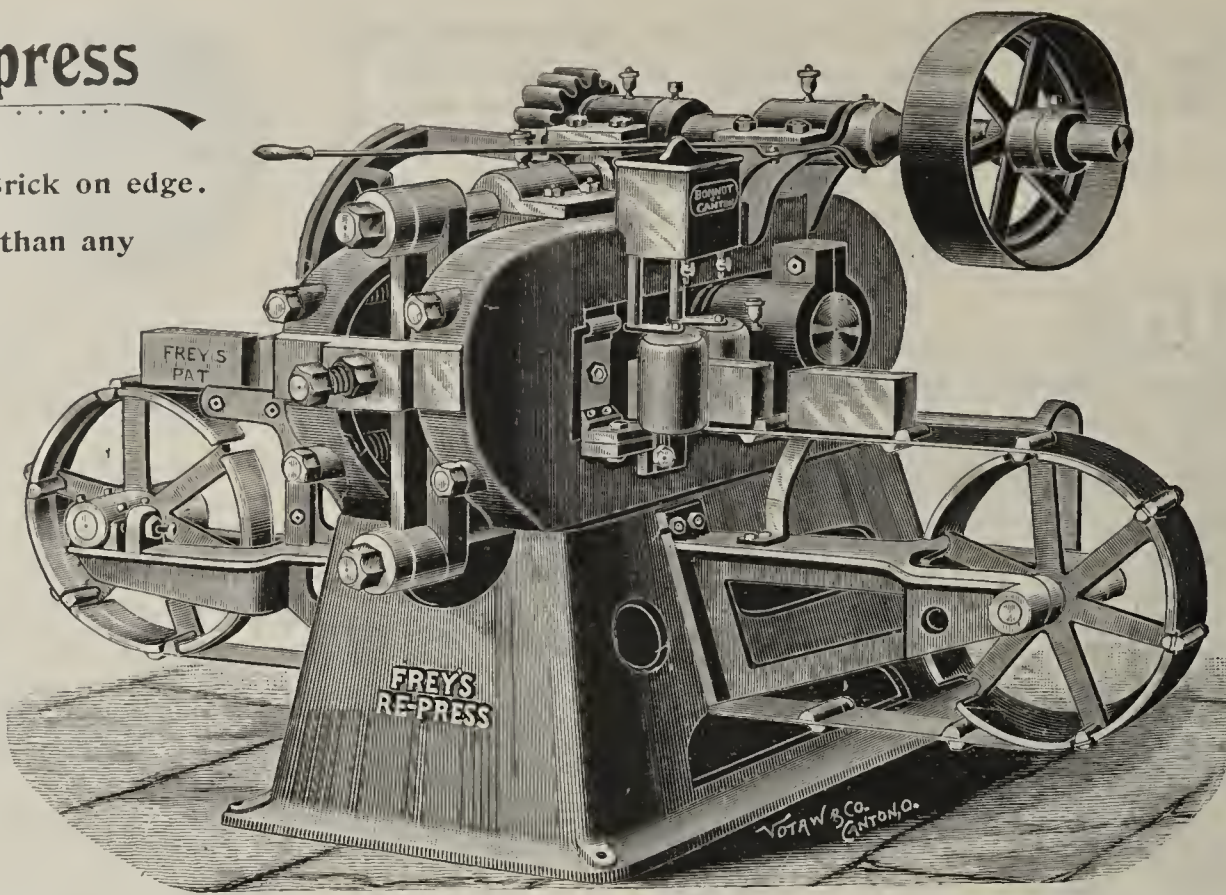
Takes Brick same size of die.

No working parts under the die for dirt to wear.

Send for Circular giving 12 Reasons Why this Re-press is the best, to

**F. E. Frey & Son,**

WILLOUGHBY, - OHIO.



**F. E. FREY & SON,**

MECHANICAL ENGINEERS.....

And Designers of

**Clayworking Machinery**

WILL.....

Take contracts for new Brick or Tile Factories.

Examine Clays and furnish plans for outfits.

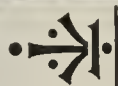
Over Thirty Years' Experience.....

## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



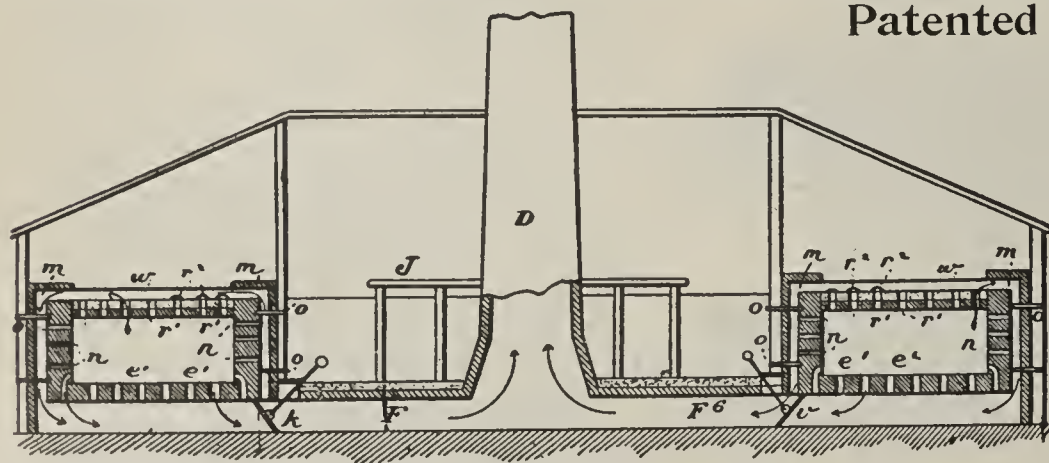
FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.

## The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

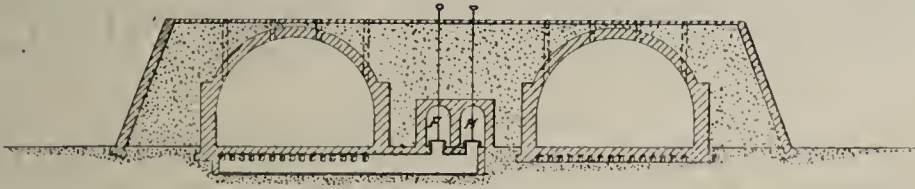
I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

**CARL F. KAUL, Madison, Neb.**

Mention the Clay-Worker.]



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



Office of SAN JOSE BRICK CO.

SAN JOSE, Cal., Feb. 11, 1893.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR: In reply to yours of the 13th inst, will say that the Continuous Kiln you erected for us last winter is giving us great satisfaction, having turned out all good brick on the first round, something we did not look for. We are now shutting down our B-ke kiln and contemplate applying your improvements on it. Please forward estimate cost of same if it can be done. We will give you statement in regard to fuel consumption of new kiln later.

Yours very truly,

D. CORKERY, Manager.

**SIMPLICITY, DURABILITY and the highest EFFICIENCY**  
Are the Characteristics of this Kiln.

IT has taken the lead and will remain there. Burns all kinds of brick more uniform and economical than any other kiln. I mean what I say and am prepared to erect kilns under the highest guarantee, covering the entire cost of kiln. Its superior work is due to the peculiar features which are the result of a careful and systematic consideration of the continuous system of burning.

Competitors are warned from using my inventions as I will protect my claims at all hazards.

Applications for unpatented portions of my improvements now pending. All first-class plants will soon be compelled to adopt the continuous method of burning, so it is no use spending good money for poor kilns, but get the best at once. It does not require a millionaire to own one of my kilns as my large experience in building these kilns has enabled me to reduce the cost of same down to an exceedingly low figure.

Write for description and estimate, cost of kilns for your capacity.

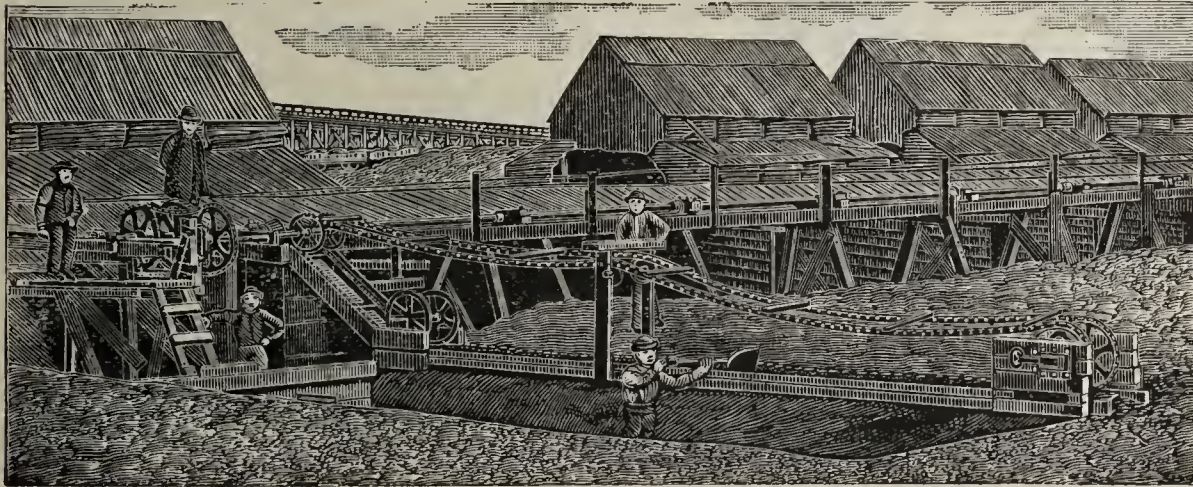
Address communications to

**P. L. YOUNGREN, Oakland, Cal.**



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR . . .

**Elevating, Conveying & Transmission of Power**

64 to 68 Columbia St., BUFFALO, N. Y.



at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.

## A LONG FELT WANT SUPPLIED.

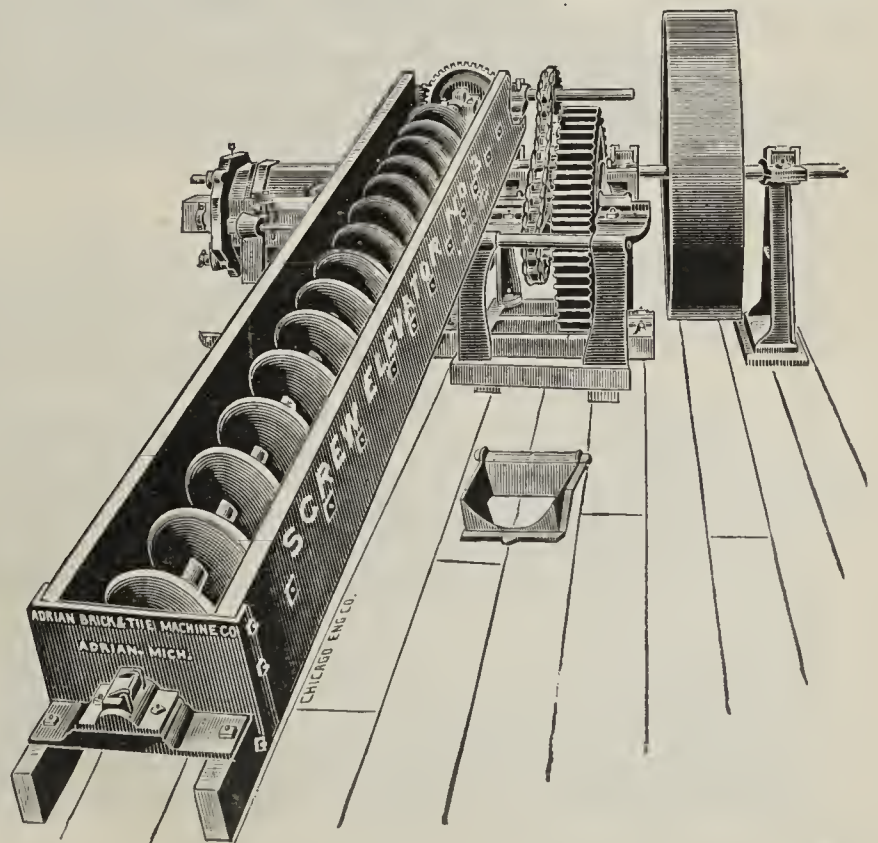
**A SCREW ELEVATOR FOR ELEVATING CLAY.**

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

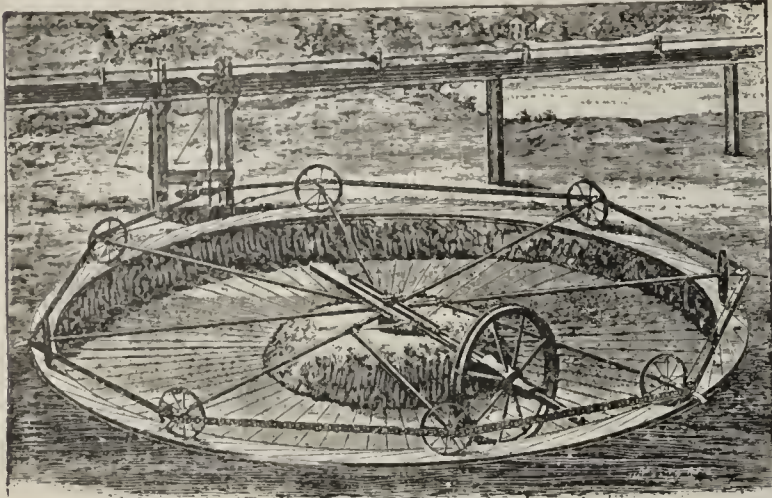
For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

ADRIAN, - - MICHIGAN.







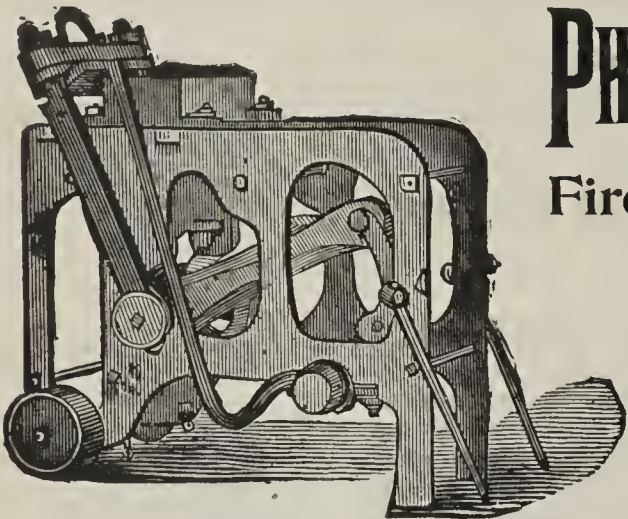
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

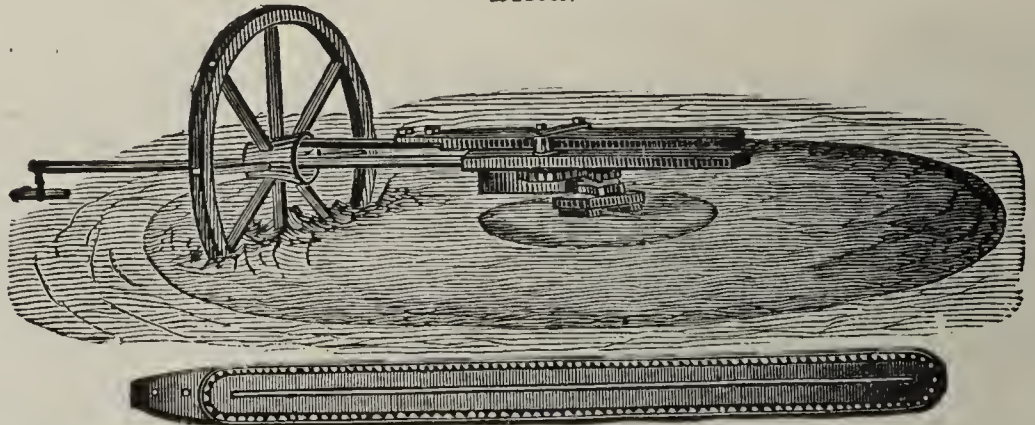
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

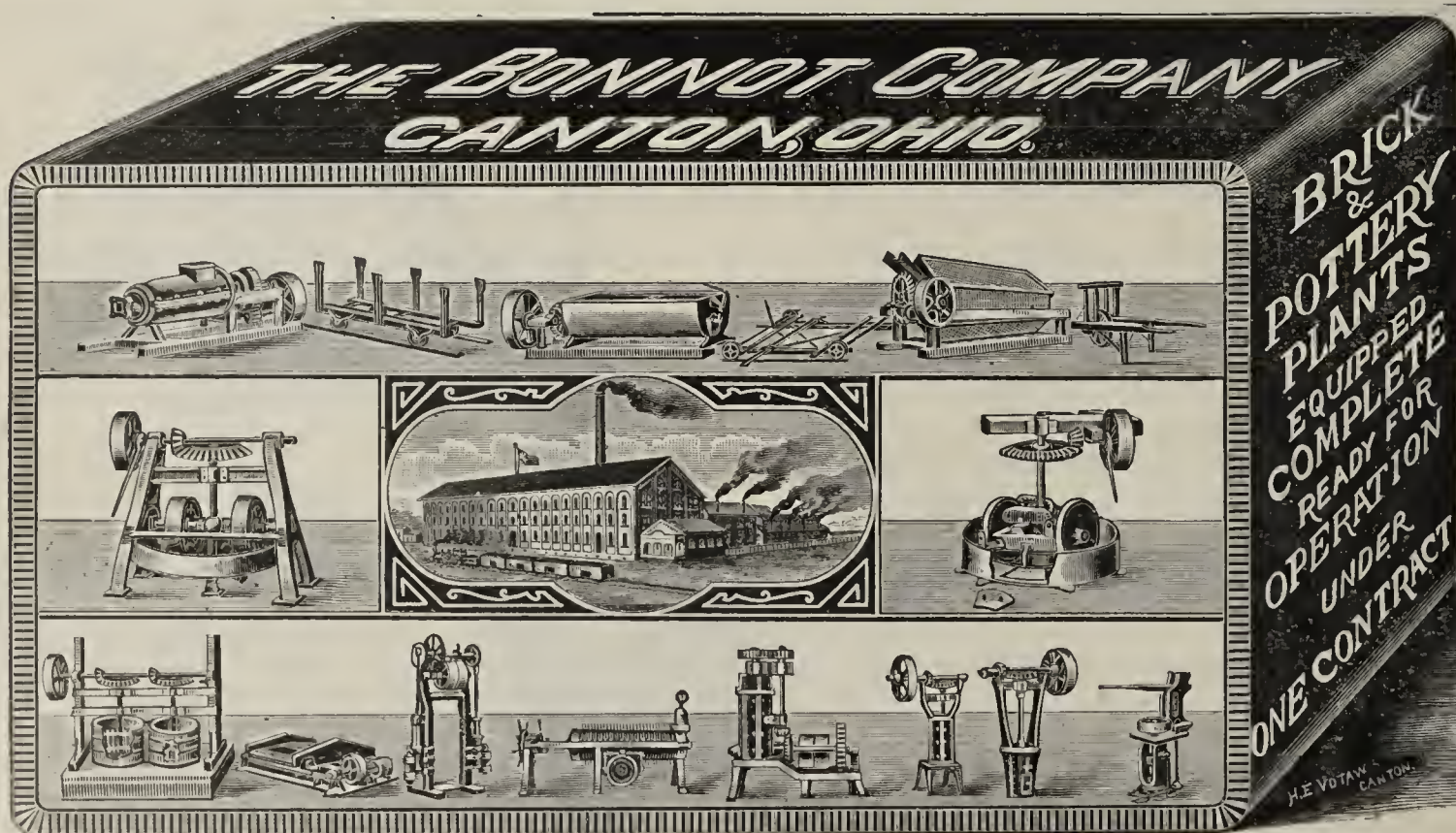
Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.





# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

MANUFACTURED BY

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

48 Styles.

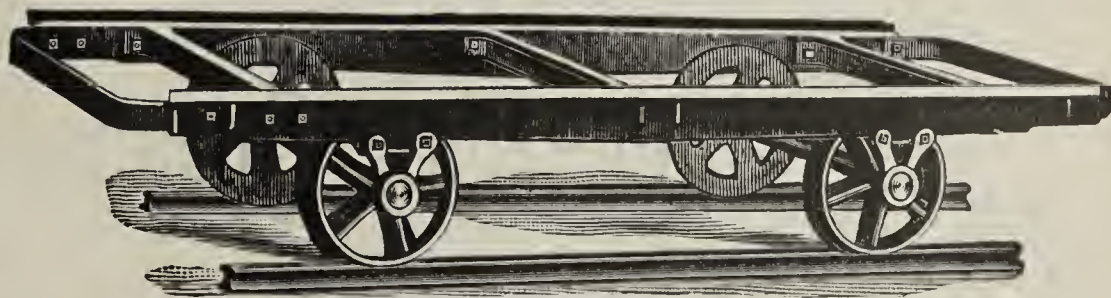
Also

Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



# MAKERS

Send For Price List.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,

Cleveland, O.



## WHEELING MOLD AND FOUNDRY CO.,

Dies of All Kinds  
and Glass House Molds.WHEELING, W. VA.,  
.....MANUFACTURERS OF.....Models for all kinds of Inventions  
of small machinery a specialty.

**Brick Molds, Machinery Castings**  
*And Machinery From Specifications.*

**150 DOUBLE DECK**  
**BRICK DRYER CARS**  
**FOR SALE, CHEAP.**

•➔• Ready For Shipment. •➔•

**CLEVELAND WHEELBARROW & MFG. CO.,**  
961-981 Hamilton St., - - - Cleveland, Ohio.

If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

**Jonathan Creager's Sons,**

127 W. SECOND STREET,

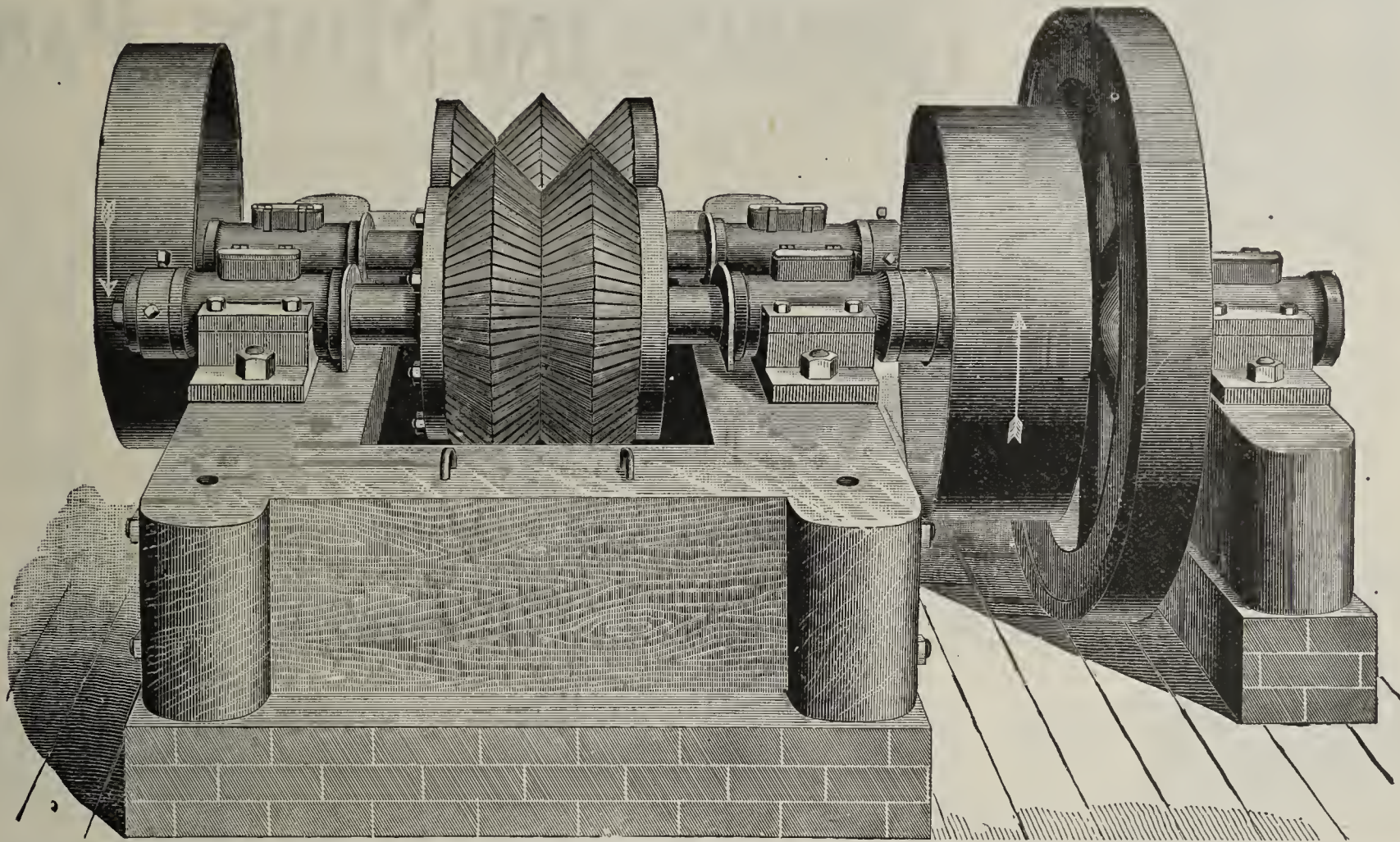
**Cincinnati, Ohio.**

P. S. If you do not ask we cannot tell you of several very important improvements.



# NEWELL IMPROVED CLAY PULVERIZER

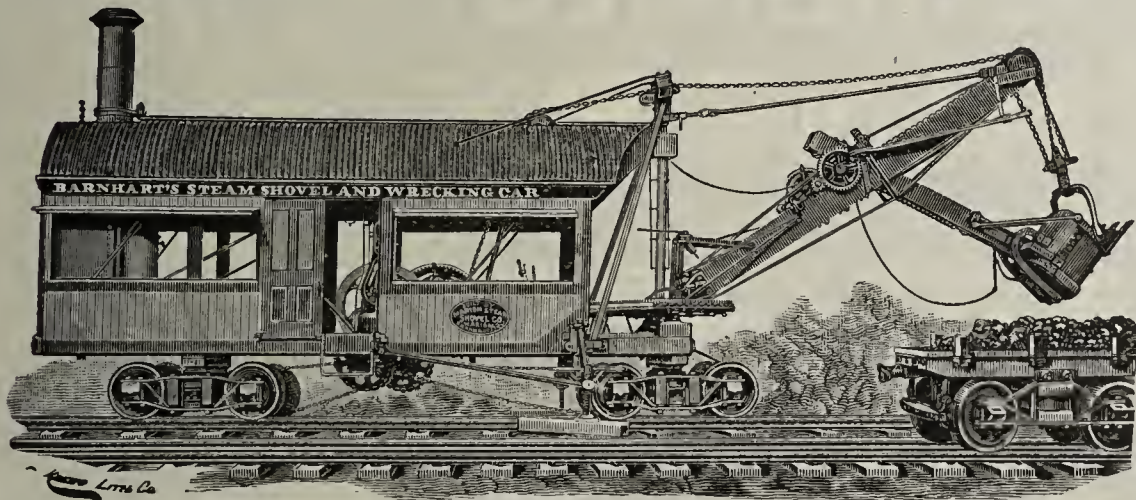
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

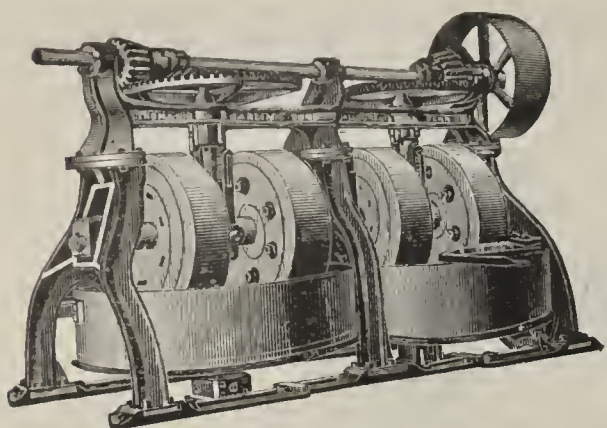
**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION. . . . OHIO.**



STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick





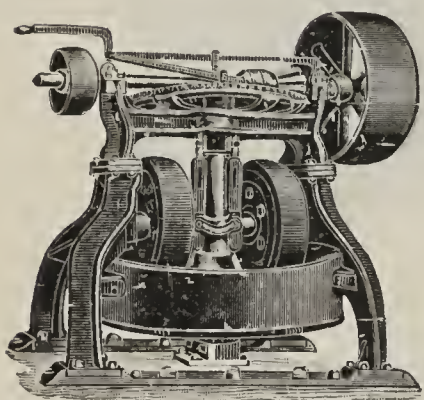
OUR SPECIALTY.

# GRINDING AND MIXING PANS

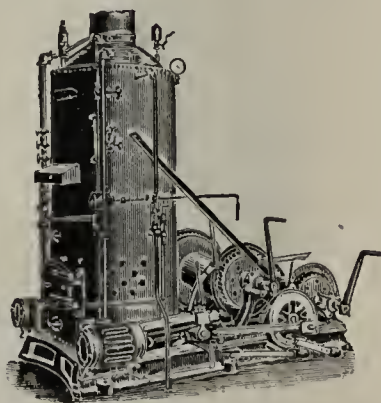
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



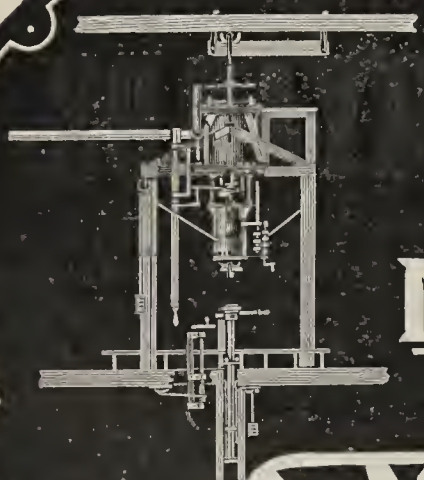
Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

} IN STOCK:

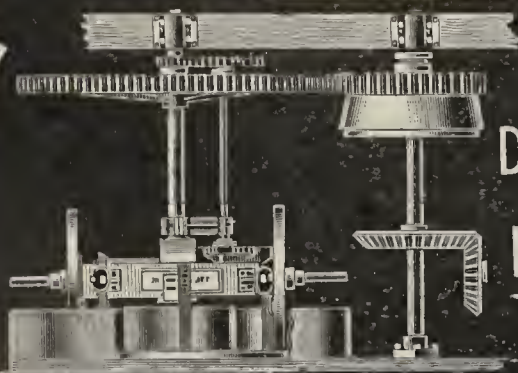
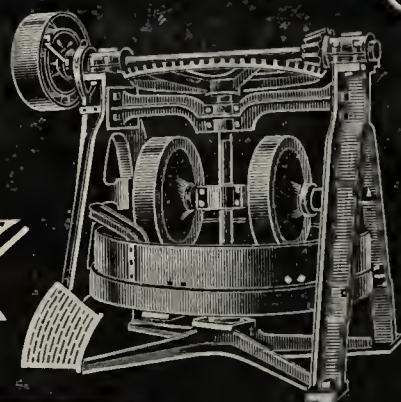
{ One 8 foot Wet Pan.  
 { Eight 3 foot gauge Dump Cars.



MANUFACTURERS OF  
 IMPROVED  
**CLAY WORKING  
 MACHINERY**

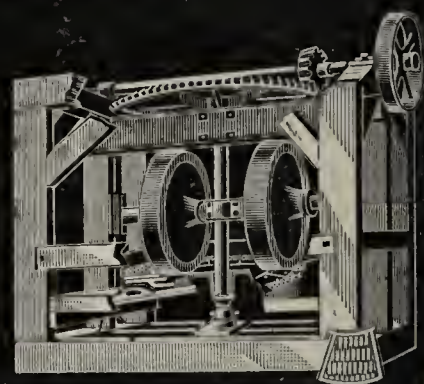
OF EVERY DESCRIPTION

**TAPLIN RICE & CO.**



CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

AKRON, OHIO, U.S.A.

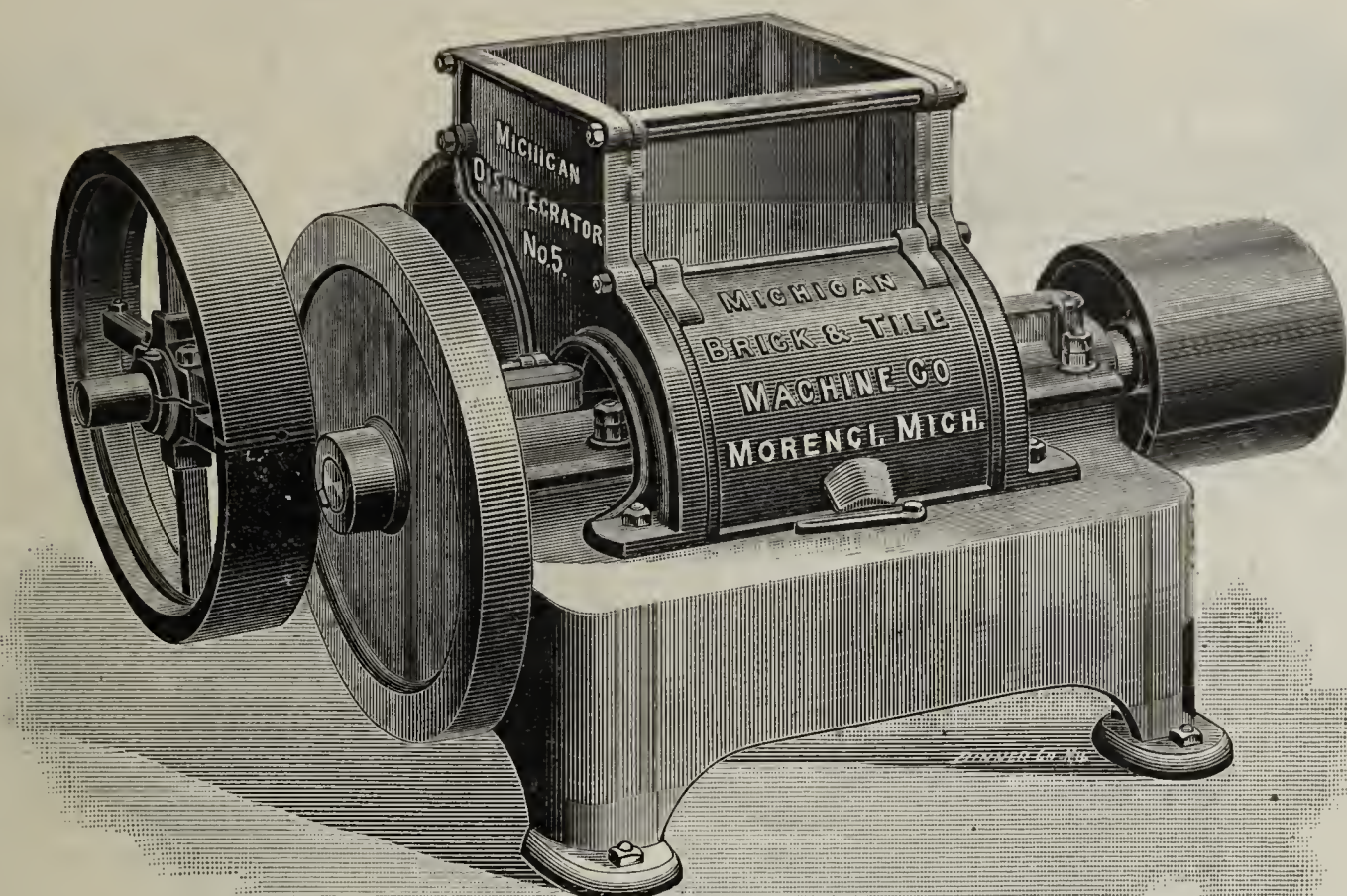


PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



MICHIGAN DISINTEGRATOR, No. 20  
is a Mammoth. It has a Capacity  
of 100,000 or Over a Day.



ALL DISINTEGRATORS Fully Guaranteed.  
Send for Catalogue and  
Testimonials.

## A MONEY MAKER. BRICK AND TILE MANUFACTURERS

Cannot afford to do without it. It reduces hard, stiff, lumpy clay and puts it in the best possible condition. "It increases the capacity and improves the quality sufficient to pay for itself once a month;" that is what users of it write us. Throw away your old Smoothe Rolls and put in a MICHIGAN DISINTEGRATOR. They are the strongest, have the largest knives, do the best work. The No. 5 has a Capacity up to 40,000 a day. Price, Capacity considered, the lowest on the market.

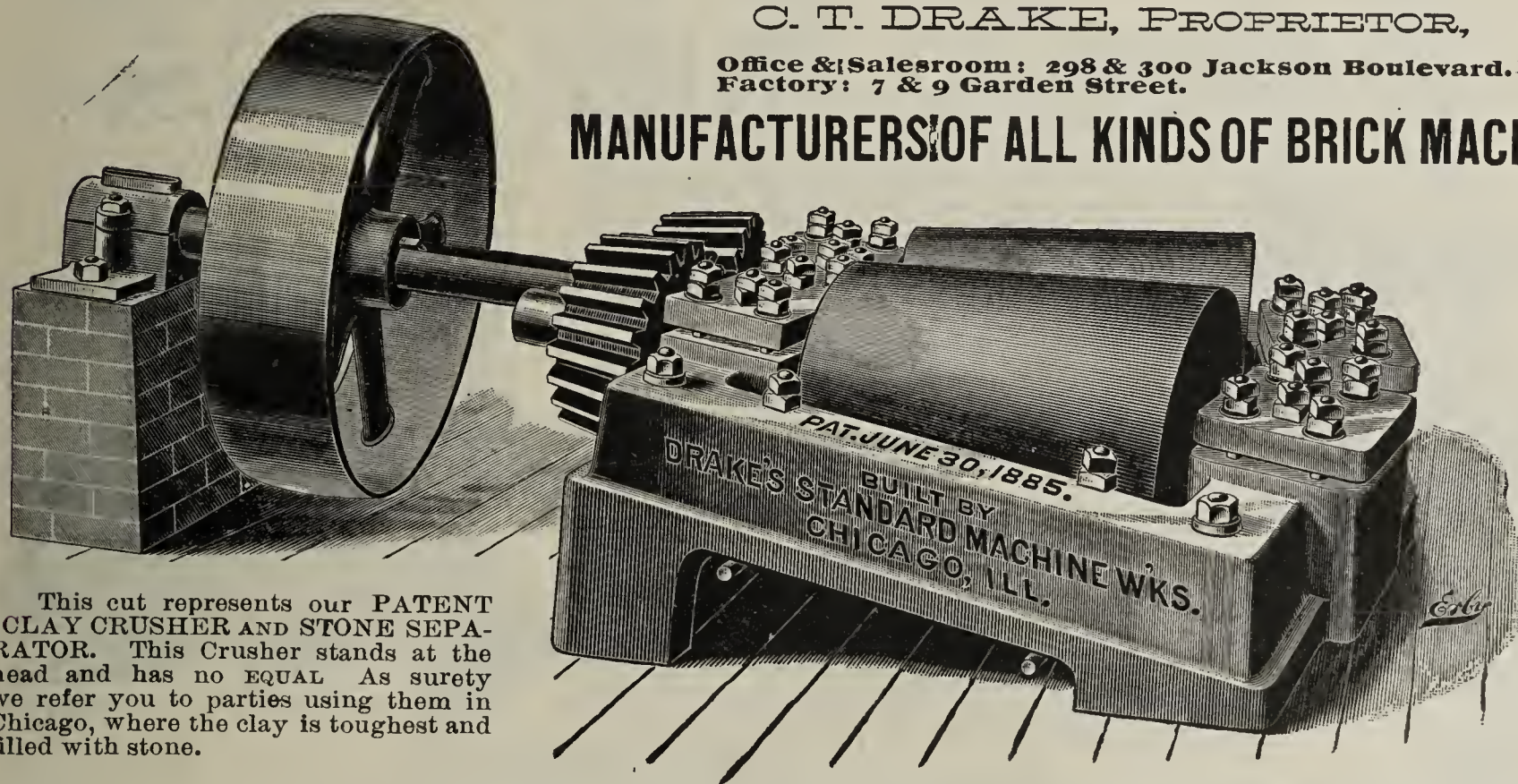
MICHIGAN BRICK & TILE MACHINE CO.. - MORENCI, MICH.

# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY

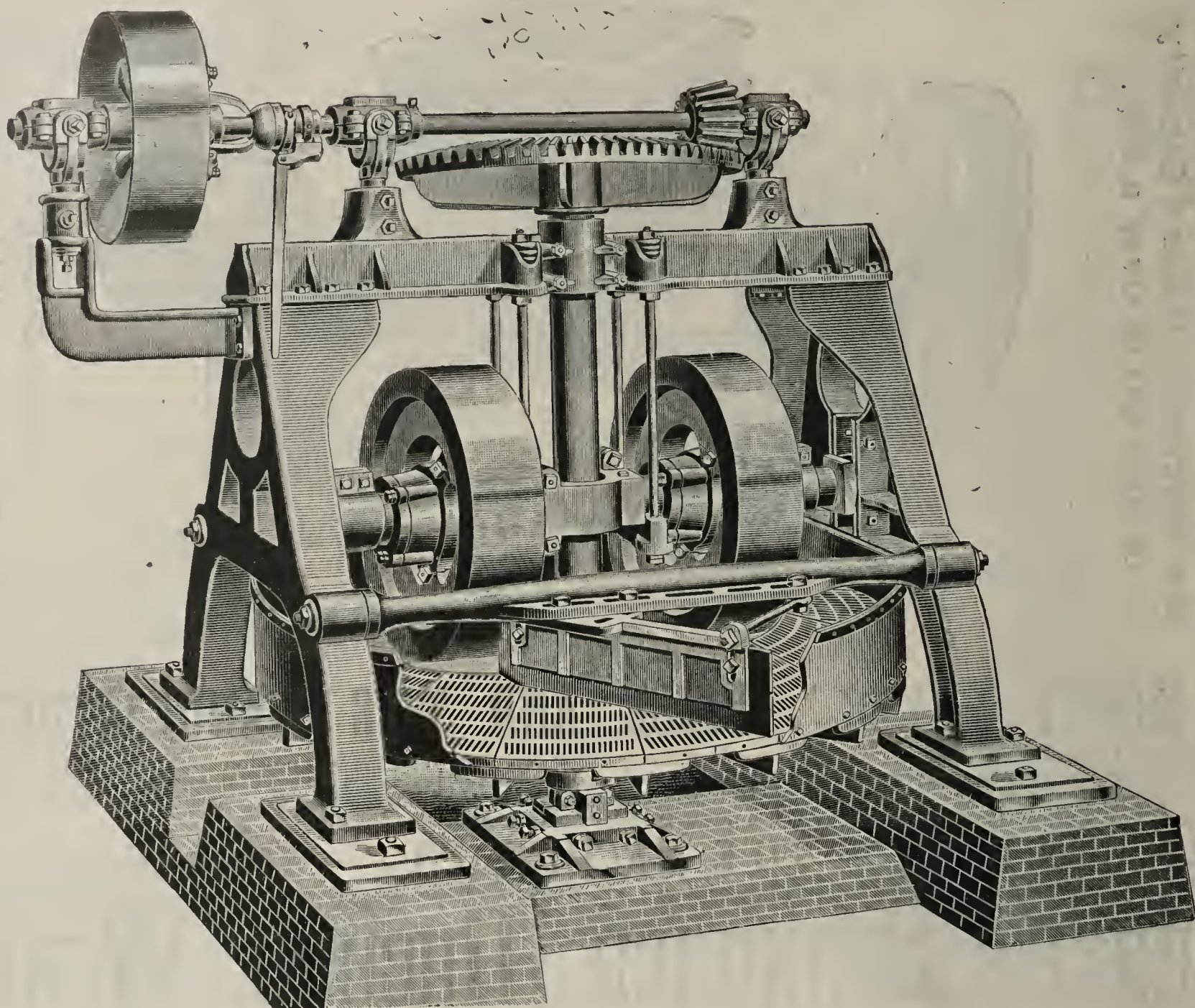


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 11 crushers; Hayt & Alsip Co. is running 6 crushers; Purington-Kimbell Brick Co. is running 8 crushers; May, Purington & Bonner B. Co. is running 4 crushers; J. B. Legnard is running 2 crushers; Weckler Brick Co. is running 1 crusher; Adam J. Weckler is running 1 crusher; Weckler Prussing Brick Co. is running 1 crusher; Chicago Brick Co. is running 2 crushers; Union Brick Co. is running 2 crushers; M. Myers is running 2 crushers; Wahl Bros. are running 4 crushers; Pullman Brick Co. is running 2 crushers; Fred Zapel is running 1 crusher; Myers & Toll are running 2 crushers; Harms & Schlake Brick Co. is running 1 crusher; L. Wehrheim & Son are running 1 crusher; Alexander Burke is running 1 crusher; John Sexton is running 1 crusher; John Busse, Jr., & Co. is running 1 crusher; John Busse is running 1 crusher; Weber & LaBahn Brick Co. is running 2 crushers; George Lill is running 1 crusher; Legnard & Madden are running 2 crushers; Turner Brick Co. is running 1 crusher; Mayer & Toll are running 2 crushers; Purington Brick Co. is running 2 crushers; Kuester & Thurrow are running 1 crusher; Reimer, Labahn & Kuester are running 1 crusher; Dumesniel Bros. Co., Louisville, Ky., are running 1 crusher; Mason City Brick & Tile Co., Mason City, Ia., is running 1 crusher; Eagle Clay Works, Streator, Ill., is running 1 crusher.

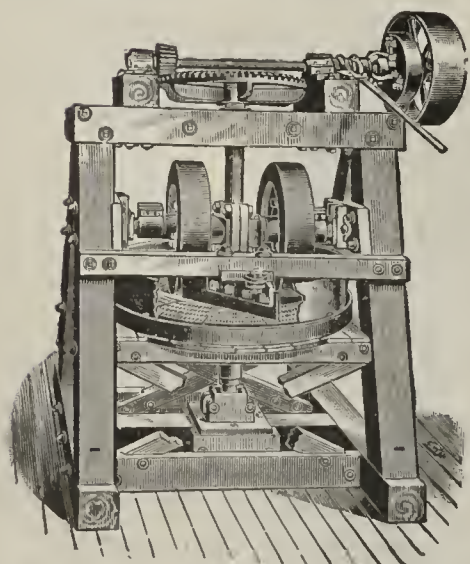
**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.





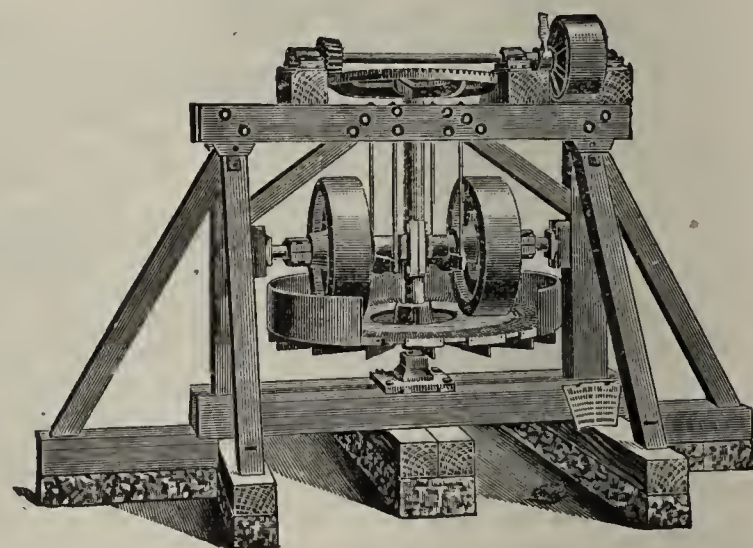
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

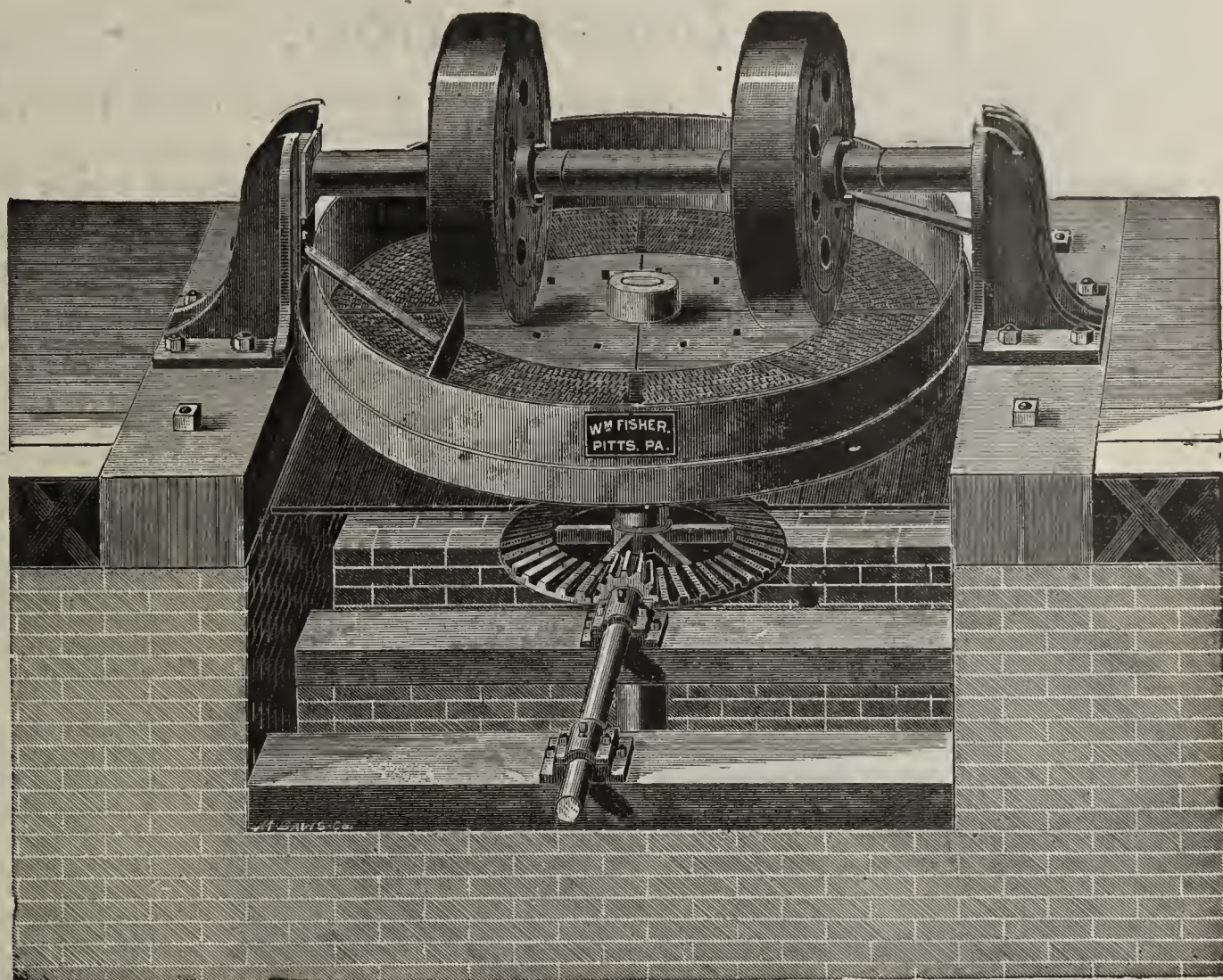
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

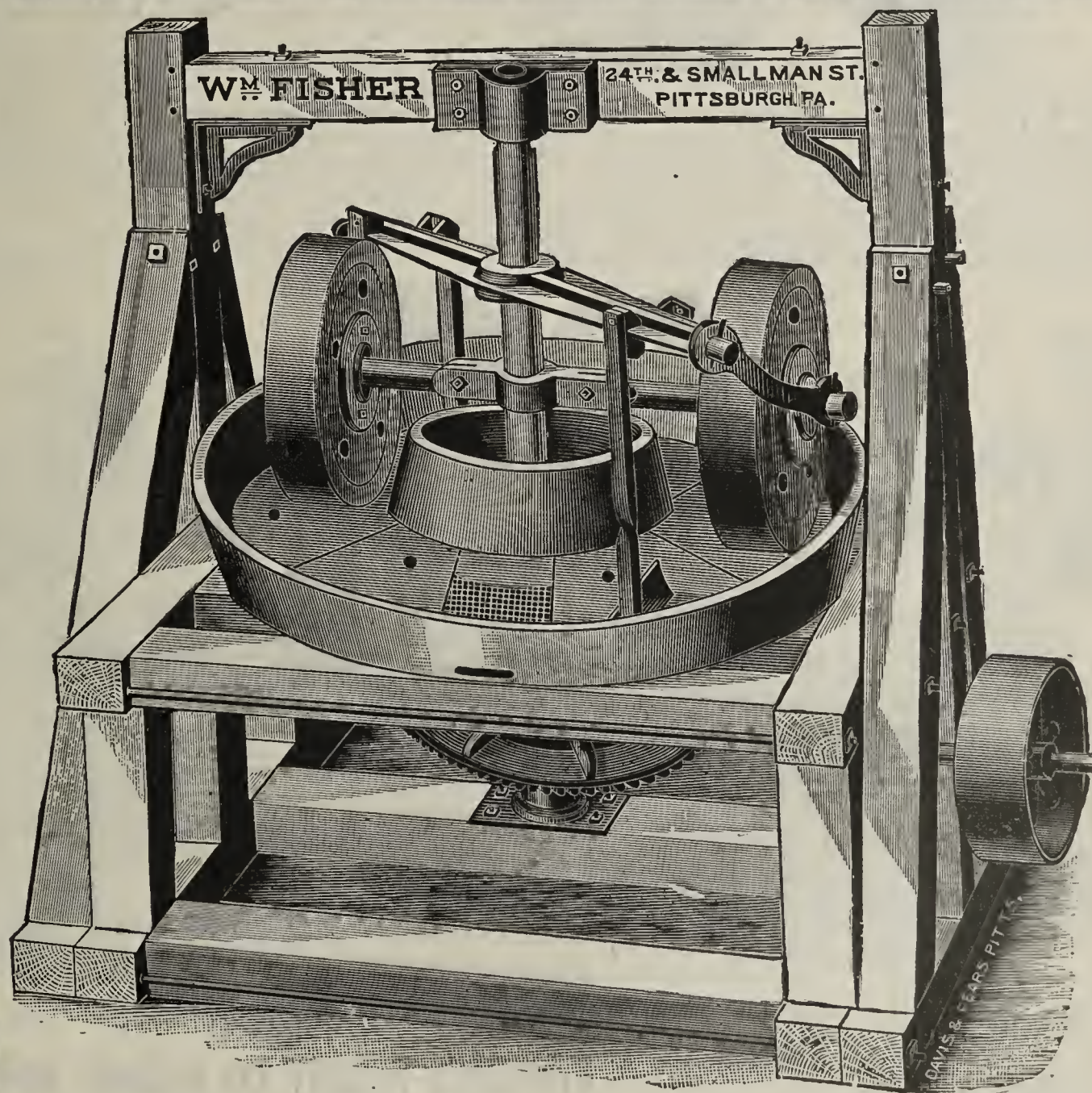
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.



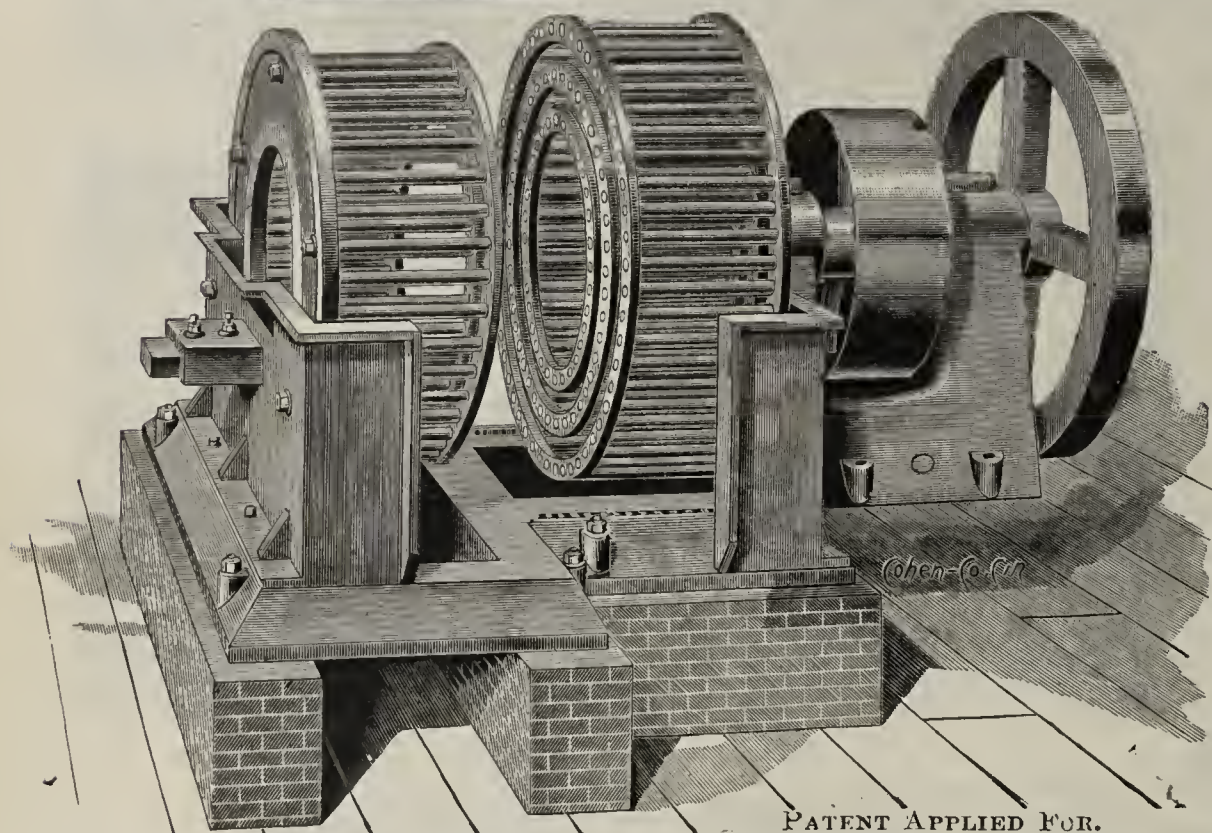
## Description.



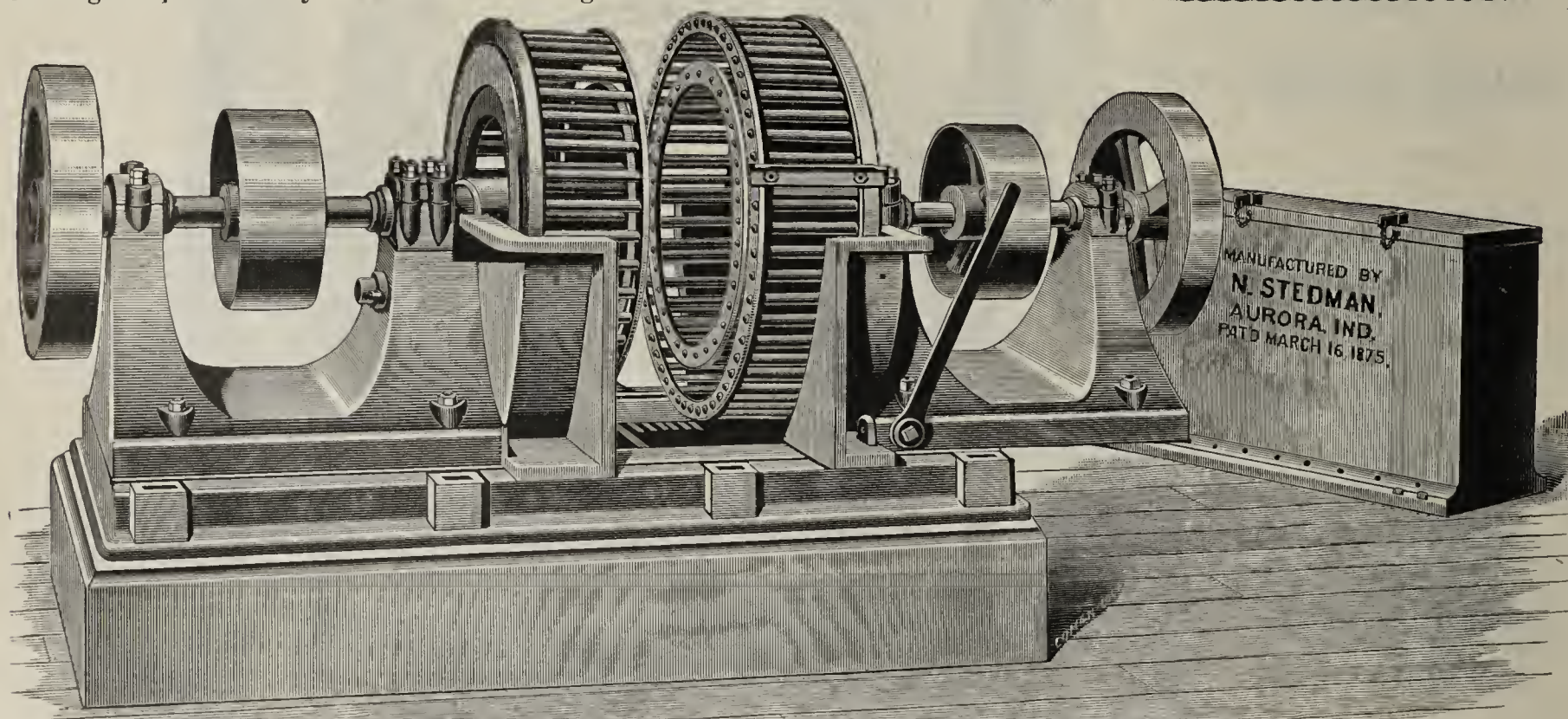
This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loomy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

**RUSHVILLE, IND.**

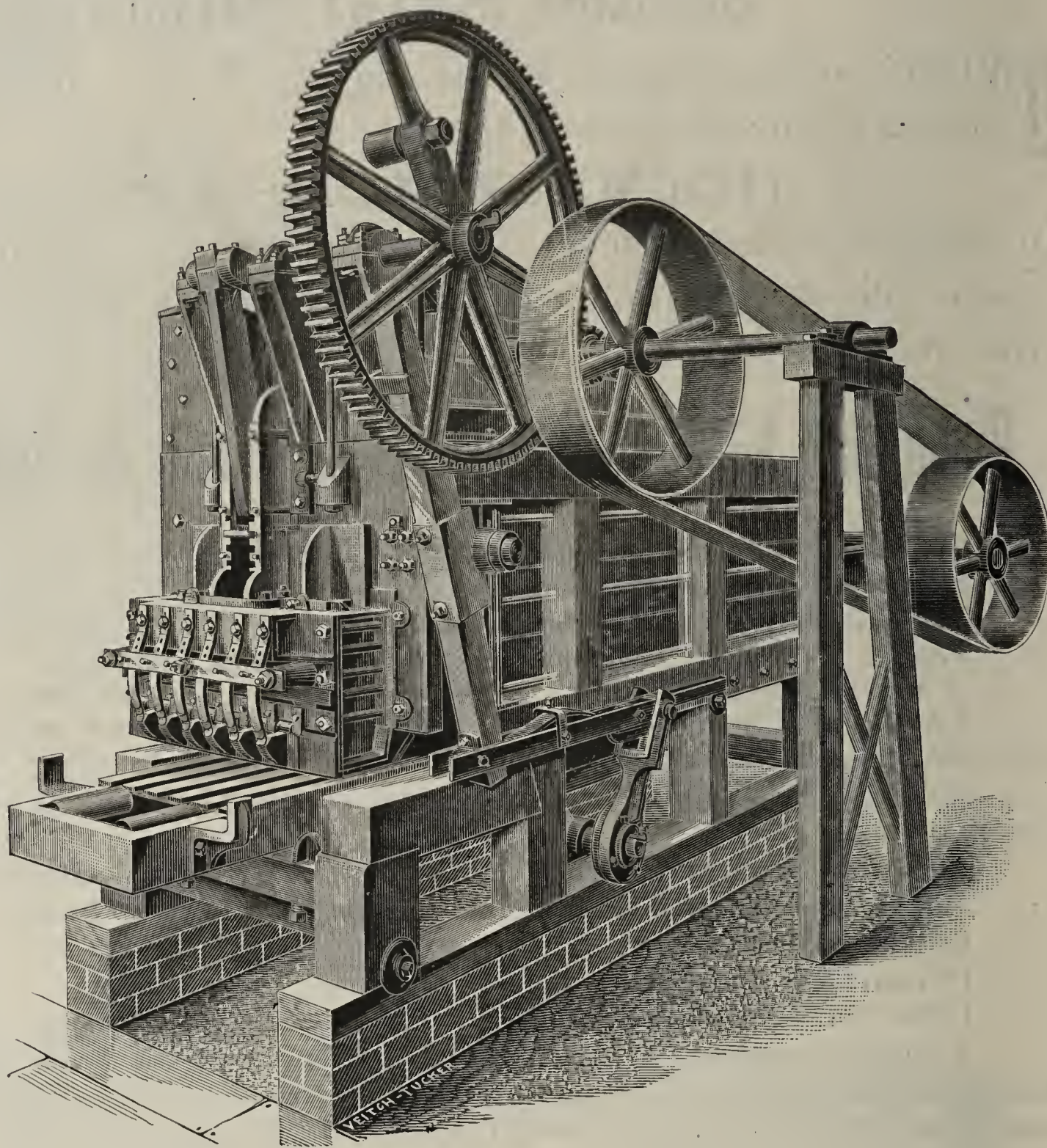
REFERENCE: Rush County National Bank.



THIS IS THE.....  
 .....MACHINE TO **INVESTIGATE**  
 WILL OUTWEAR ANY OTHER.



WEIGHT  
 NEARLY EIGHT  
 TONS.



AFTER THREE YEARS.

DANIELSONVILLE, CONN., Nov. 2, 1892.

THE McLAGON FOUNDRY CO.:

DEAR SIRs:—Another season has whirled around and finds me 3,000,000 brick better off for the season's work. My expense bill for the year was \$11.75, which, I think, is small enough for anyone. My opinion of the "New Haven" Brick Machine remains just the same, "**Without a Peer.**"

Yours truly, FRANK G. BAILEY.

GUARANTEED IN EVERY RESPECT.

**The McLAGON FOUNDRY CO., New Haven, Conn.**

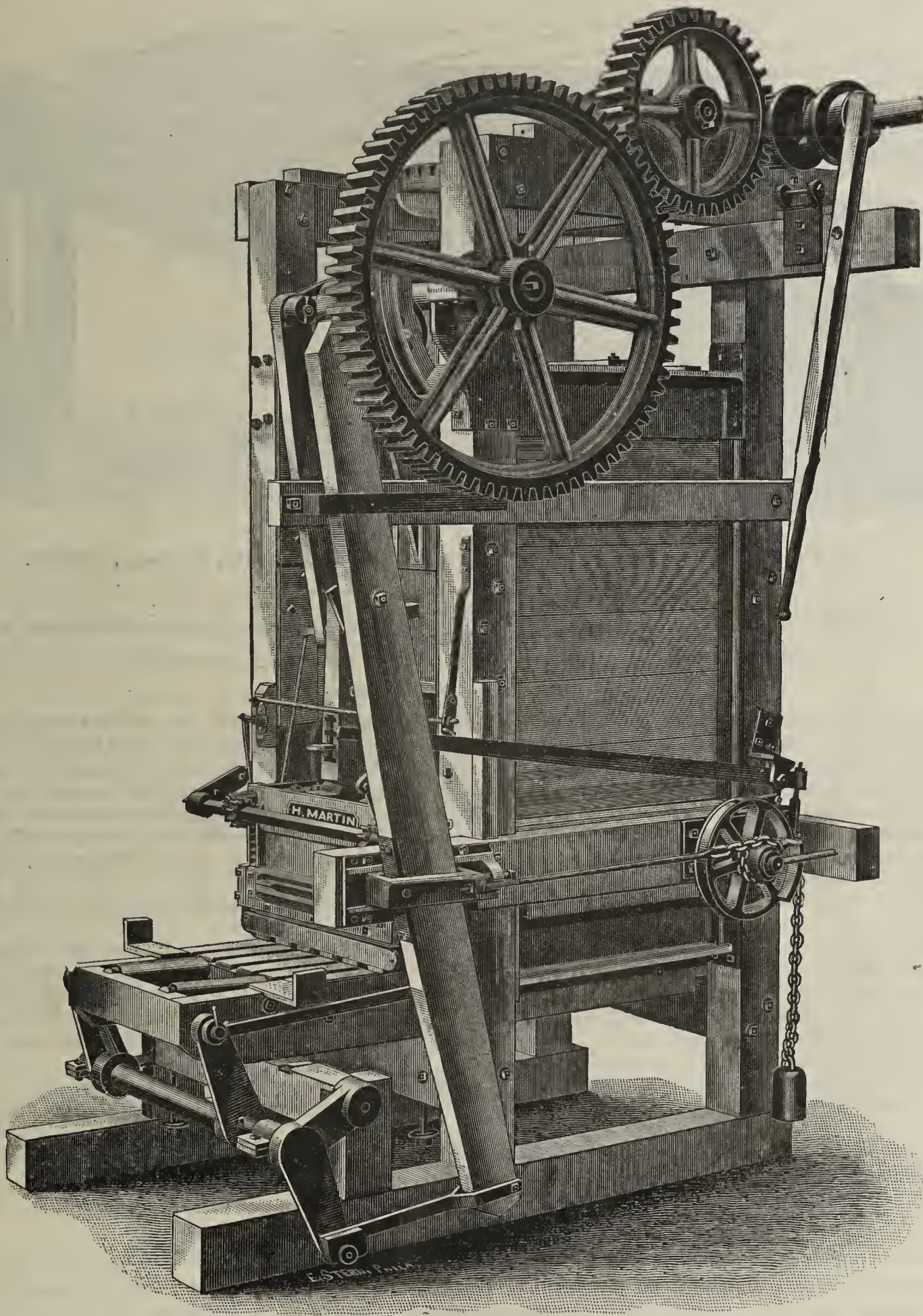


# "MARTIN" BRICK MACHINERY.

DIFFERENT STYLES. DIFFERENT SIZES.....  
BUILT FOR STRENGTH AND DURABILITY.



Plans  
and  
Specifica-  
tions  
of  
Complete  
Plants  
Furnished  
Upon  
Application.



Clay  
Tested  
and  
Reports  
Furnished.  
Machines  
in  
Practical  
Operation  
at  
Our  
Works.



The Henry Martin Brick Machine Manufacturing Co. are so well commended to the brick interests of the United States that they are well and favorably known.....

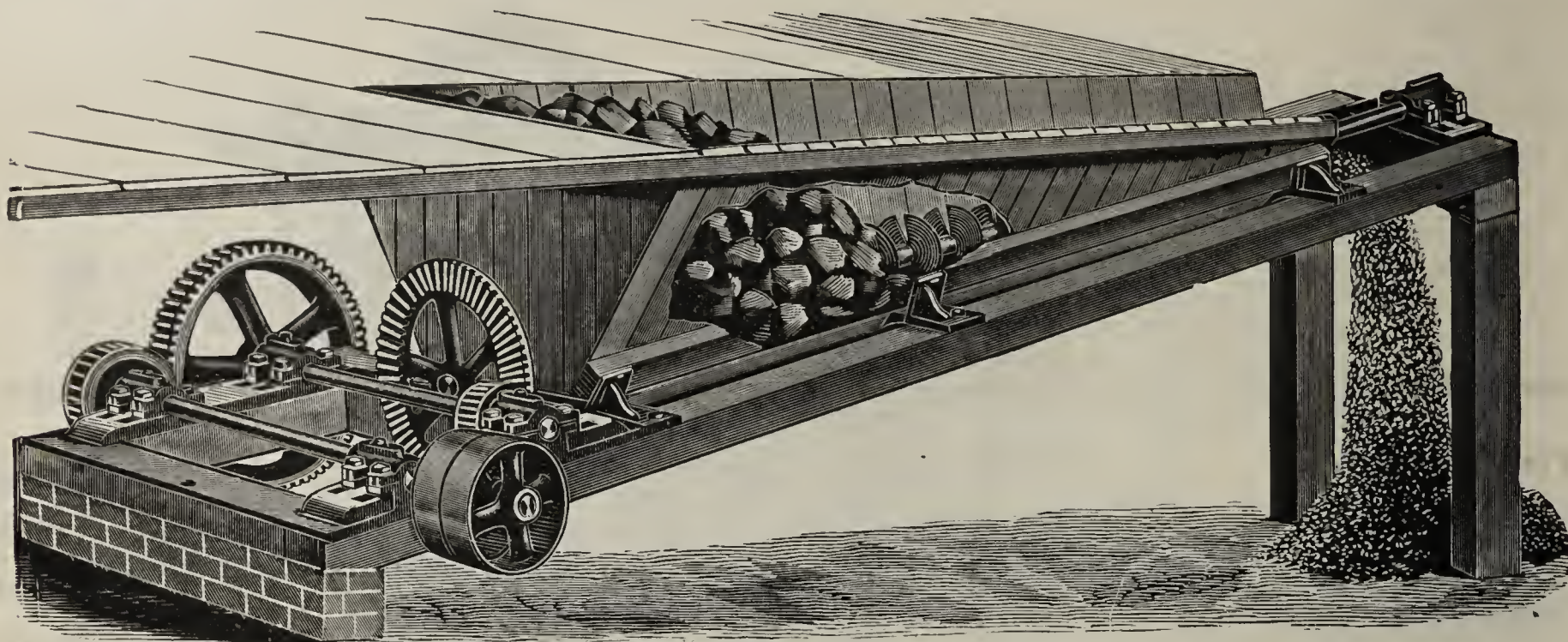
## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

SEND FOR CATALOGUE.  
SOLE MANUFACTURERS OF "MARTIN" PATENTS.

LANCASTER, PA., U. S. A.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

## MUSKEGON, MICH.

Mention Clay-Worker.



## Now Is The Time For Improvements.

You have contemplated adding improved machinery or labor-saving appliances to improve your ware, increase sales and profits.

### Why Not Do It Now?

The lull in business has caused the temporary suspension of work in many brickmaking establishments. Consequently, there is nothing to interfere with the effecting of improvements without inconvenience or delay to the regular work.

The scarcity of money gives it a greater purchasing capacity,—both of labor and materials—and you can make your changes or additions much more cheaply than under ordinary circumstances.

When the demand for brick again revives,—as it is sure to do—a stoppage for improvements will be much more expensive, as well as delay the production of ware for which you will have urgent demand.

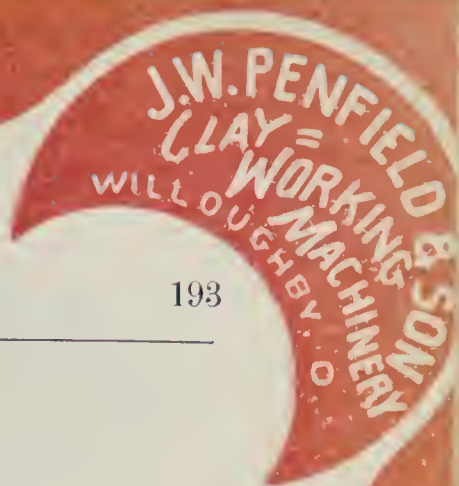
When trade revives, you should be prepared for it with machinery that will do most profitable service, and enable you to realize the largest profits from the start. Take time by the forelock; make your changes to-day. You cannot make a better investment.

A PENNY SAVED IS TWO PENCE EARNED.

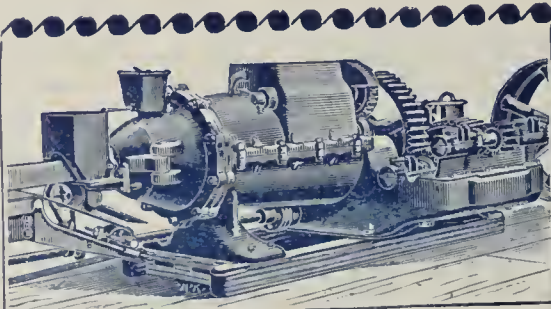
**J. W. Penfield & Son,**

Brick and Sewer Pipe Machinery Makers,

WILLOUGHBY, OHIO, U. S. A.





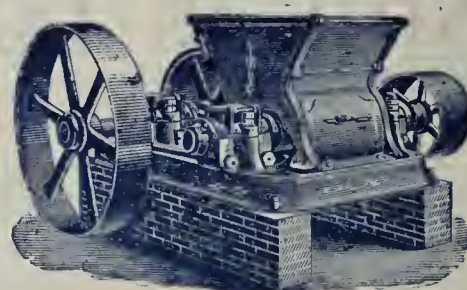


### The Penfield Auger Brick Machines

are the heaviest of the good machines and the best of the heavy machines. They are strong, durable, speedy, automatic. They make good brick. What more could you ask?

CATALOGUES FREE.

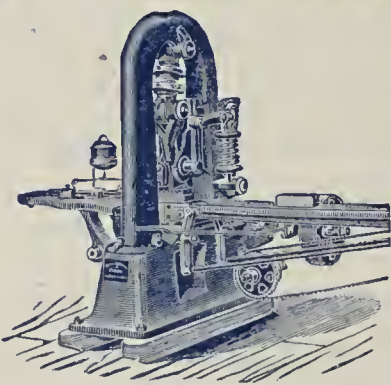
J. W. PENFIELD & SON,  
Willoughby, Ohio, U. S. A.



### Penfield Disintegrators and Crushers

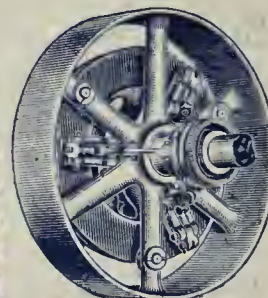
will aid you to prepare your clay better and you will make better brick. Better brick mean quicker sales, larger demand, better prices; advantages worth securing. Send for our catalogues.

J. W. PENFIELD & SON,  
Brick Machinery Makers,  
Willoughby, Ohio.



Every time you press a brick by hand, you lose money. A Power Press will do everything a hand press can and do it easier, quicker and cheaper. PENFIELD'S POWER PRESS is simplest and strongest; lasts longest; costs least for repairs; is guaranteed. Circulars free.

J. W. PENFIELD & SON,  
BRICK MACHINE MAKERS,  
Willoughby, Ohio.



Equip  
your  
Line-  
Shafting  
with  
the

### Imperial Clutch Pulleys.

Friction regulated without stopping shaft. Clutch mechanism perfectly balanced. Runs at any speed. Takes small space on shaft. Strictly first-class. Send for details.

J. W. PENFIELD & SON,  
No. 12 Mentor Ave.,  
Willoughby, Ohio.



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

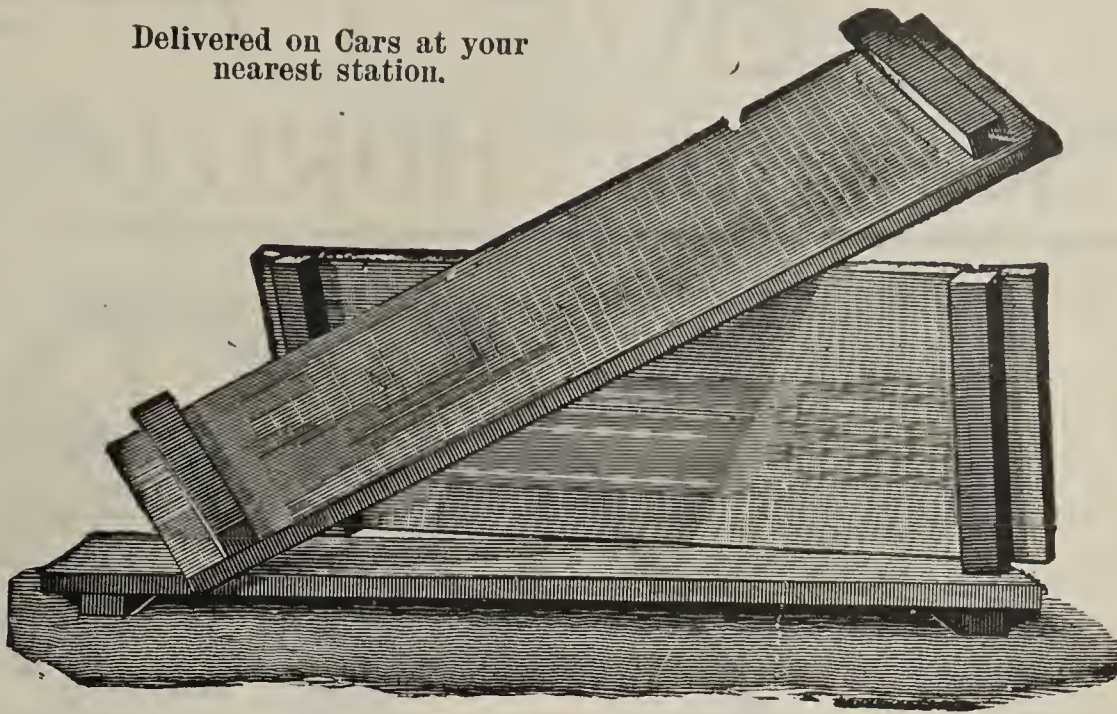
W. B. MERSHON & CO.,

East Saginaw, Mich.

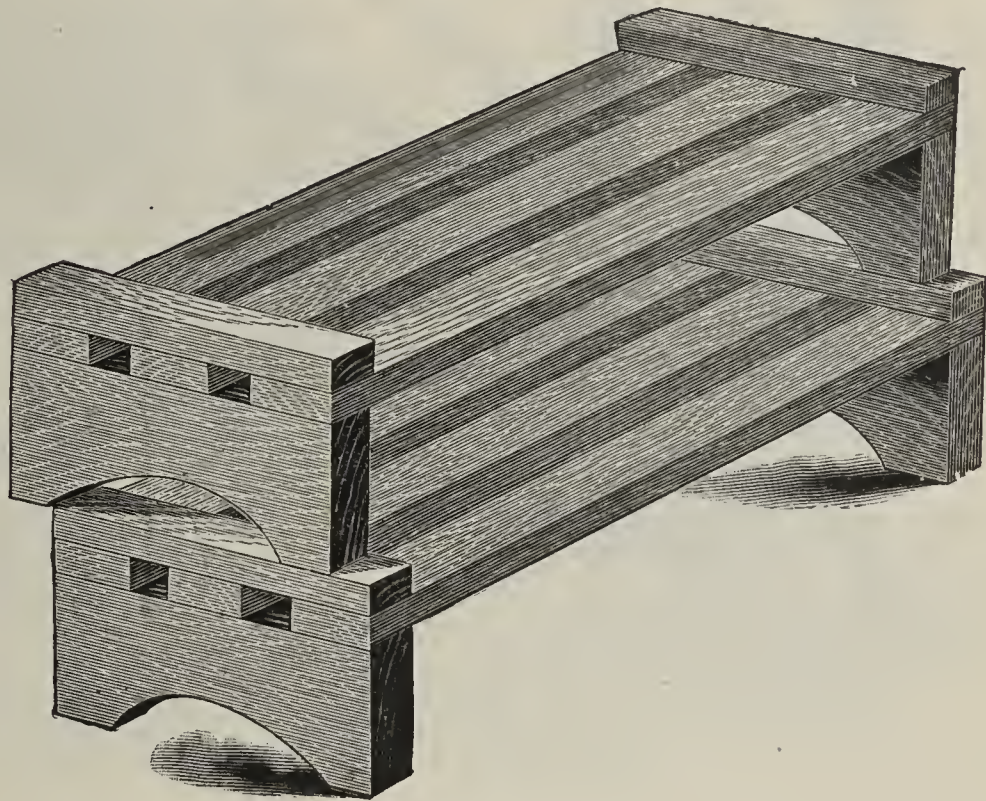
THE CLAY-WORKER.

195

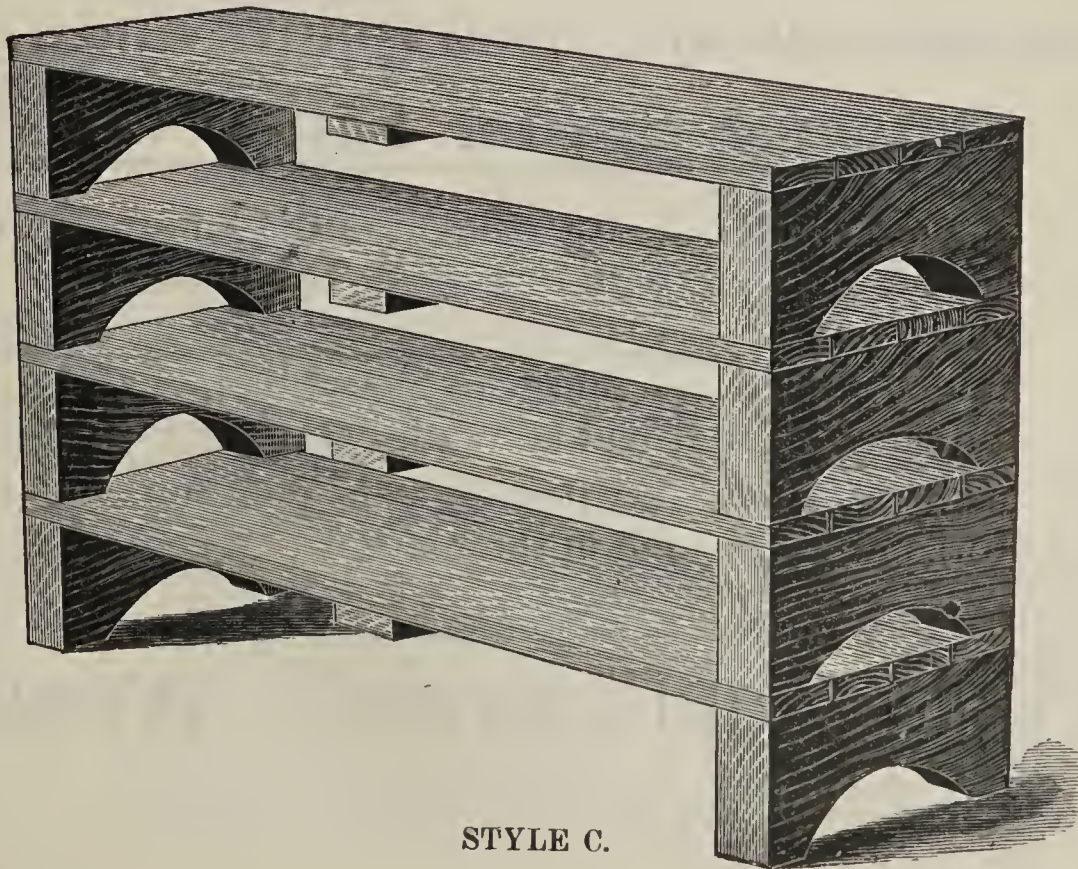
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.

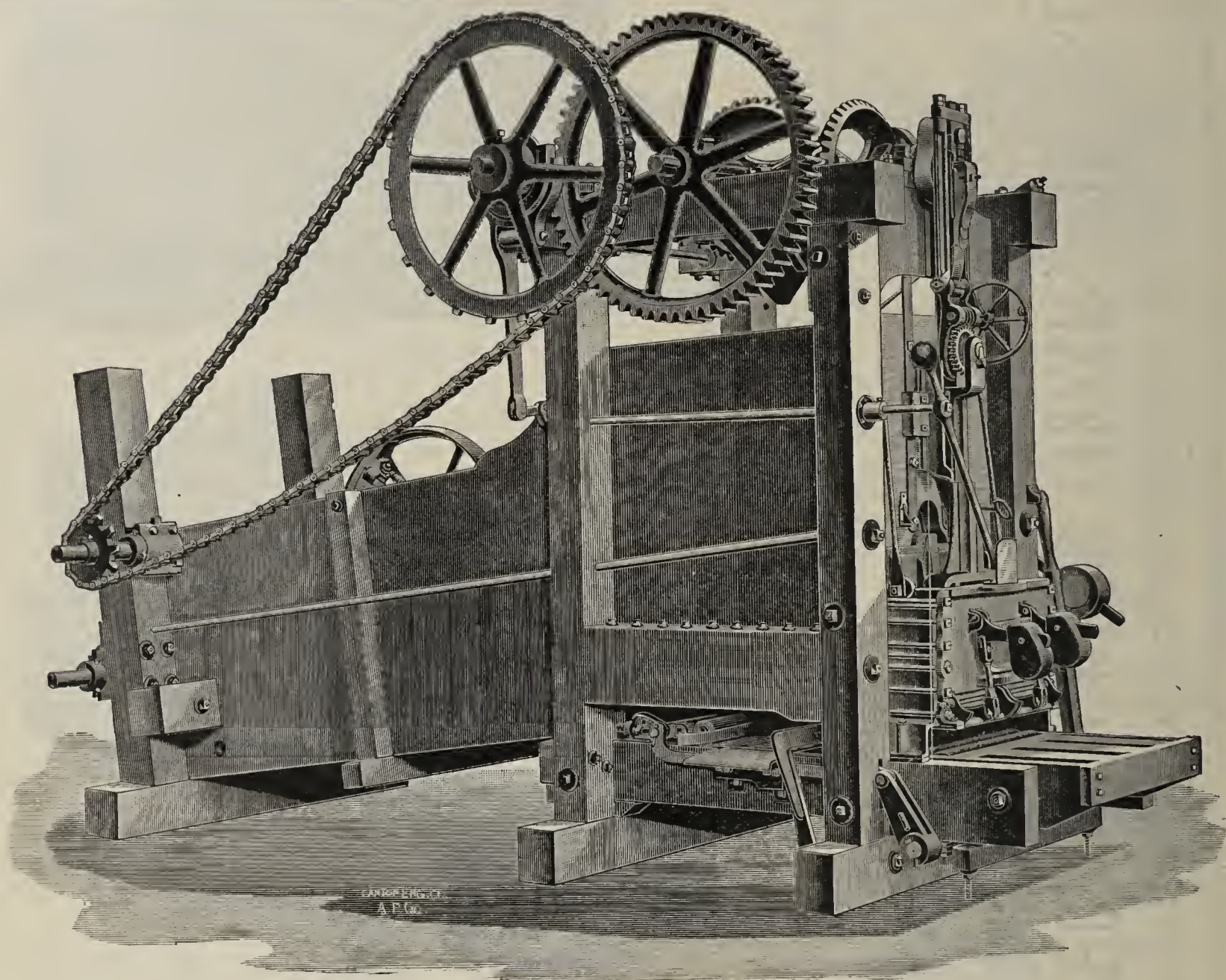


STYLE C.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



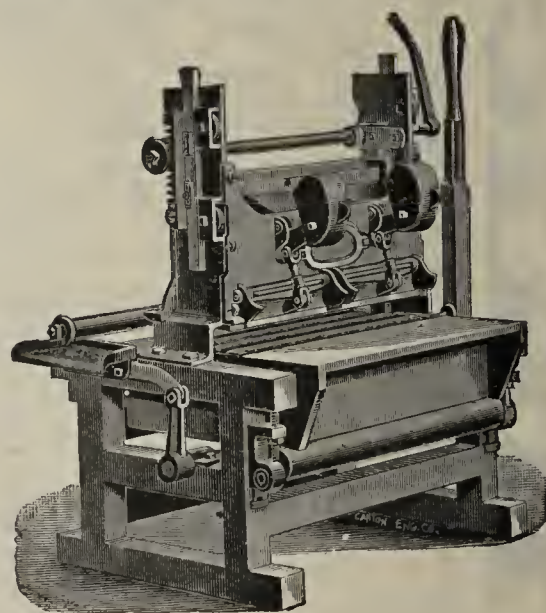
### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers. The Horizontal has a very much greater pugging capacity than any Vertical Machine can possibly have, and has other advantages that will be readily apparent to the experienced. We have no hesitancy in guaranteeing it the best Horizontal Machine in the market.

Address, for full particulars and prices,

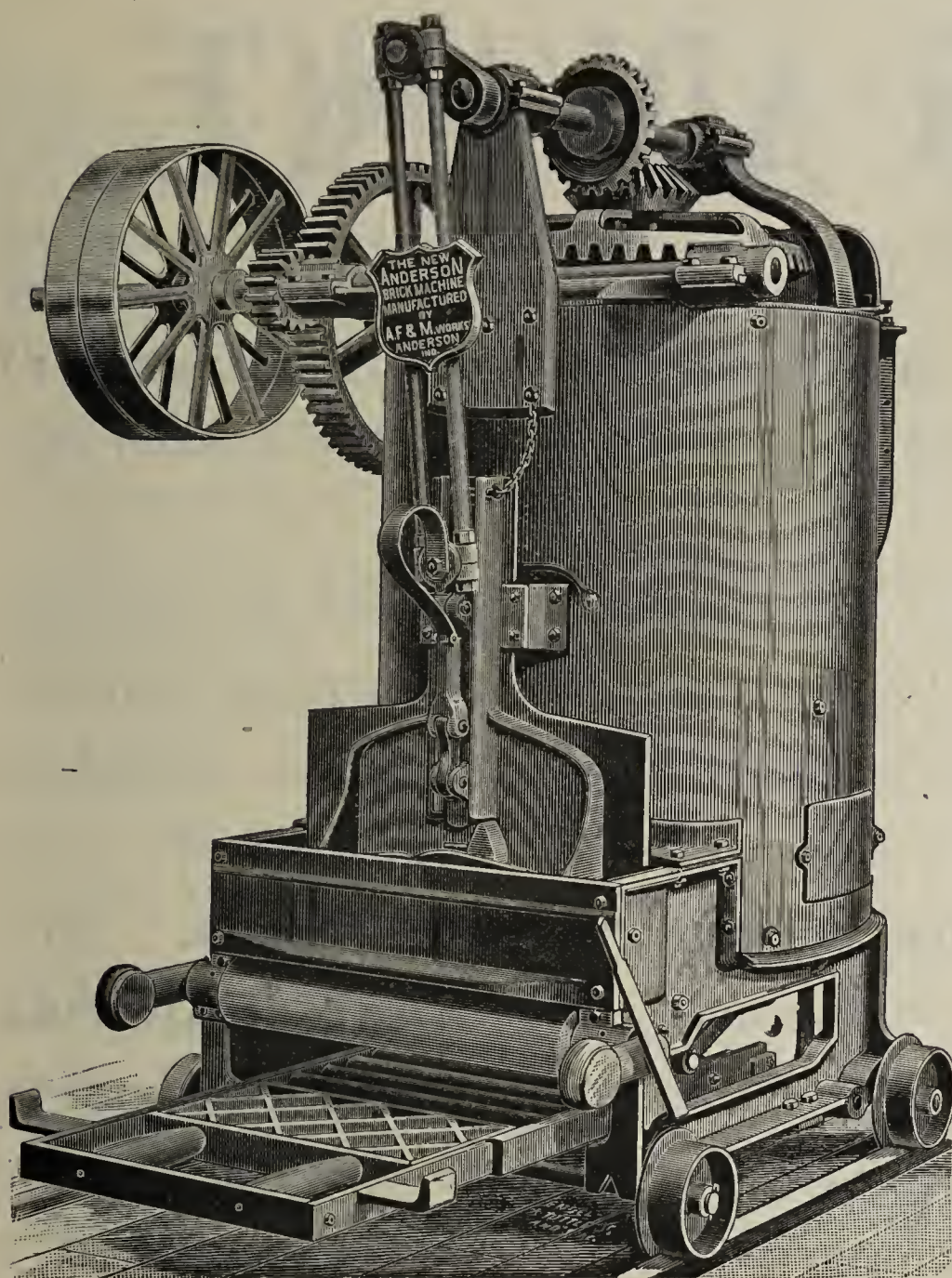
**TIFFIN AGRICULTURAL WORKS,**  
TIFFIN, OHIO, U. S. A.

### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.





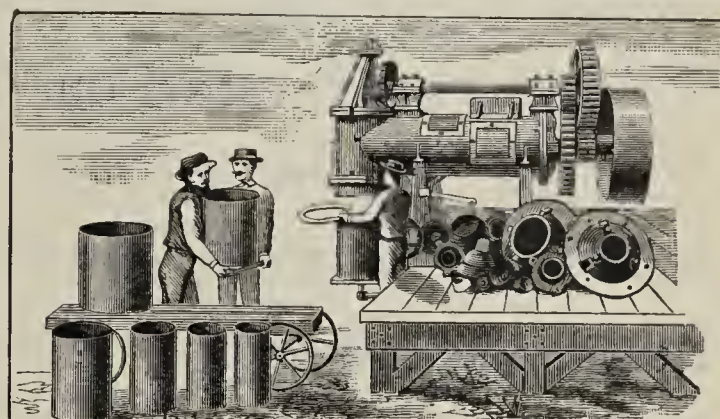
## THE New Anderson Brick Machine

MANUFACTURED BY

### THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.

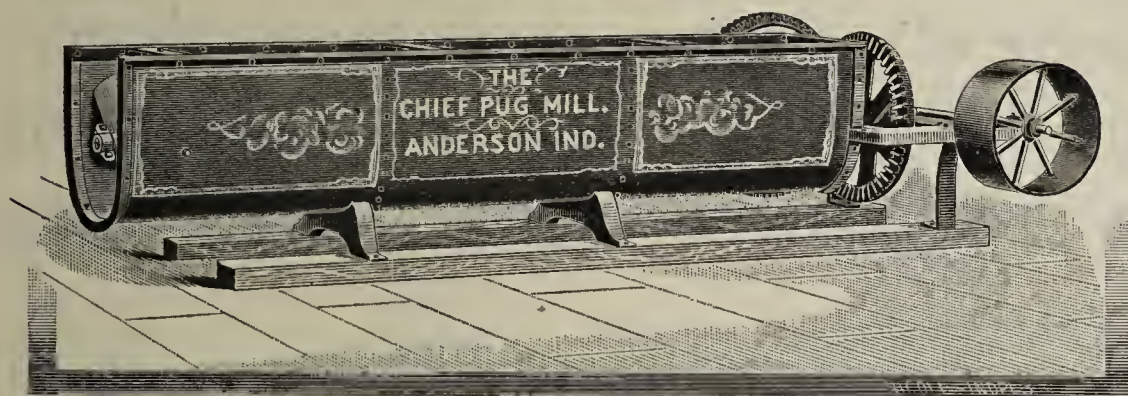


## The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

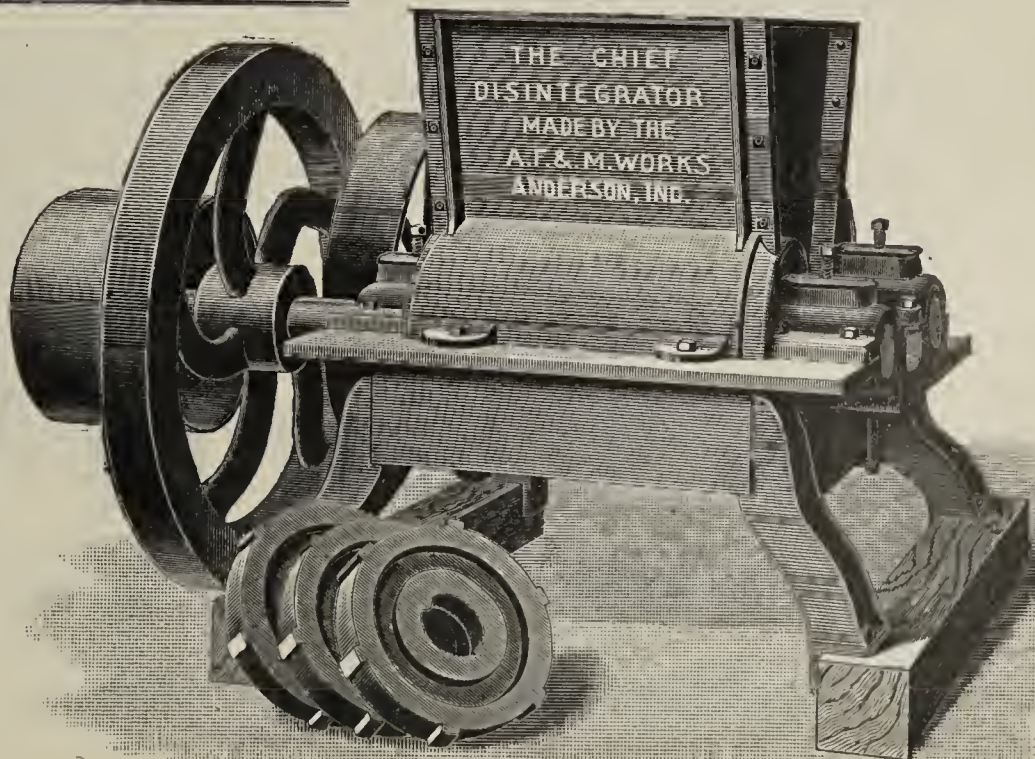
Side Delivery for Small Tile.



## The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 3/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.



[Mention the Clay-Worker.]

Correspondence Solicited.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.

[Mention the Clay-Worker.]



# An Expert's Opinion.

Mr. C H. Carpenter, whose letter is given below, was for several years President of one of the largest concerns manufacturing "soft mud" brick machines, and had a wide experience "in the field," and hence his opinion has greater value than one's whose experience has been limited to one or a few localities.

His Company have made nearly 2,000,000 in three months without a break, a good record, and they will keep up the same gait on their yard the year round.

MARTIN'S FERRY, OHIO, July 19, 1893.

THE WELLINGTON MACHINE CO., Wellington, Ohio,

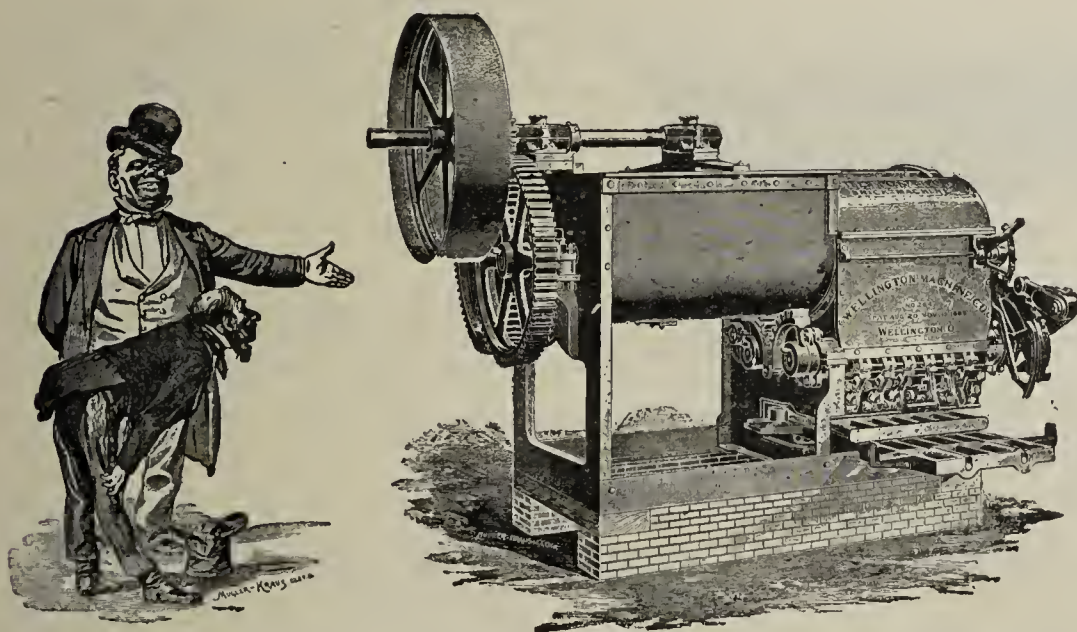
GENTLEMEN:—In reply to your inquiry, asking our opinion of the "Monarch," will just say that we commenced work April 15th, and we will finish our sixth kiln of 325 M. each tomorrow; so you can see we have made a good run.

The greatest point with us is that our moulds are filled out perfectly, with full corners and edges, which we have been unable to do with other machines in our very stubborn material, even when we would work our clay much softer than we do now.

I also endorse every other claim you make for it in your circular, especially solid construction and lightness of draft. We certainly think it nearer perfection than any other machine we have ever seen.

Yours truly,

BELMONT BRICK & TILE CO.,  
C. H. CARPENTER, Manager.



## A Brickyard Conversation Where a Monarch is used

OWNER TO VISITOR:—"There it is! You did well to come and SEE it, for that is the only way its advantages are fully appreciated. When first I read the description of it, I had a kind of a hazy, dreamy impression that it contained some vital improvements, but like yourself I did not realize the immense money value to the user until I actually saw it in operation."

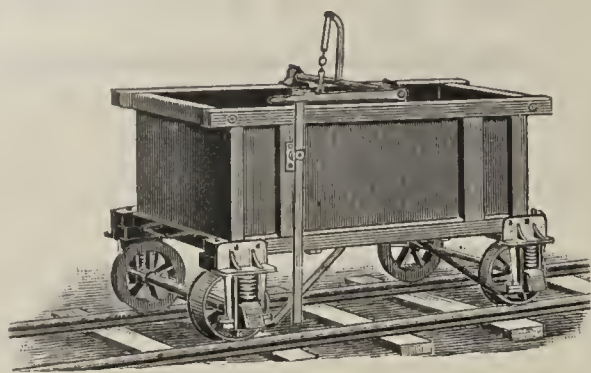
## The Wellington Machine Co.,

"The procession is passing by." Get in it.

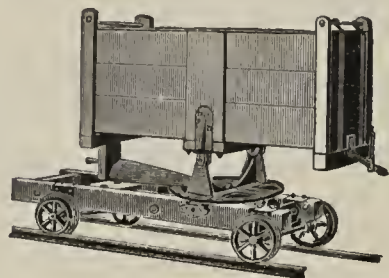
Wellington, Ohio.



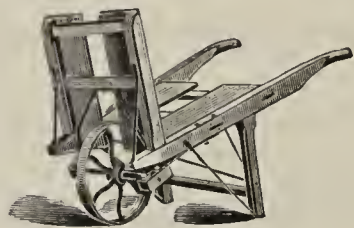
# BRICK YARD SUPPLIES.



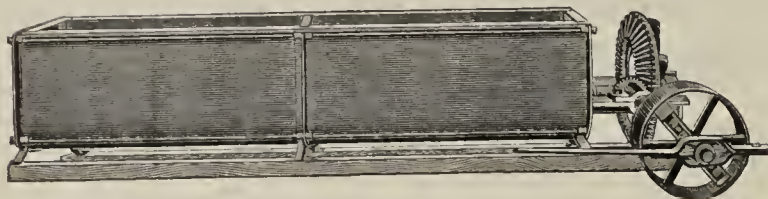
BOTTOM DUMP---Chilled Wheels.



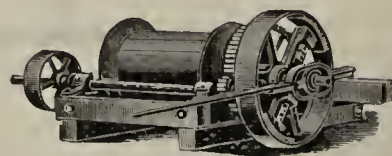
REVOLVING DUMP---Chilled Wheels.



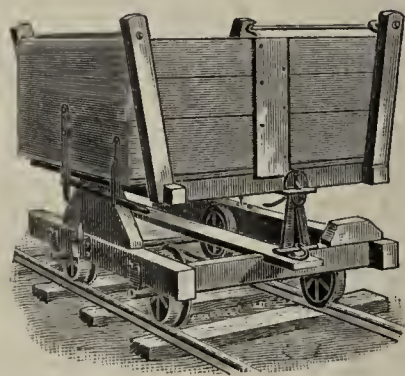
BARROWS.



PUG MILLS.



WINDING DRUM.



SIDE DUMP---Chilled Wheels.



TRUCKS.



ELEVATORS.



BRICK MOULDS.

We make the only clay car having chilled wheels.

If in need of supplies of any kind we can save you *money*.

We manufacture everything used on a Brickyard.

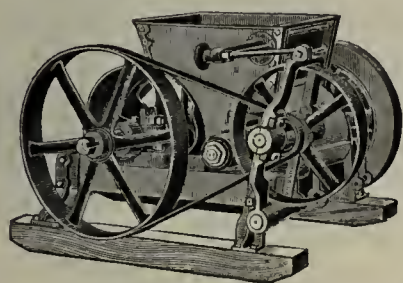
When you purchase from us you buy from manufacturers and save all commissions.

**C. & A. POTTS & CO.,**  
**INDIANAPOLIS, . . INDIANA.**

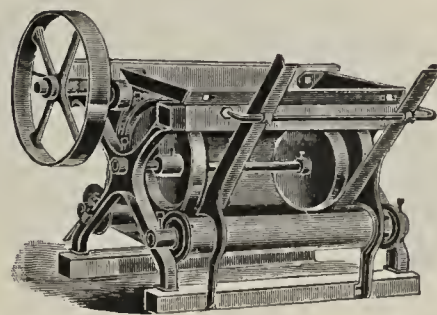
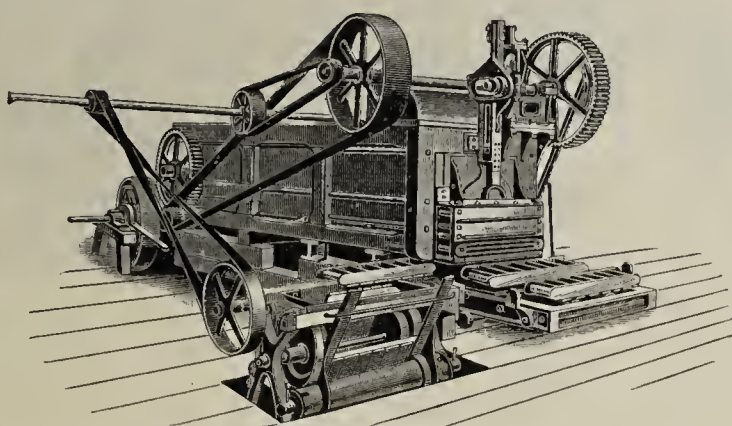


# THE BIG 3

## THE POTTS HORIZONTAL STOCK BRICK MACHINE, DISINTEGRATOR AND MOULD SANDER.



Having Chilled Rolls



Simple in Construction.  
Strong and Durable.

### A Disintegrator

Having **Chilled Rolls**. A machine that will grind hard, lumpy, or wet, sticky clays, and not choke or clog, that will separate or grind the stone. A machine that is simple, strong and durable.

### A Horizontal Stock Brick Machine

Which will work the clay direct from the bank without an extra Pug Mill. It will work the clay so stiff that the brick will not pitch in trucking or spread in drying. It will fill a six brick perfectly. The brick made will have *clean, sharp corners* and *smooth surfaces*. A machine which is *simple in construction, strong and durable*.

### A Mould Sander

Which will sand the Moulds better than can be done by hand, and will make a saving in labor and sand. It does not waste or spill the sand. It will make a saving of 75 cents to \$1.50 per day.

### With the Big 3

You can make brick which will always bring the highest market price. A brick which will always be in demand.

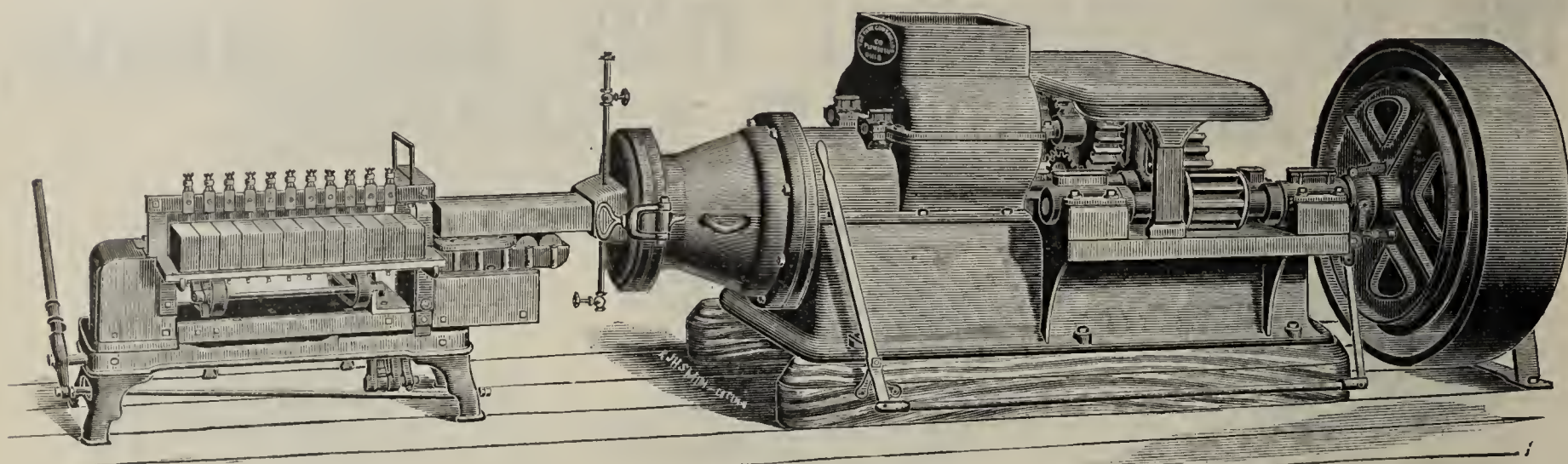
The above machinery is guaranteed to do the work and will be shipped on trial.  
For further information, address

**C. & A. POTTS & CO.,**

INDIANAPOLIS IND.



# SAVE YOUR MONEY BY BUYING THE BEST.

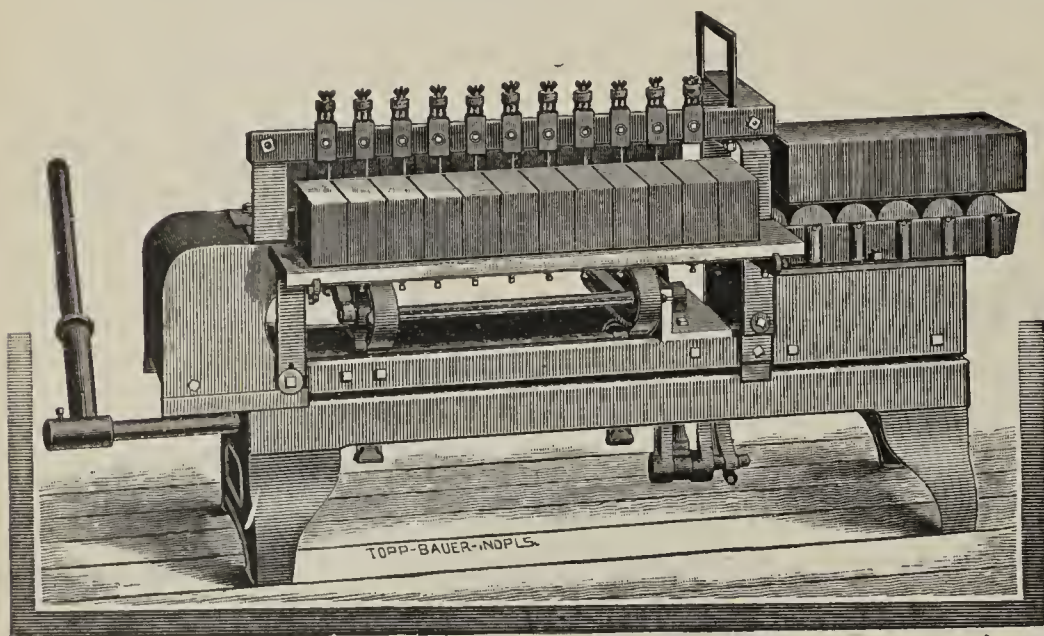


## THE "PLYMOUTH"

Will make brick faster than you can take care of them; and do it with a minimum power.

How do we do it?

With our double force-feed and pugging device.

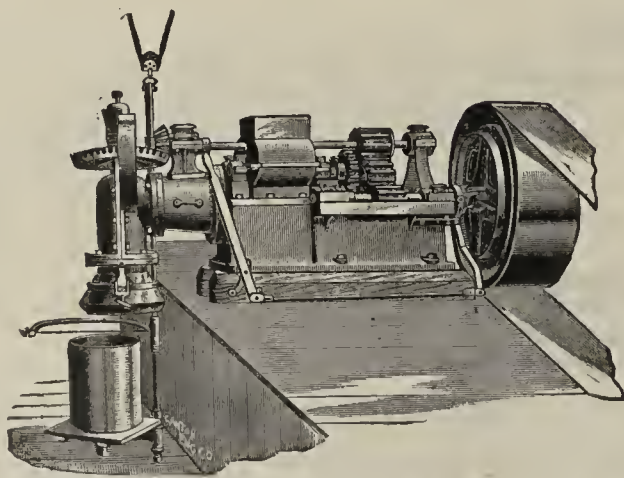


We build our Machines  
for

STRENGTH

... and ...

DURABILITY.



"D" Mill Arranged for Delivering Large Tile on End.

Write for our New

DESCRIPTIVE  
CATALOGUE;

It will Tell You  
All About It.

# The Fate-Gunsaulus Co.,

PLYMOUTH, OHIO.

[Mention the Clay-Worker.]



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

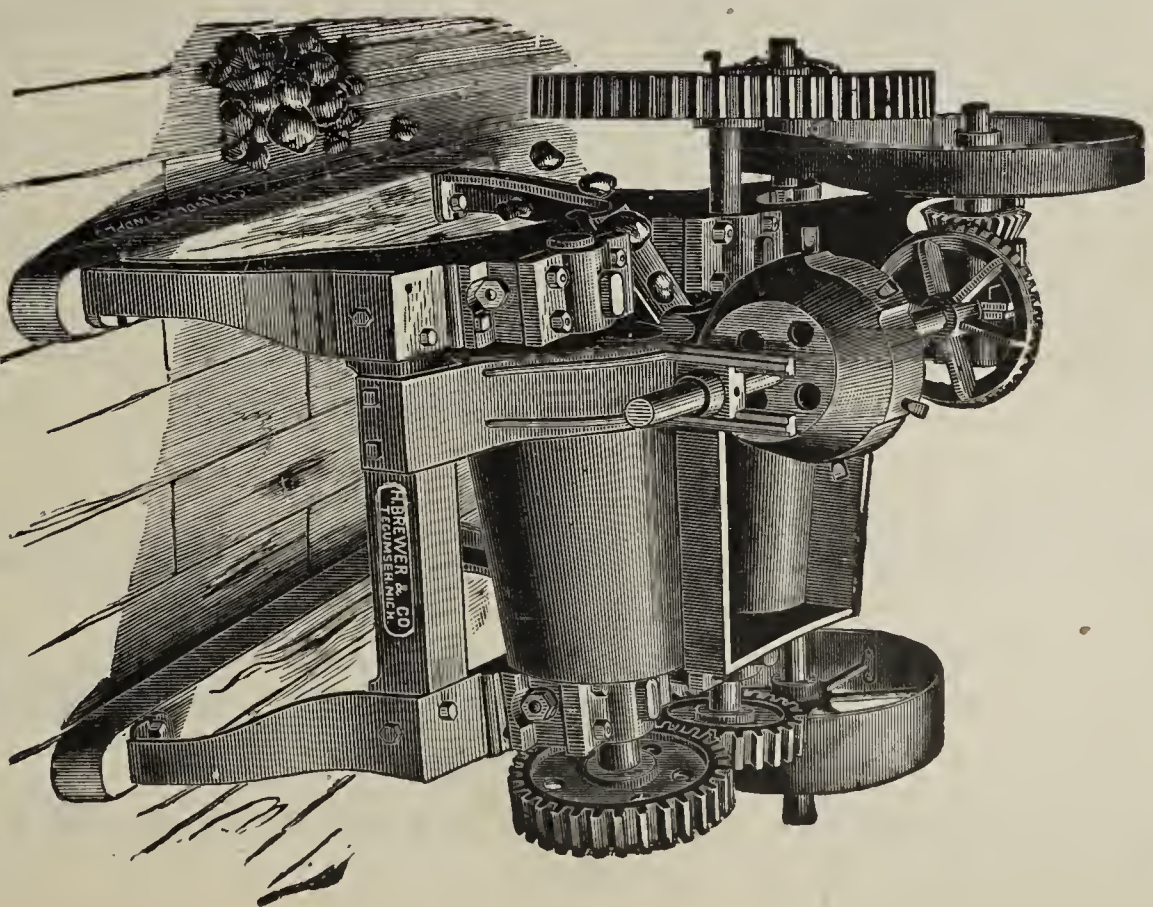
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

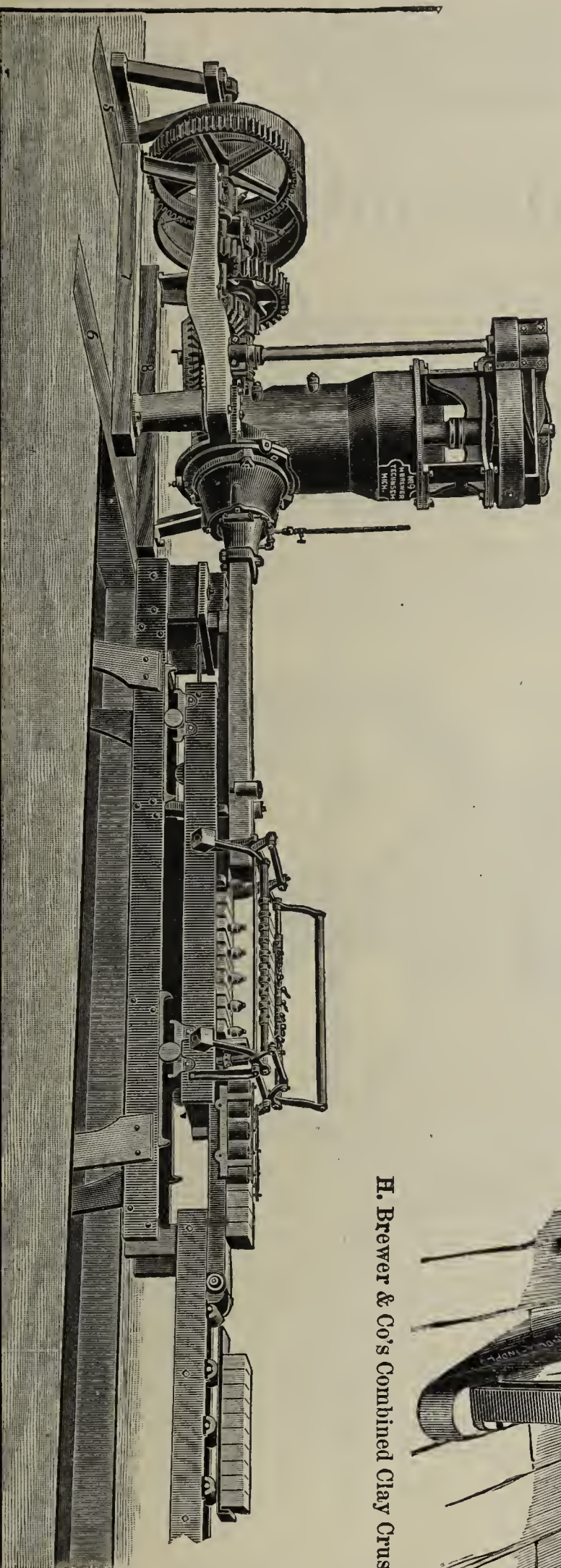
### H. BREWER & CO.,

[Mention the Clay-Worker.]

### Tecumseh, Mich.



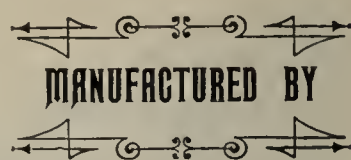
H. Brewer & Co's Combined Clay Crusher and Stone Separator.



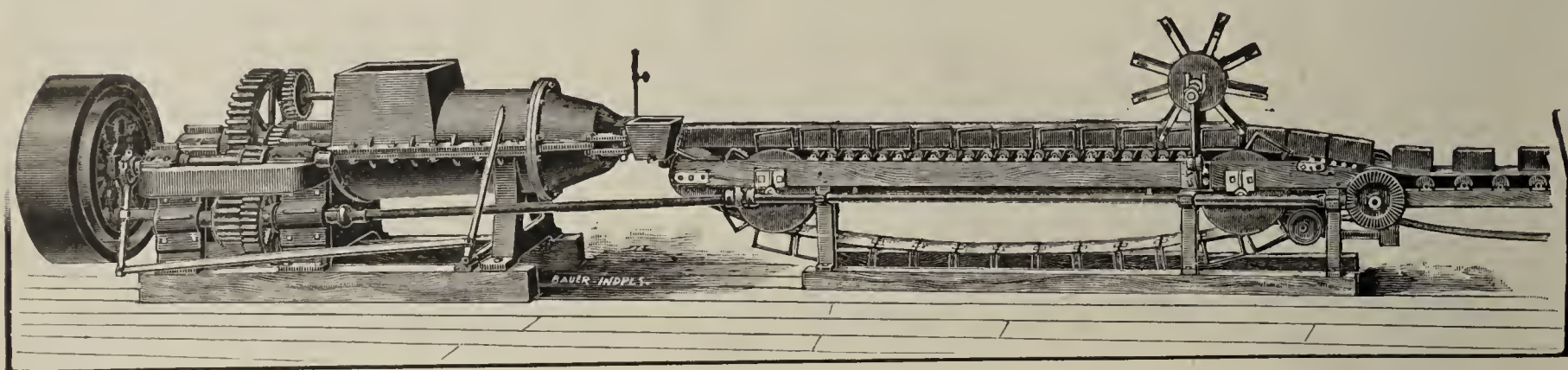
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



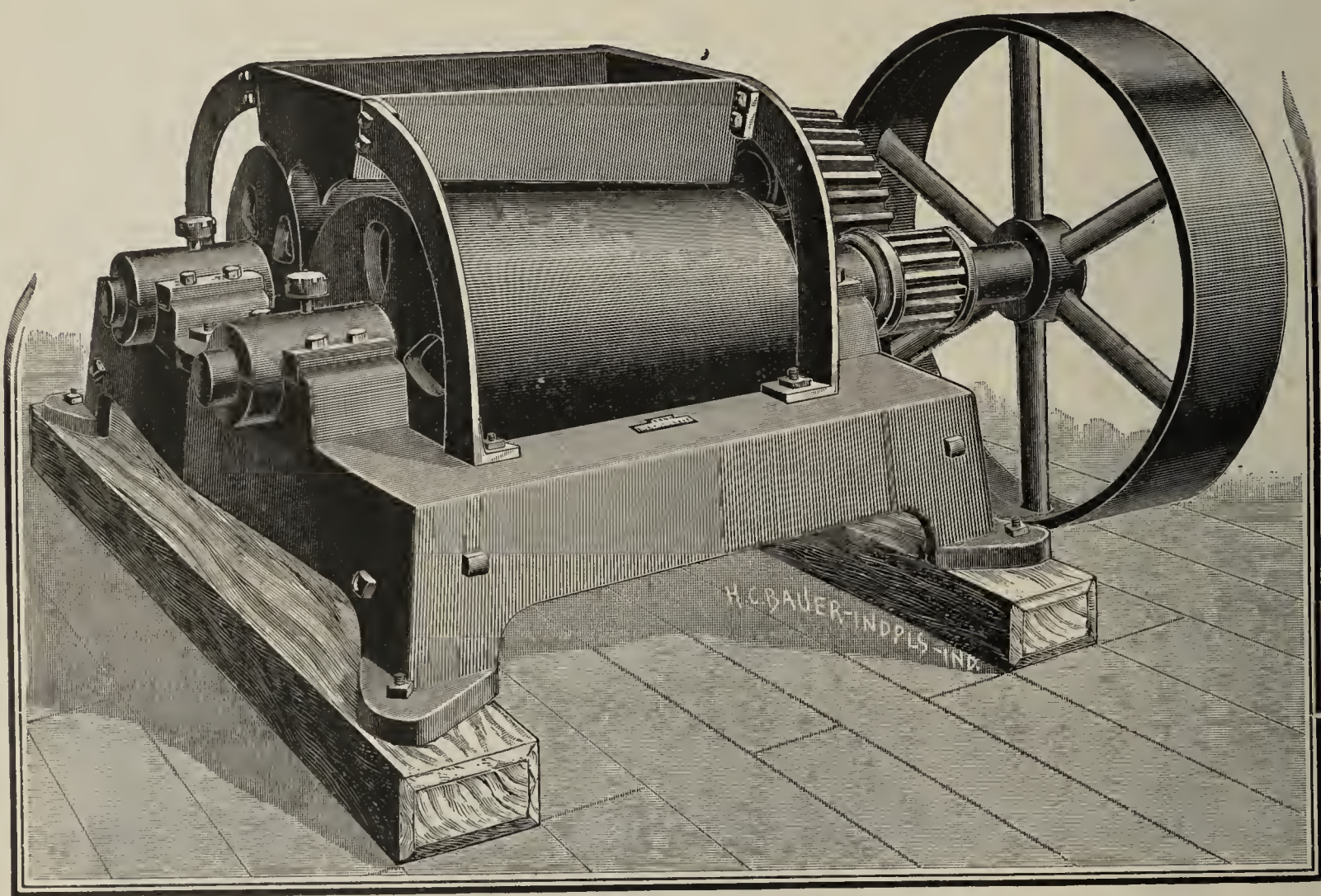
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

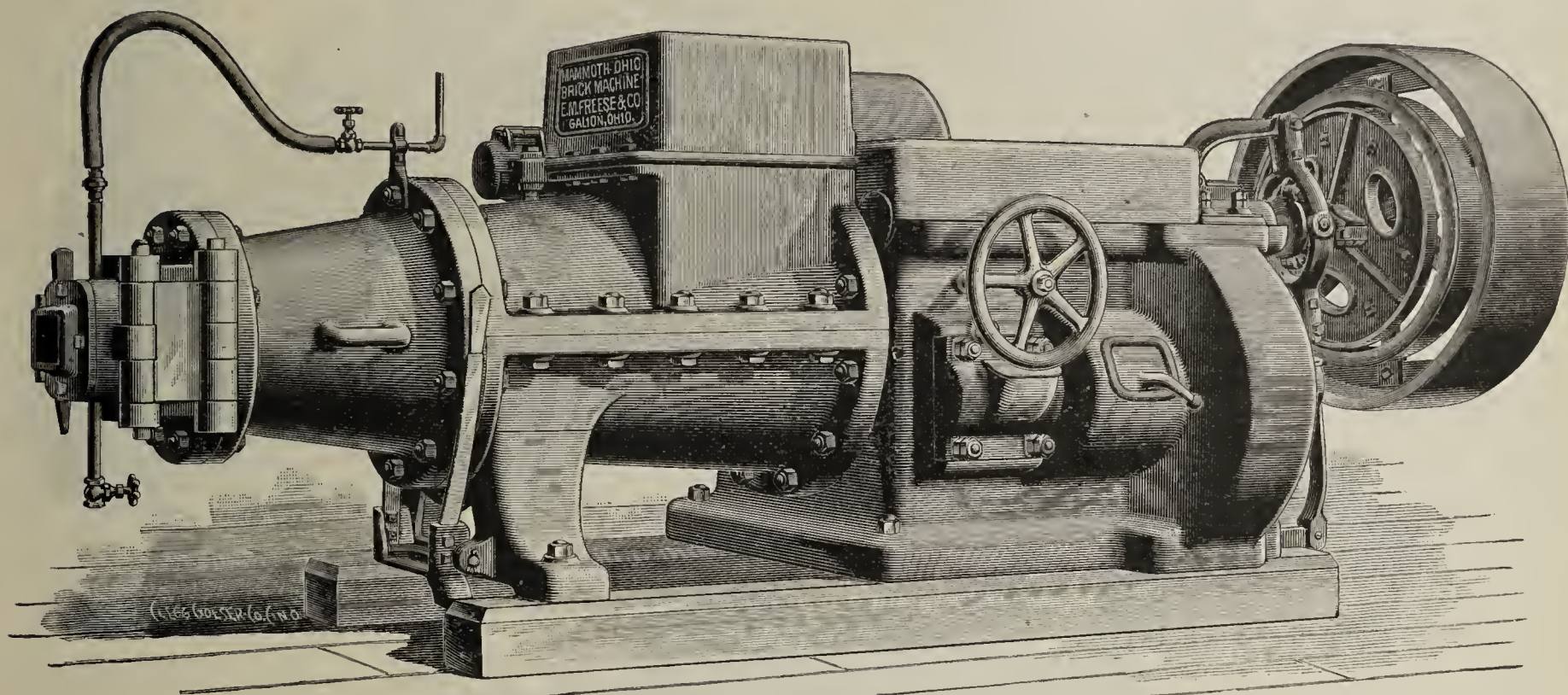
Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# SUPERIOR BRICK MACHINERY.

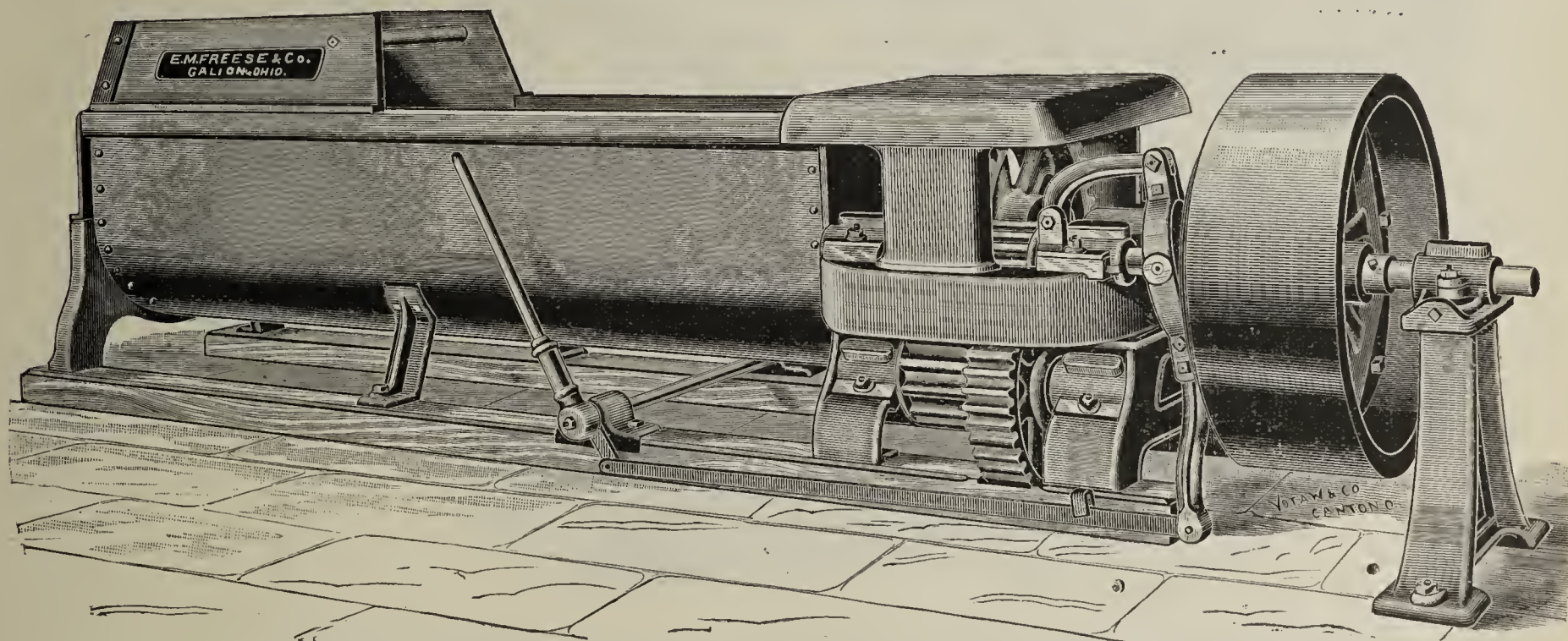
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

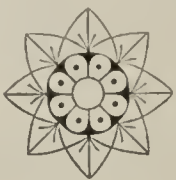
IT WILL PAY~~~~~

ADDRESS E. M. FREESE & CO.,

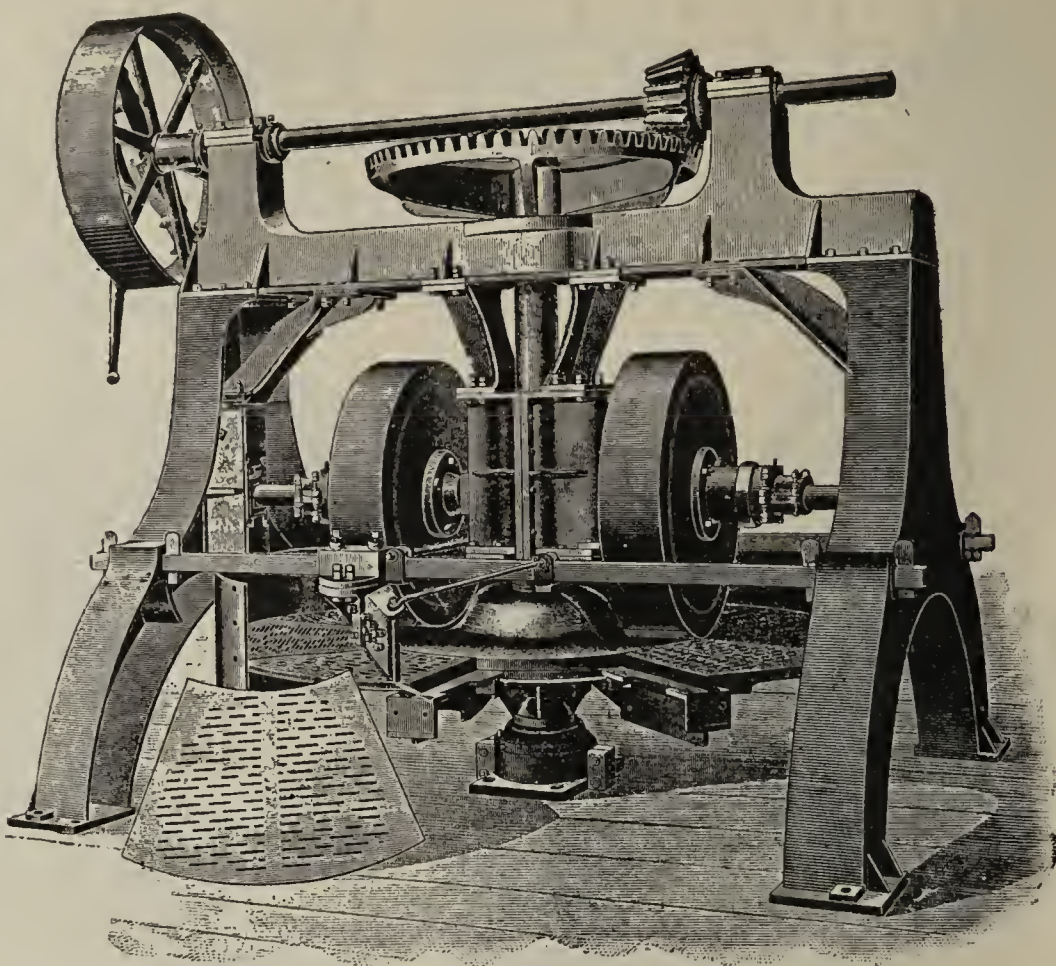
~~~~~ GALION, OHIO.



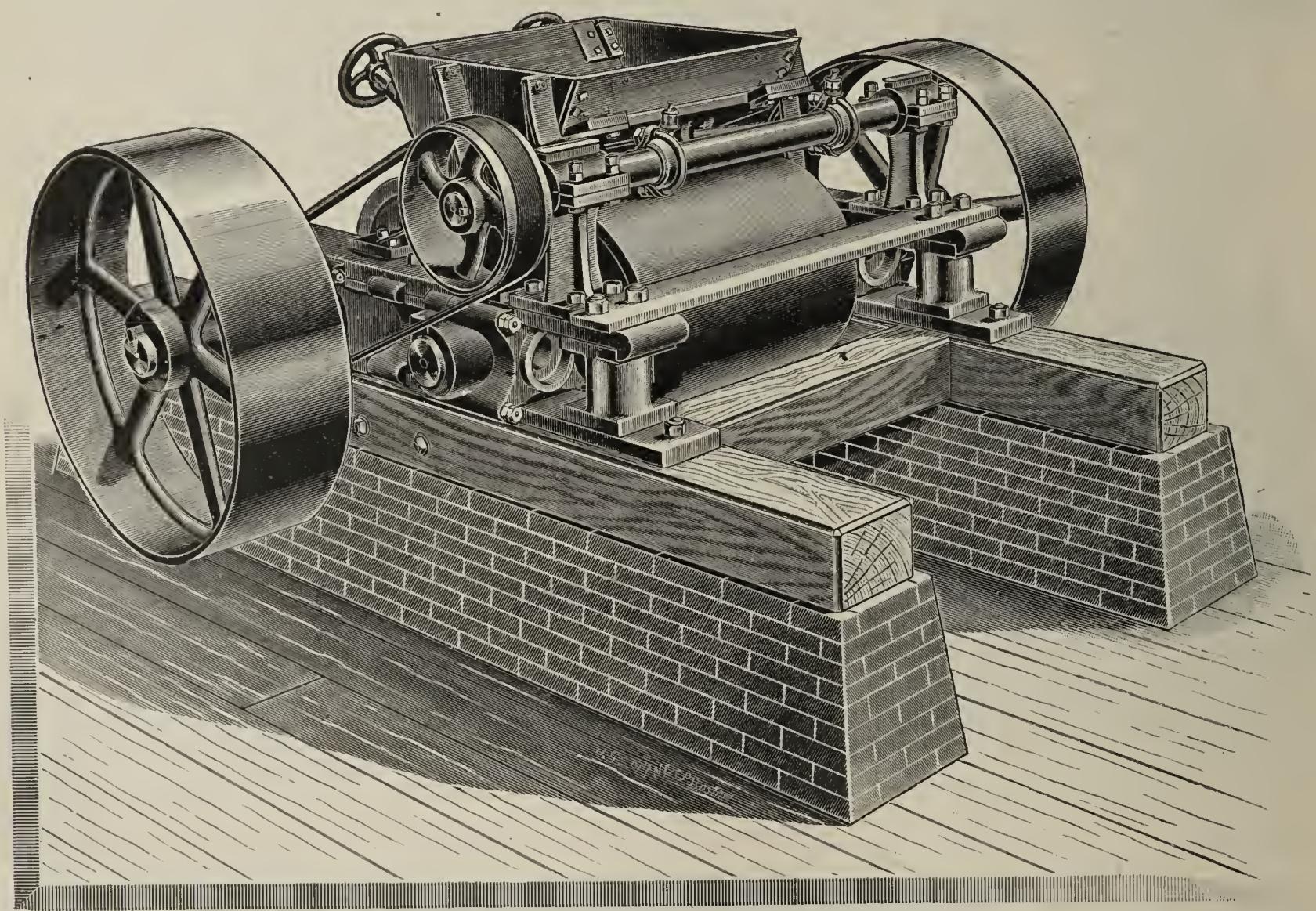
# The Frey= Sheckler Company Clayworking Machinery



Brick, Tile and Terra Cotta Machinery,  
Cutting Tables, Dry-Pans, Wet Pans, Crushers,  
Reduction Mills, Pug Mills, Winding Drums,  
Dump Cars, Clay Conveyors, Clay Screens,  
Brick and Tile Trucks, Engines and Boilers,  
Line Shafting, Pulleys, Belting, Etc.



Nine Foot Diameter All Iron and Steel Dry-Pan.



Tailings Crusher. Size of Rolls 20x26 in.

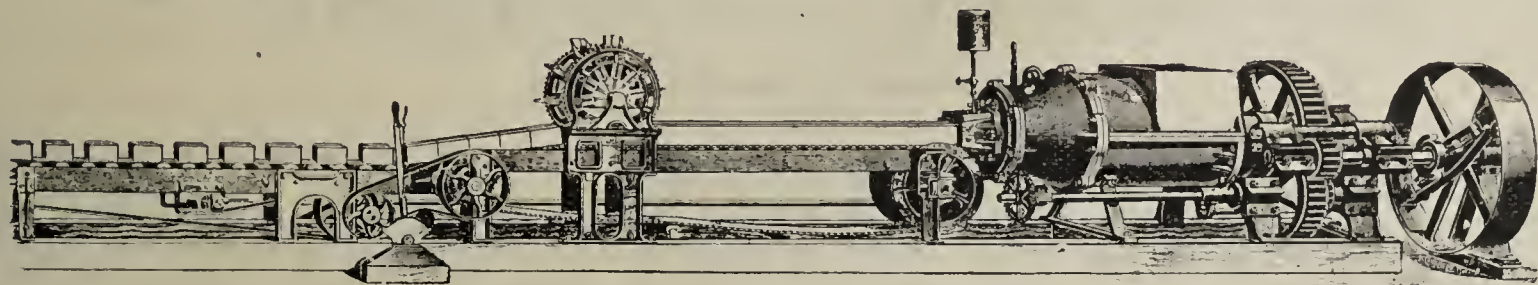
## The Frey=Sheckler Co.,

[Mention the Clay-Worker.]

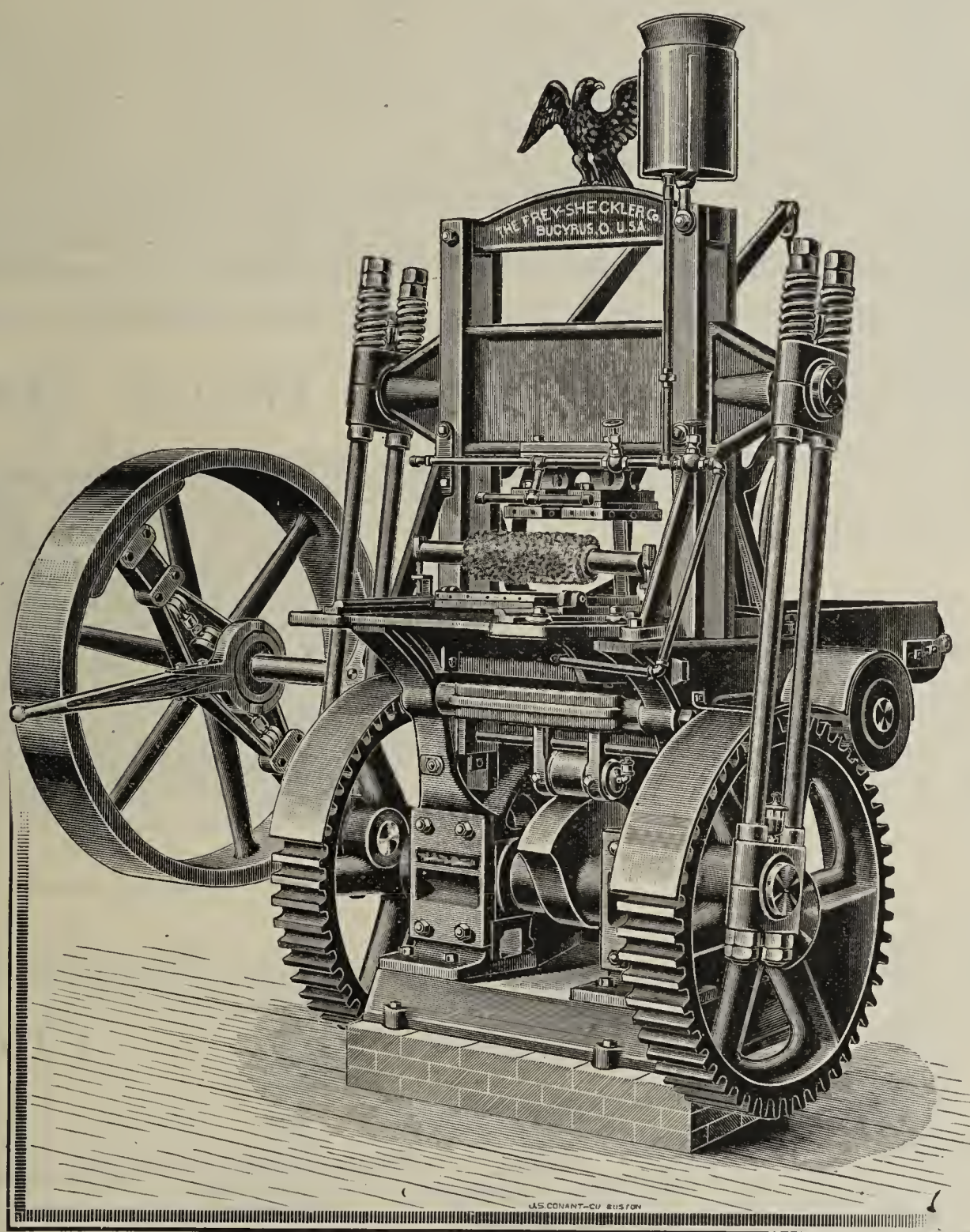
*Bucyrus, Ohio, U. S. A.*



# The Frey-Sheckler Company Clayworking Machinery.



No. 1 Giant Machine with Automatic Cutting Table.



Eagle Steam Power Double Die Repress.

## The Frey-Sheckler Co.,

Manufacturers,

BUCYRUS, OHIO, U. S. A.

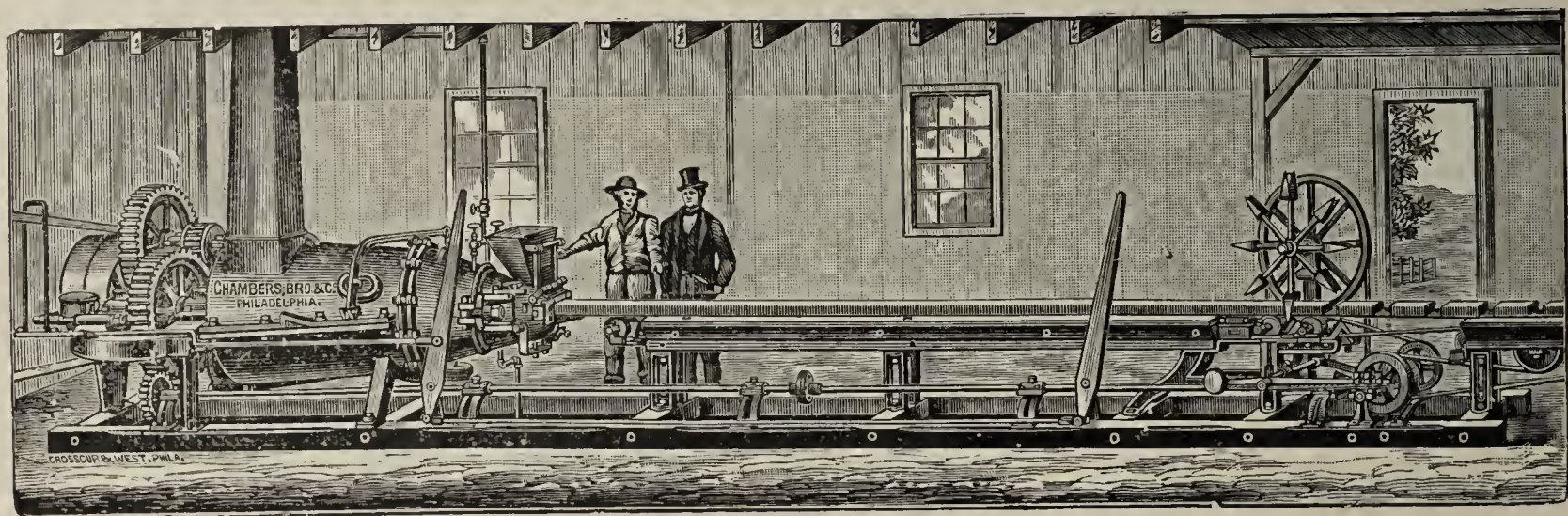


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



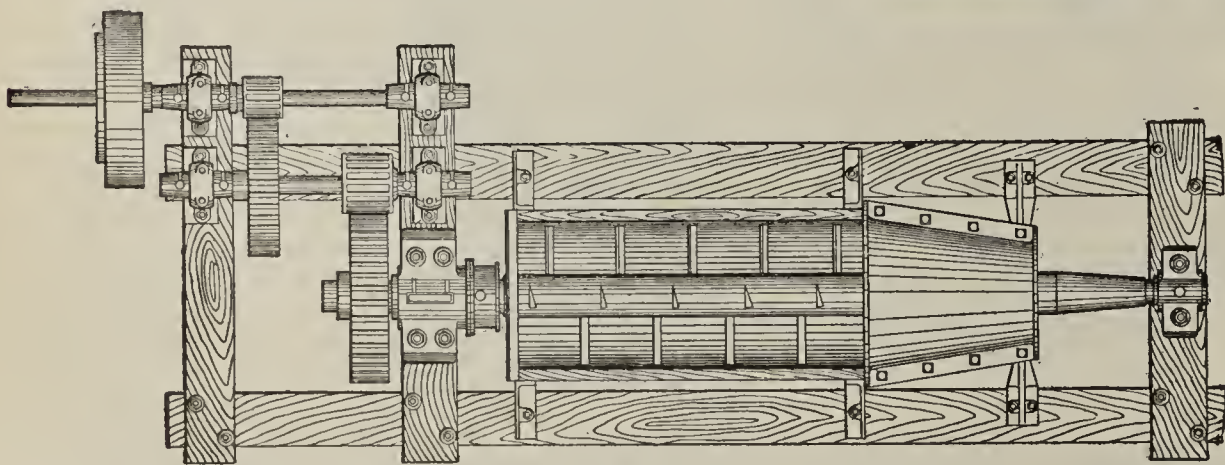
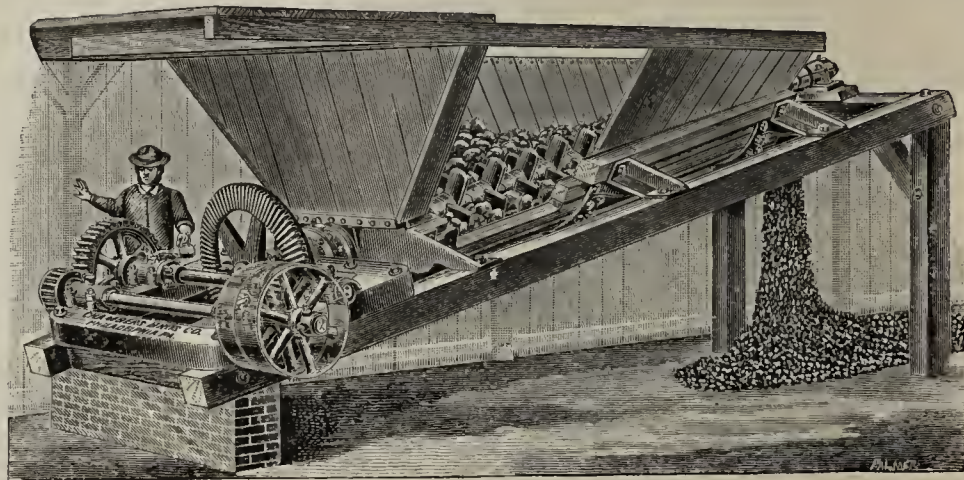
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

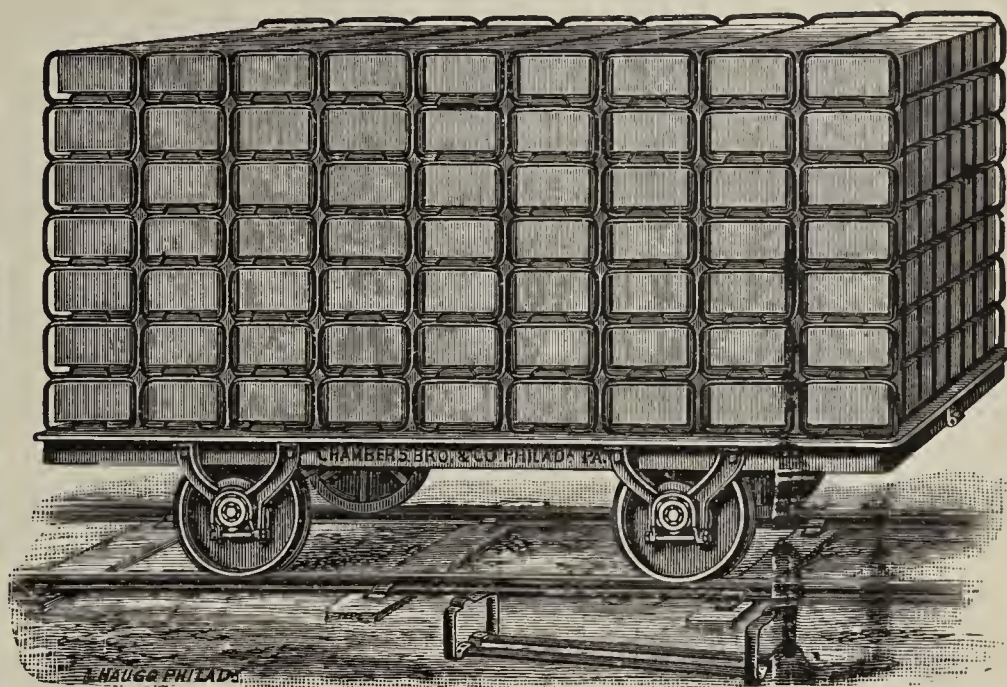
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

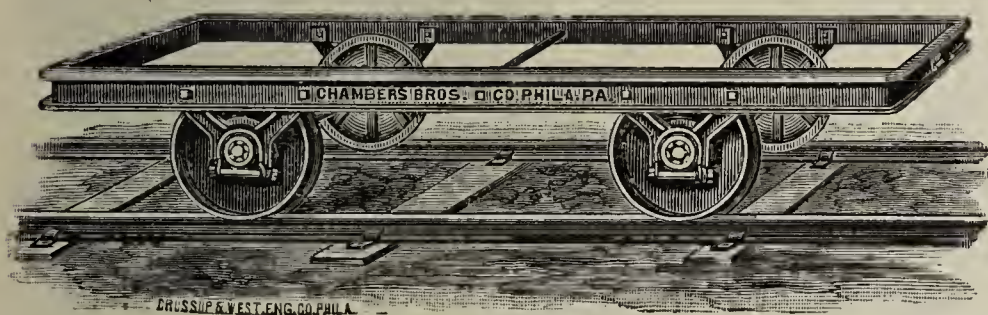
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

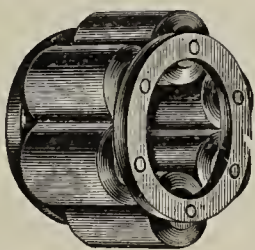


(No. 1 WROUGHT-BODY DRYER CAR.)

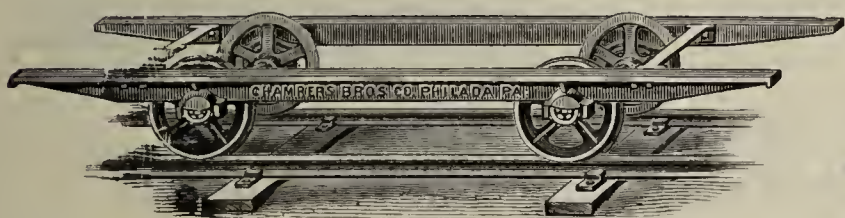


(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

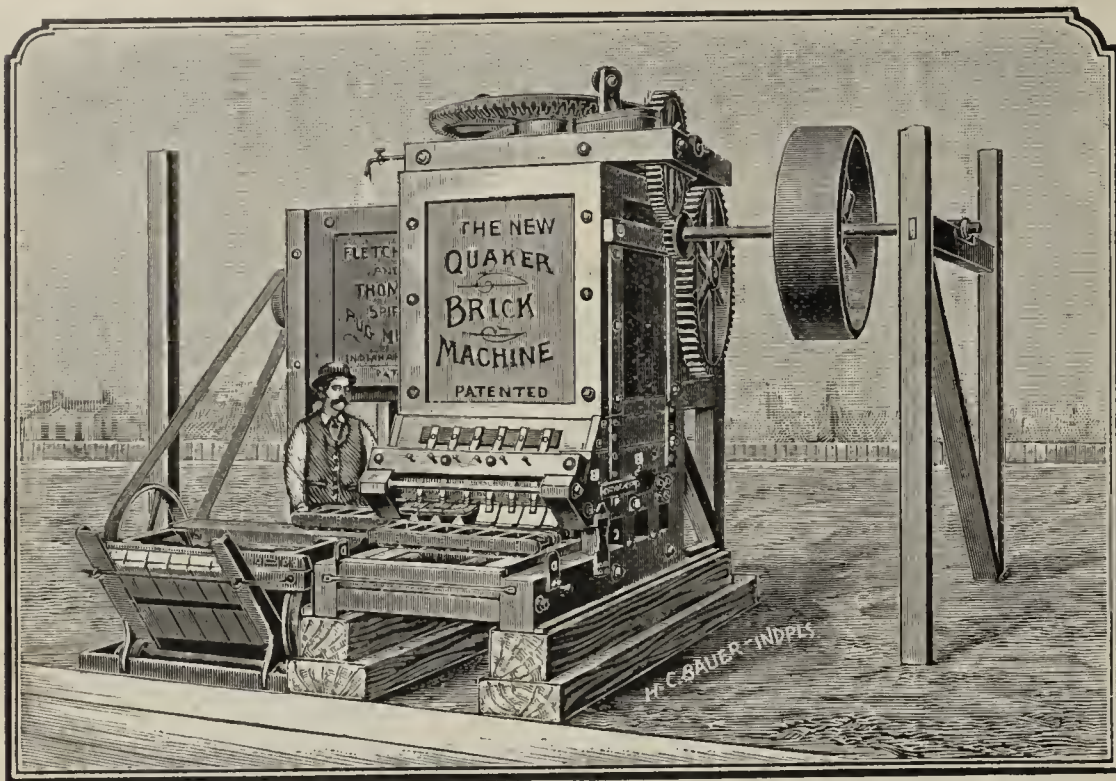
[Mention the Clay Worker



FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

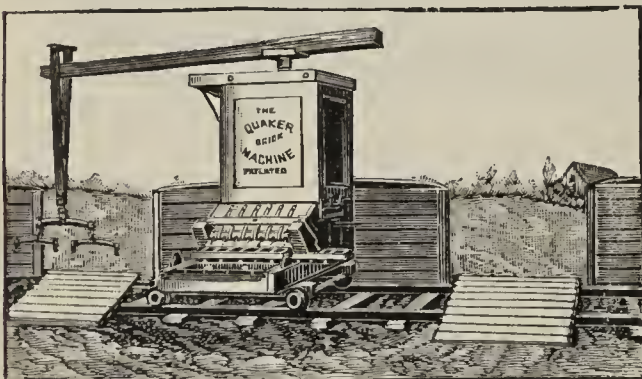


Machine Molds.



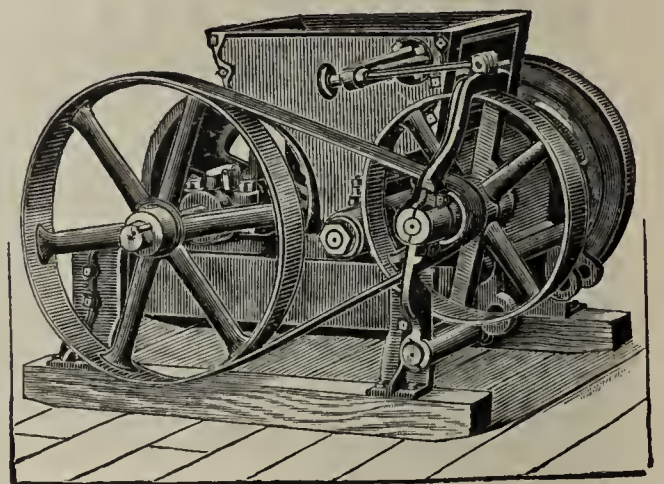
Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.

**THE NEW QUAKER**

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.

**DISINTEGRATORS.**

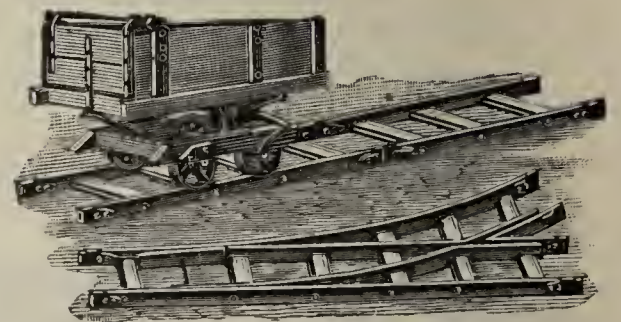
The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

**FLETCHER & THOMAS, Indianapolis, Ind.**



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS  
—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

The  
**PERFECTION  
HYDRAULIC  
BRICK PRESS**  
and....  
**ANDRUS IMPROVED  
DOUBLE PRESSURE  
BRICK PRESS**

Are the best Presses in  
the market.



The  
**GRATH DOUBLE  
DOWN DRAFT KILN,  
PERFECTION CLAY  
DISINTEGRATOR**  
....and  
**QUINCY CLAY  
GATHERER.**

Write for Circulars and  
Prices.

ALL of the above appliances are in use at the yards of the American Hydraulic Press Brick Co., Collinsville, Ill., who are producing the finest quality Press Brick in the country, free from granulation.

We solicit an inspection of our works.

## ILLINOIS SUPPLY & CONSTRUCTION CO.,

Odd Fellows' Building,

ST. LOUIS, MO.



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

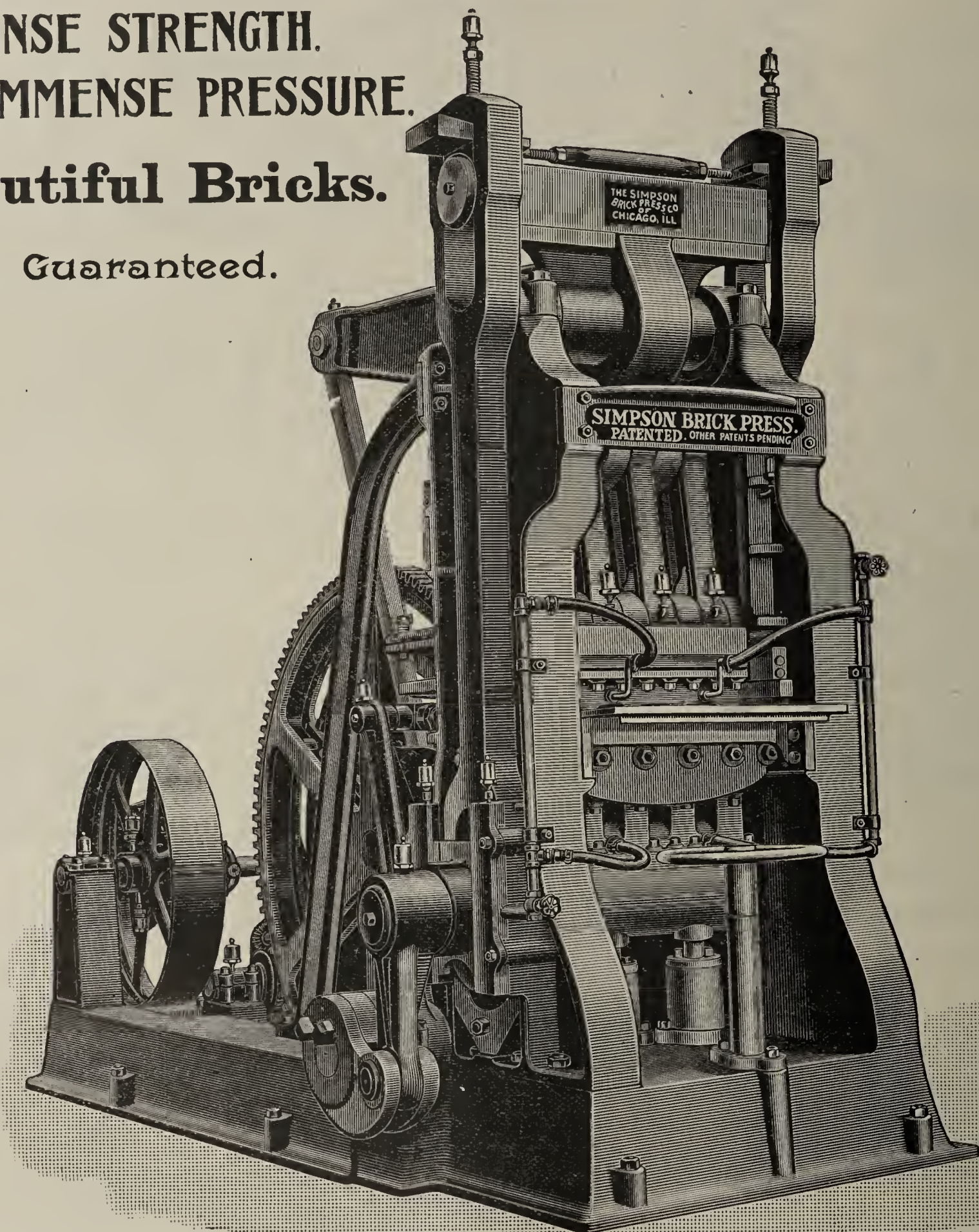
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

**Beautiful Bricks.**

Fully Guaranteed.



## THE SIMPSON BRICK PRESS CO.,

Agents for Canada:  
WATEROUS ENGINE WORKS CO., Brantford, Can.

Room 412, 87 and 89 Wash. St., CHICAGO, ILL.



# The SIMPSON 5-MOLD Brick Press.

—Apply to—

**THE SIMPSON**

**BRICK PRESS CO.,**

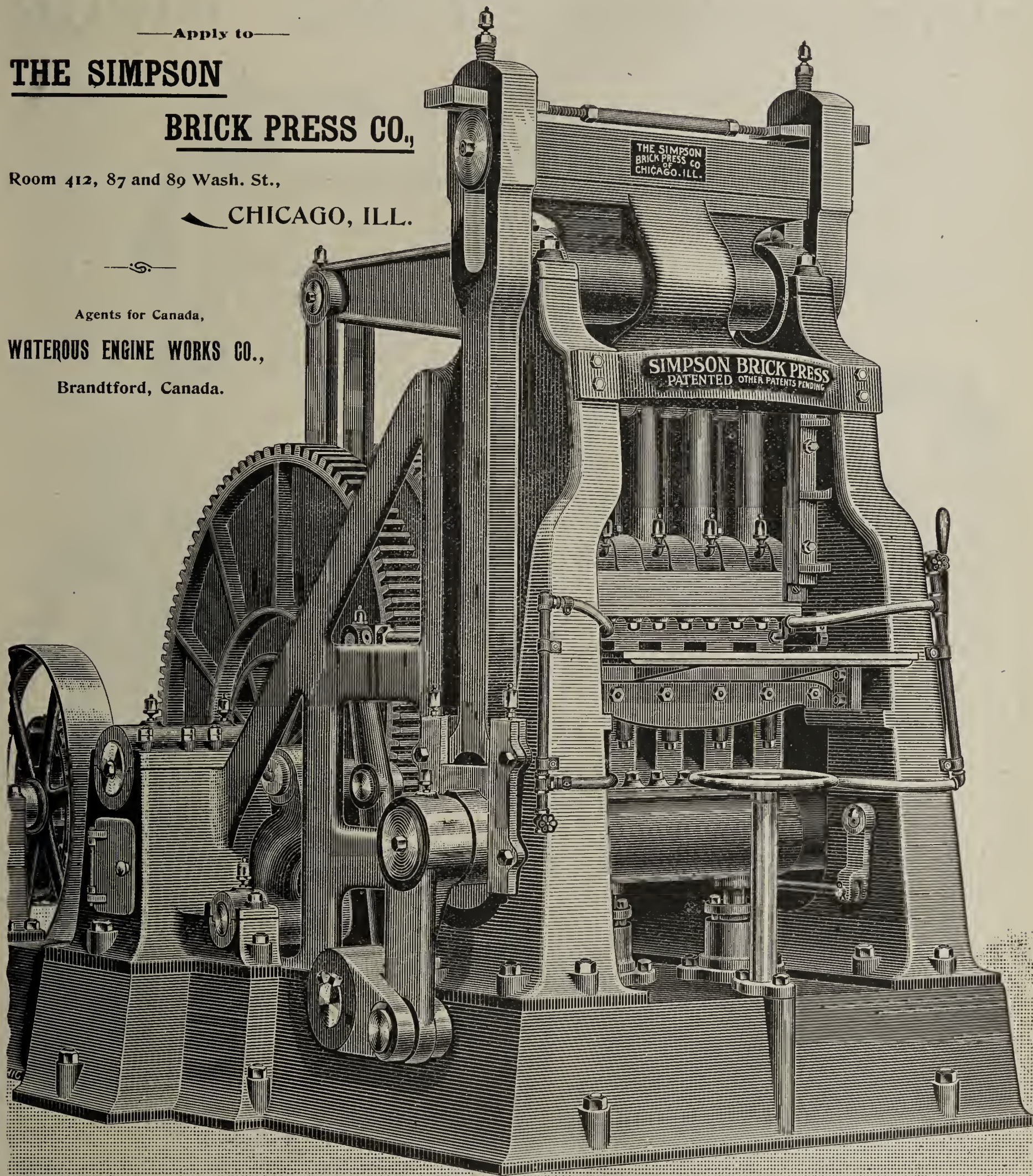
Room 412, 87 and 89 Wash. St.,

CHICAGO, ILL.

Agents for Canada,

**WATEROUS ENGINE WORKS CO.,**

Brandtford, Canada.



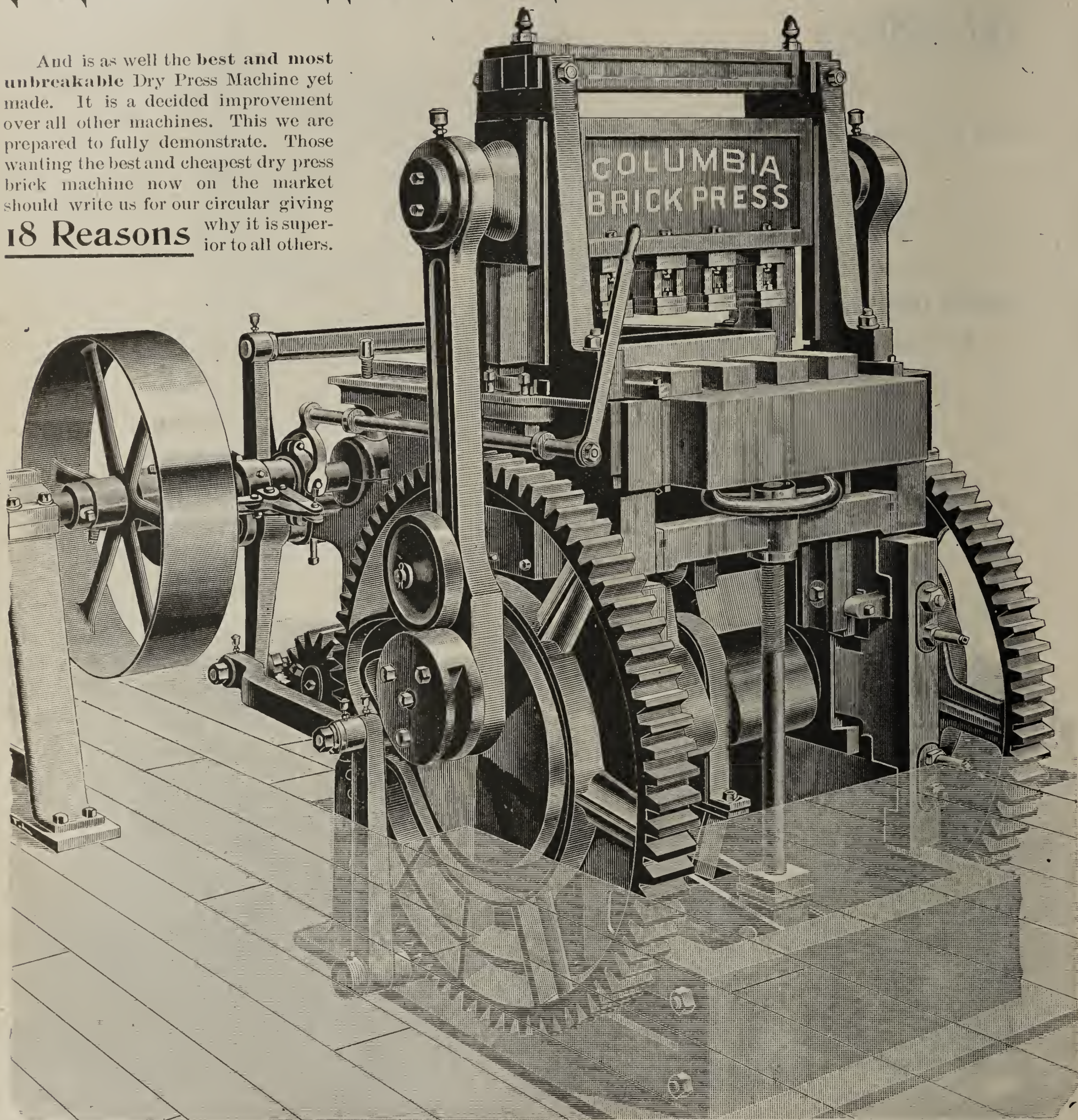


# ❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

## FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

**COLUMBIA MANUFACTURING CO.,**

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

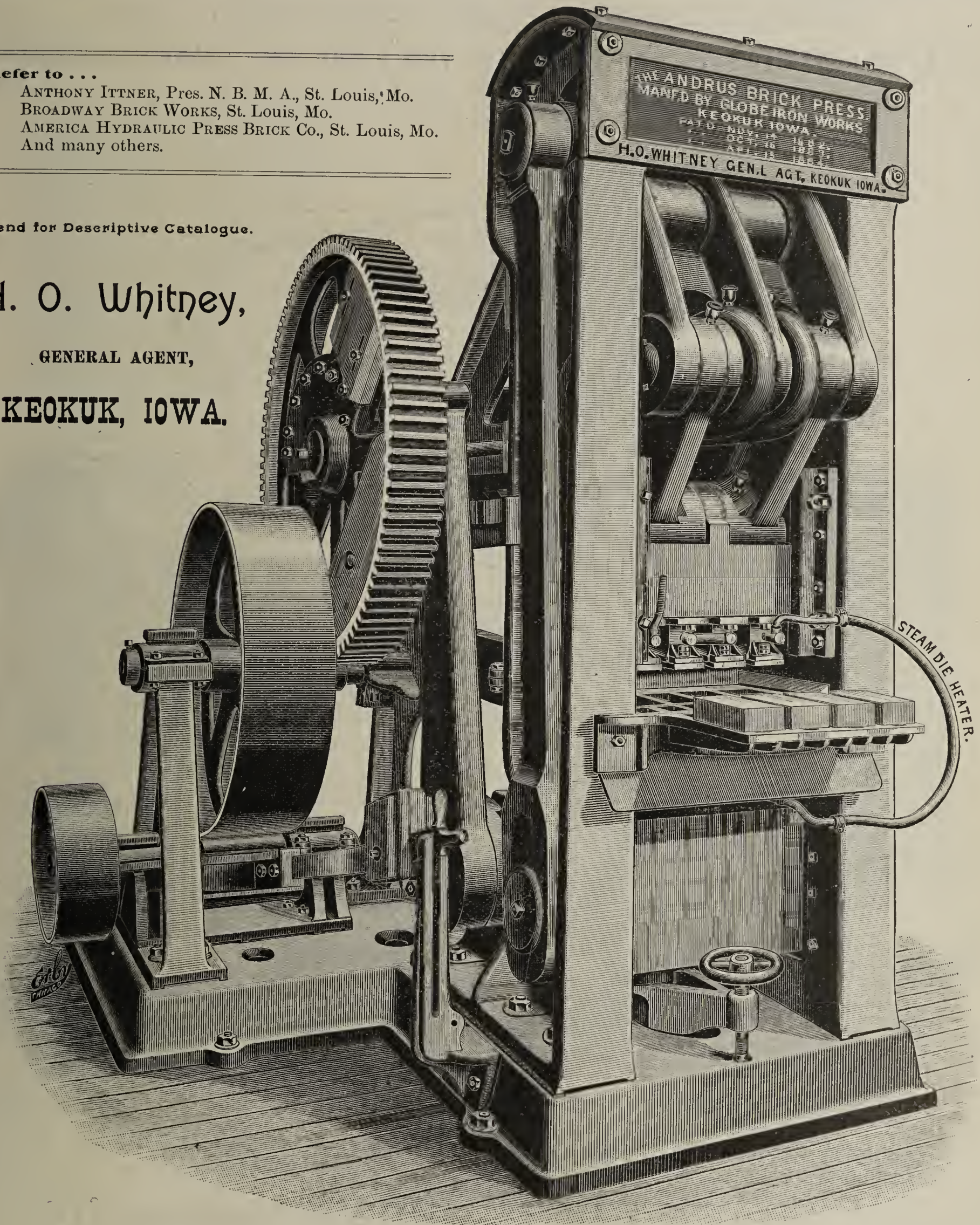
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
 BROADWAY BRICK WORKS, St. Louis, Mo.  
 AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
 And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





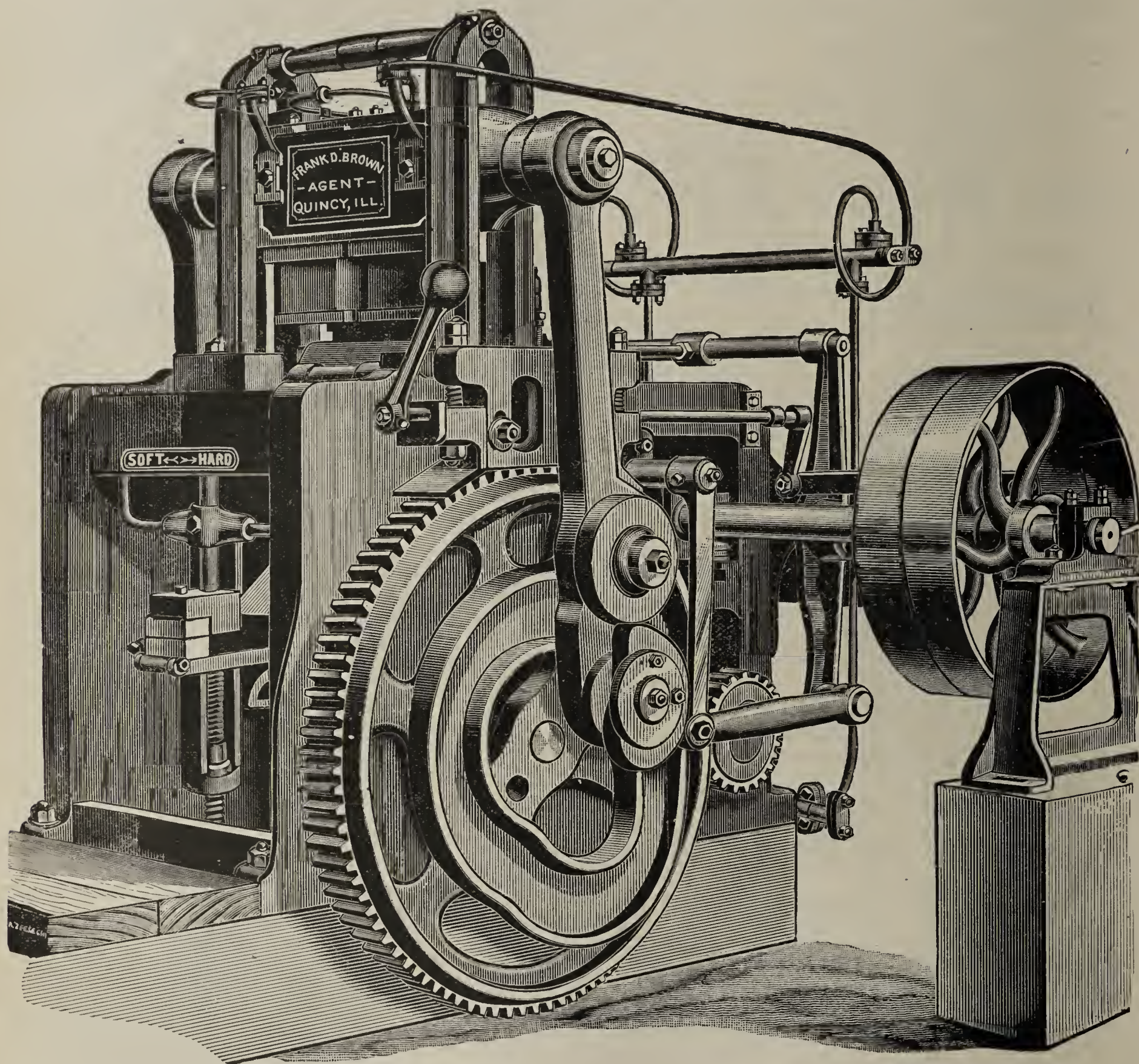
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.  
Will place the machine in your yard and guarantee entire satisfaction.  
Your correspondence solicited.

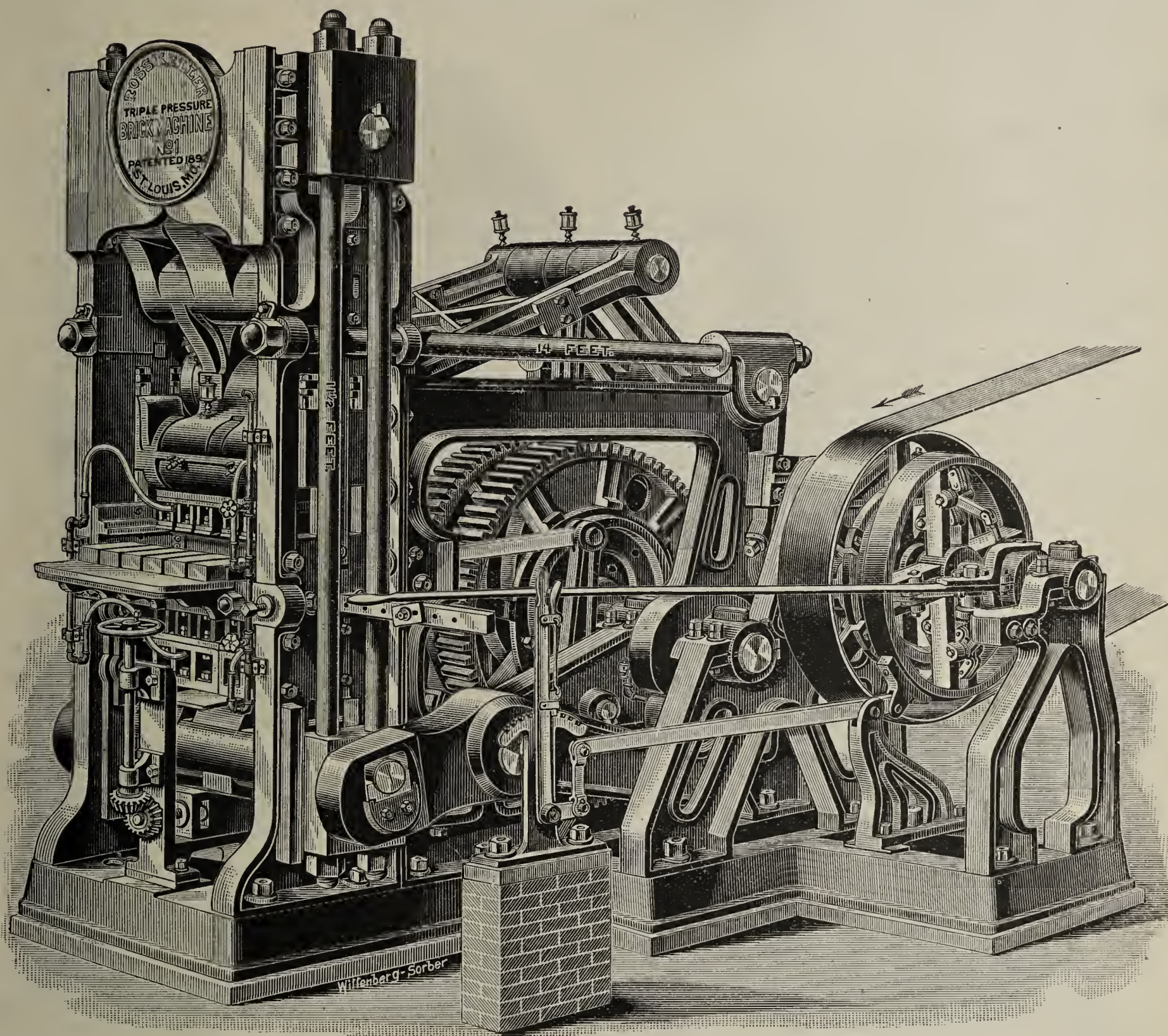
**FRANK D. BROWN, Quincy, Ill.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 75,000 pounds, Capacity 35,000 pressed brick per day.*



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**  
 Room 207 Laclede Building, ST. Louis, MO., U. S. A.



# THE U.S. DRY CLAY BRICK PRESS

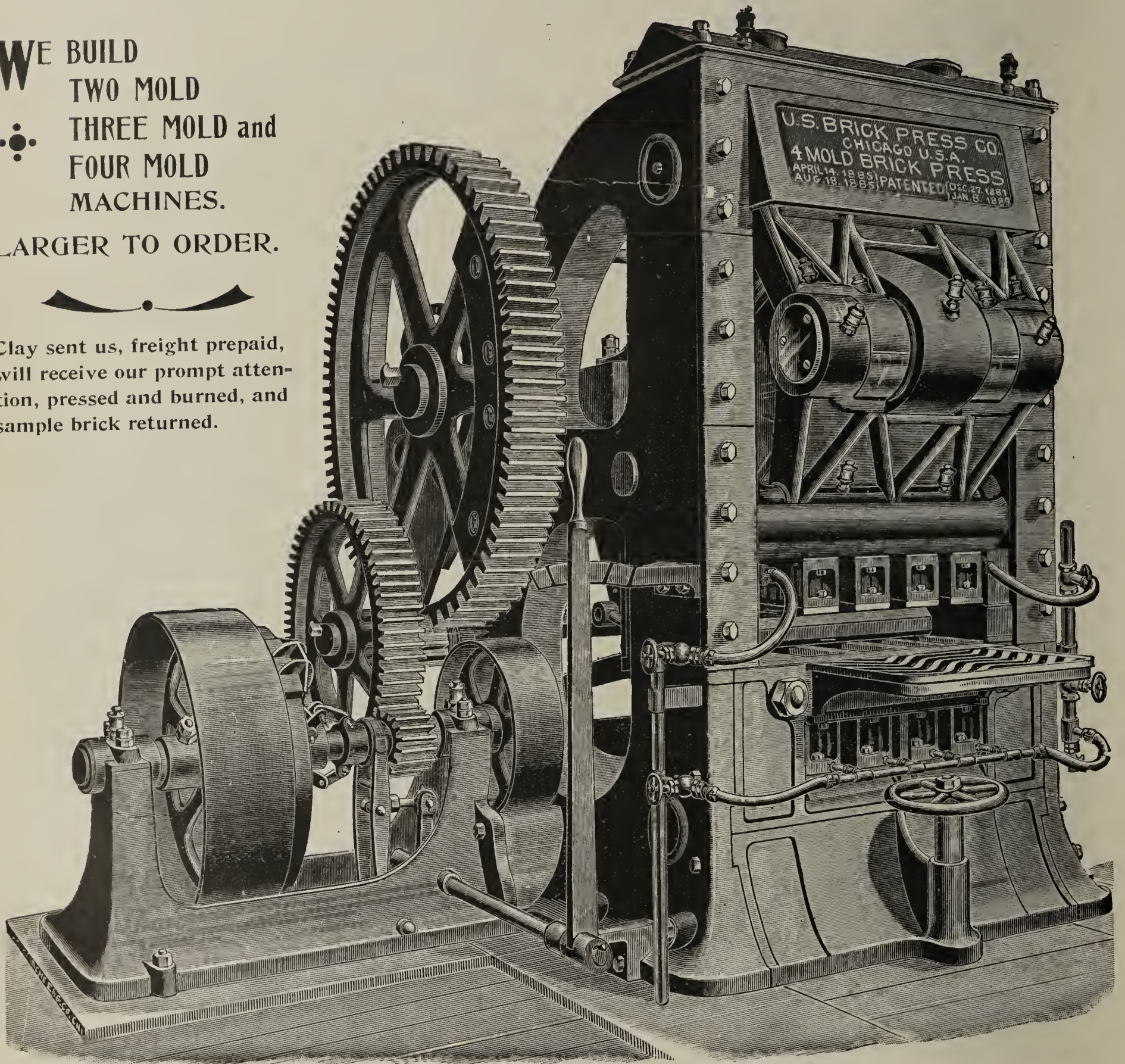
Is specially designed to meet the requirements of the modern Brick Plant, inasmuch as it is representative of STRENGTH, DURABILITY, and above all, of SIMPLE CONSTRUCTION.

—✦ MAKES FINE FINISHED FACES ✦—

WE BUILD  
TWO MOLD  
••• THREE MOLD and  
FOUR MOLD  
MACHINES.

LARGER TO ORDER.

Clay sent us, freight prepaid,  
will receive our prompt atten-  
tion, pressed and burned, and  
sample brick returned.



SEND FOR CATALOGUE AND PRICES TO

THE UNITED STATES BRICK PRESS WORKS,  
OSWALD KUTSCHE, Proprietor,

1111 to 1113 UNITY BUILDING,

79 DEARBORN STREET, CHICAGO, ILLS.



# Millions . . . . .



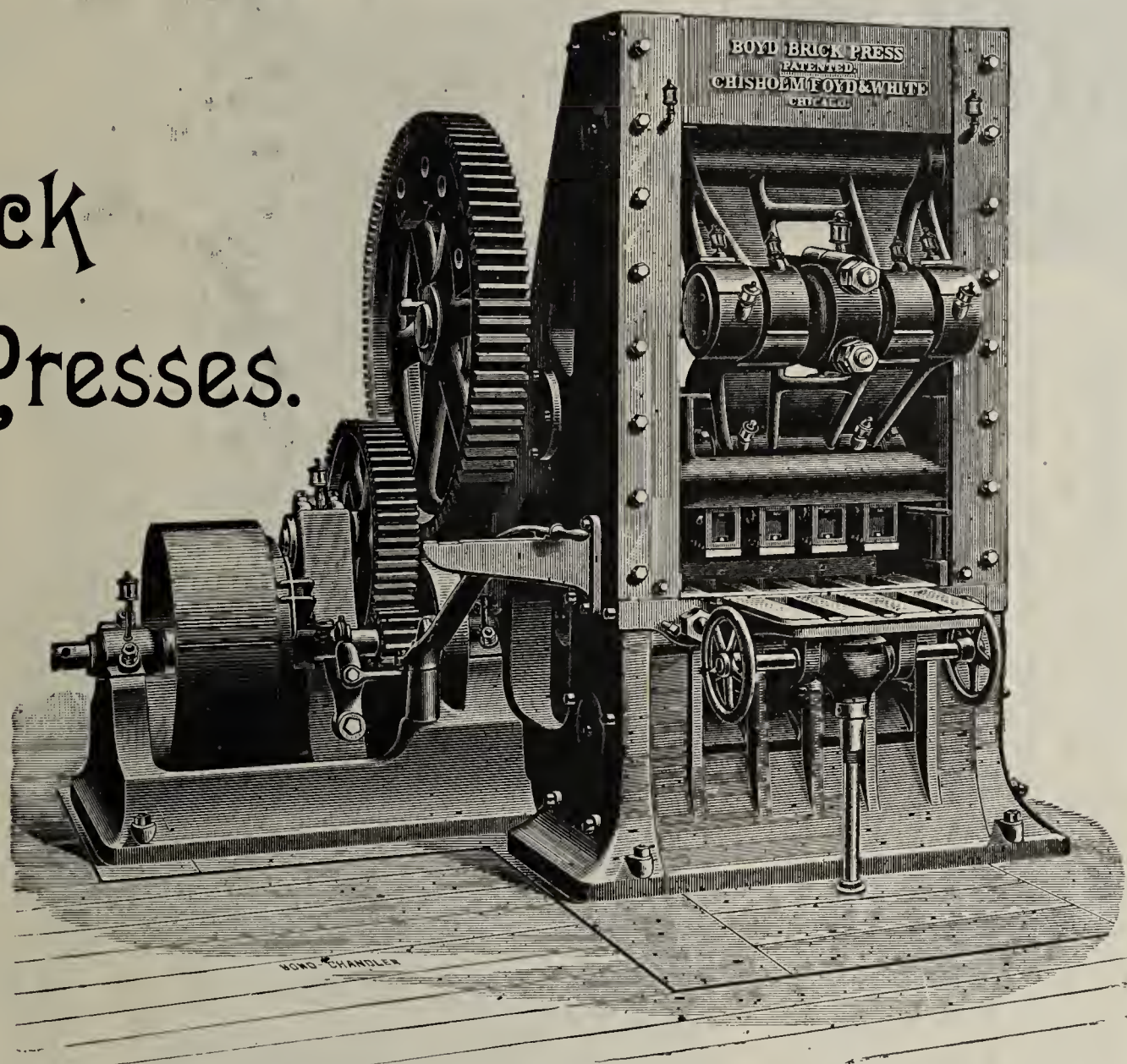
--- OF ---



## Beautiful Brick

Are Being Made Daily on

### Boyd Brick Presses.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you can have a sure thing?

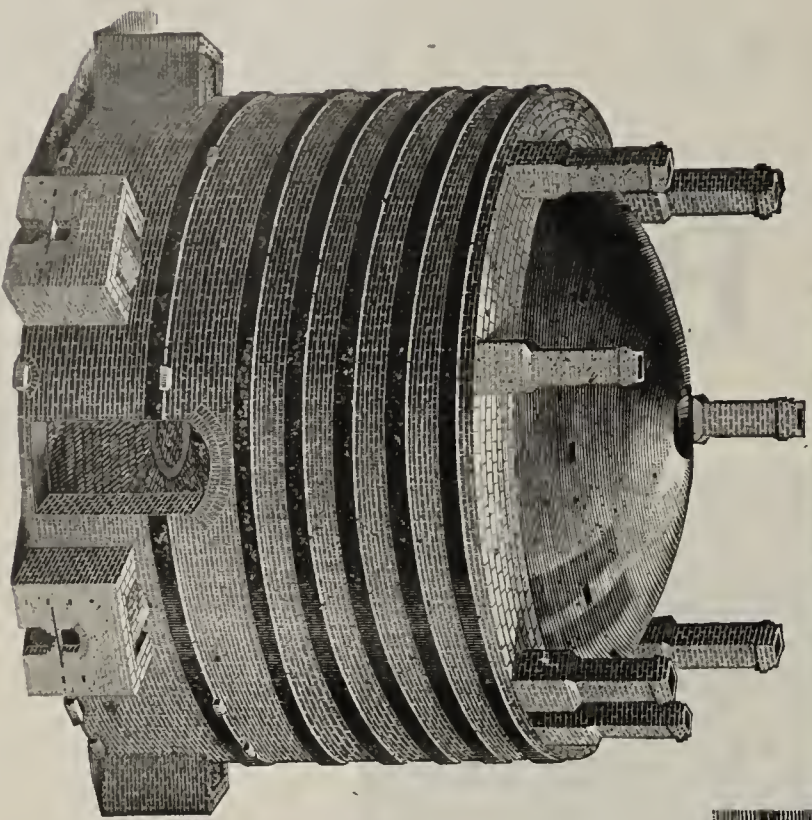
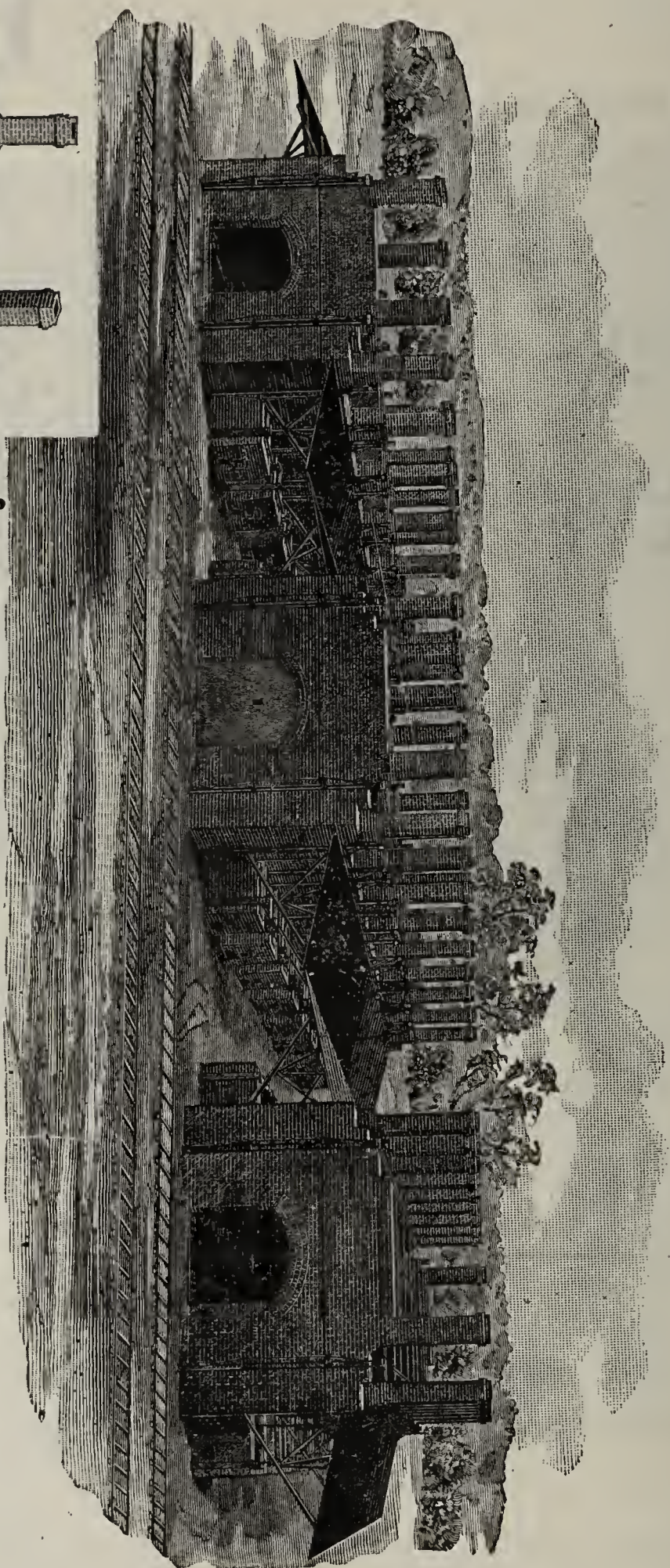
CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street,

CHICAGO.



# The Eudaly Improved Down-Draft Kiln.



**A** VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



## Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



## Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

### R. B. MORRISON & CO.,

P. O. Box 335.

Rome, Georgia, U. S. A.



## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire. It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers. Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,  
Fulton Fire Brick and Mining Co.

## FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular. (Extract.) Yours truly,

N. B.—Messrs. Carroll &amp; Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



W. H. KELSO, President.

PAUL BOEHNCKE, Treasurer.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

F. HASPER, Secretary.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

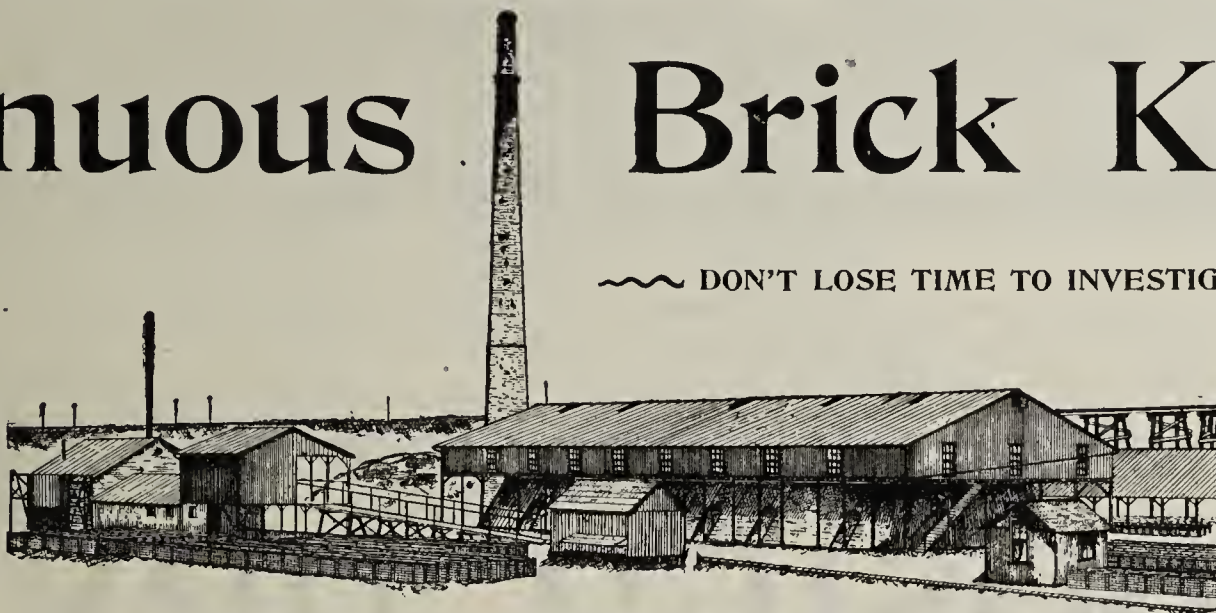
Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

## Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware  
of  
Infringe-  
ments.

### ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

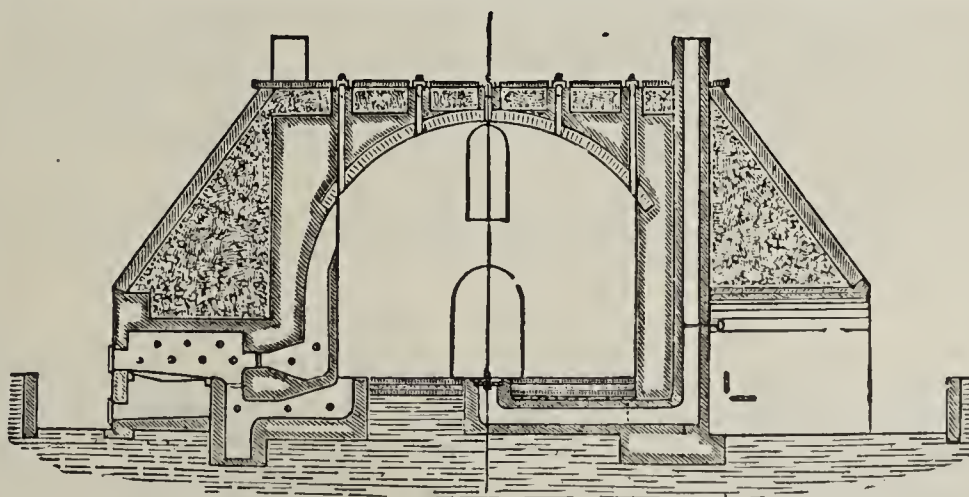
Write for Circulars to

Centinela Brick Kiln &amp; Drier Co.,

Box 35,

Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

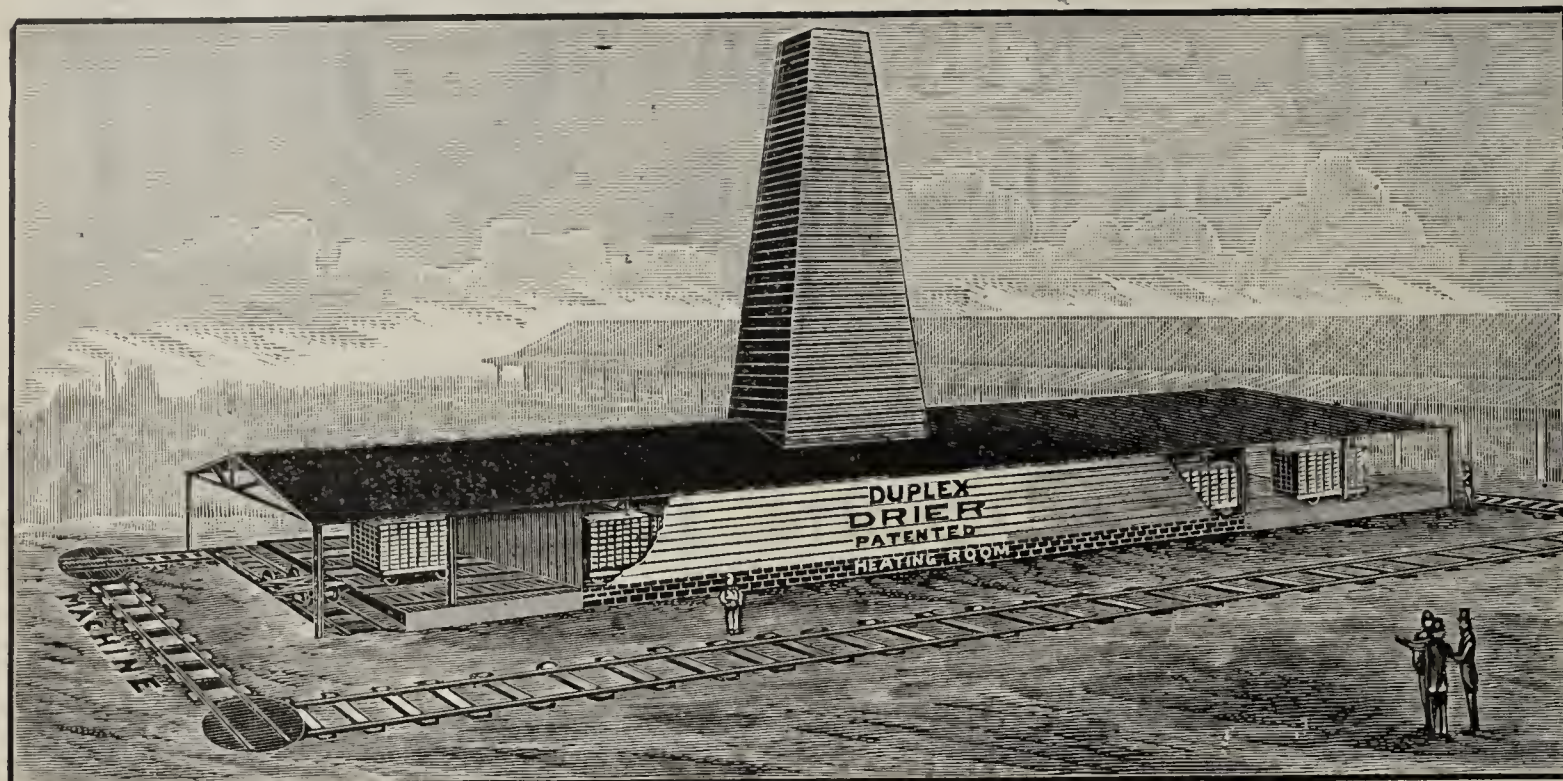
does not need any extra fuel or labor in connection with continuous kilns. Write for circulars and catalogue.

We have also Boehncke's Brick Drier, which is very economical,



## ATTENTION BRICKMAKERS!

Do not be alarmed by the  
screaching of Wild Cats  
or the howling of WOLVES.



.....  
**The  
Duplex  
Steam  
Drier**

IS NO.,...

INFRINGEMENT.

.....

Harland Brick Co. have been using it at Bernice, Ill., for eighteen months, 75,000 daily capacity. Harland Brick Co., Shermerville, Ill., twelve months, 75,000 daily capacity. Galesburg Paving Brick Co., Galesburg, Ill., six months, 150,000 capacity. J. B. Legnard, Chicago, Ill., four months, 160,000 capacity, and others.

Now is the time to buy. Address,

**W. C. BYRNE,**

Room 67, 162 La Salle Street,

**Chicago, Ill.**

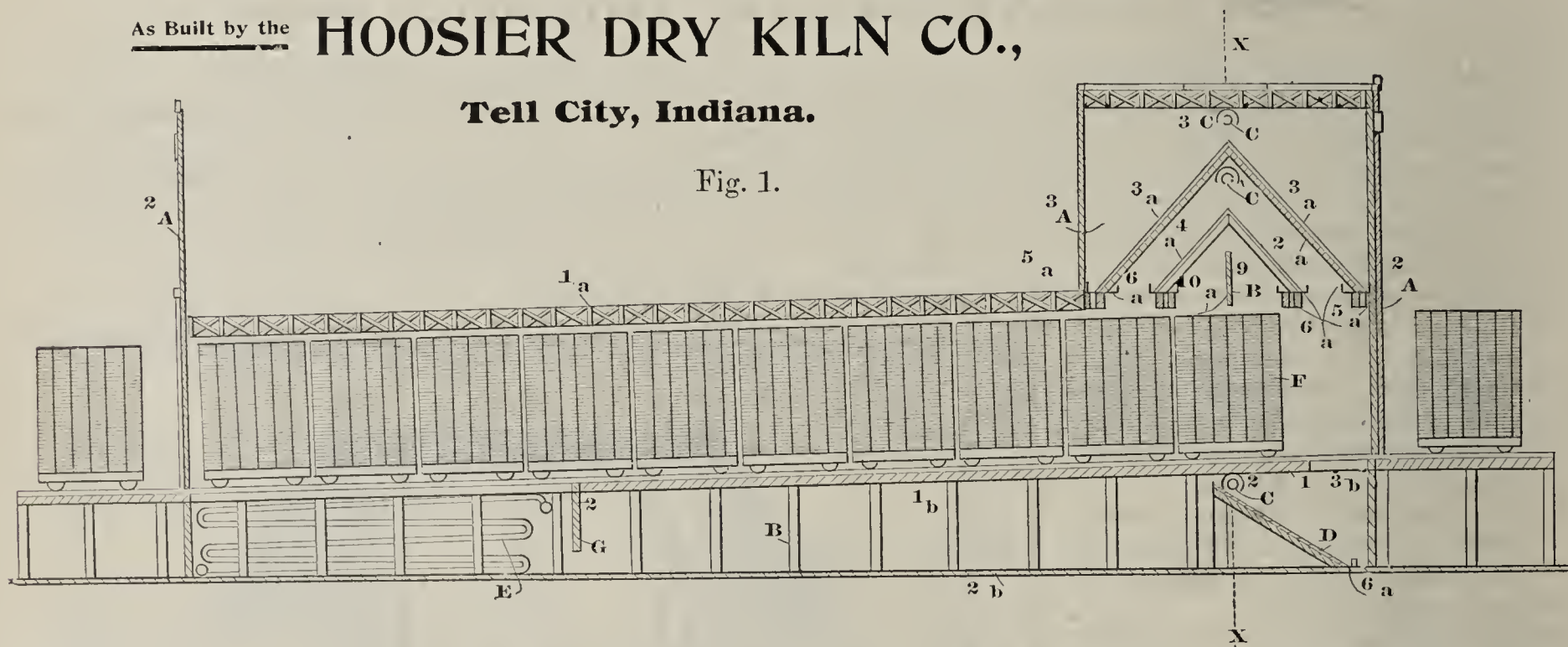
# HOOSIER DRYER,

As Built by the

**HOOSIER DRY KILN CO.,**

**Tell City, Indiana.**

Fig. 1.



**TEST ON THE MARKET.**

**LITTLE IN APPEARANCE.**

**LARGE IN RESULTS.**

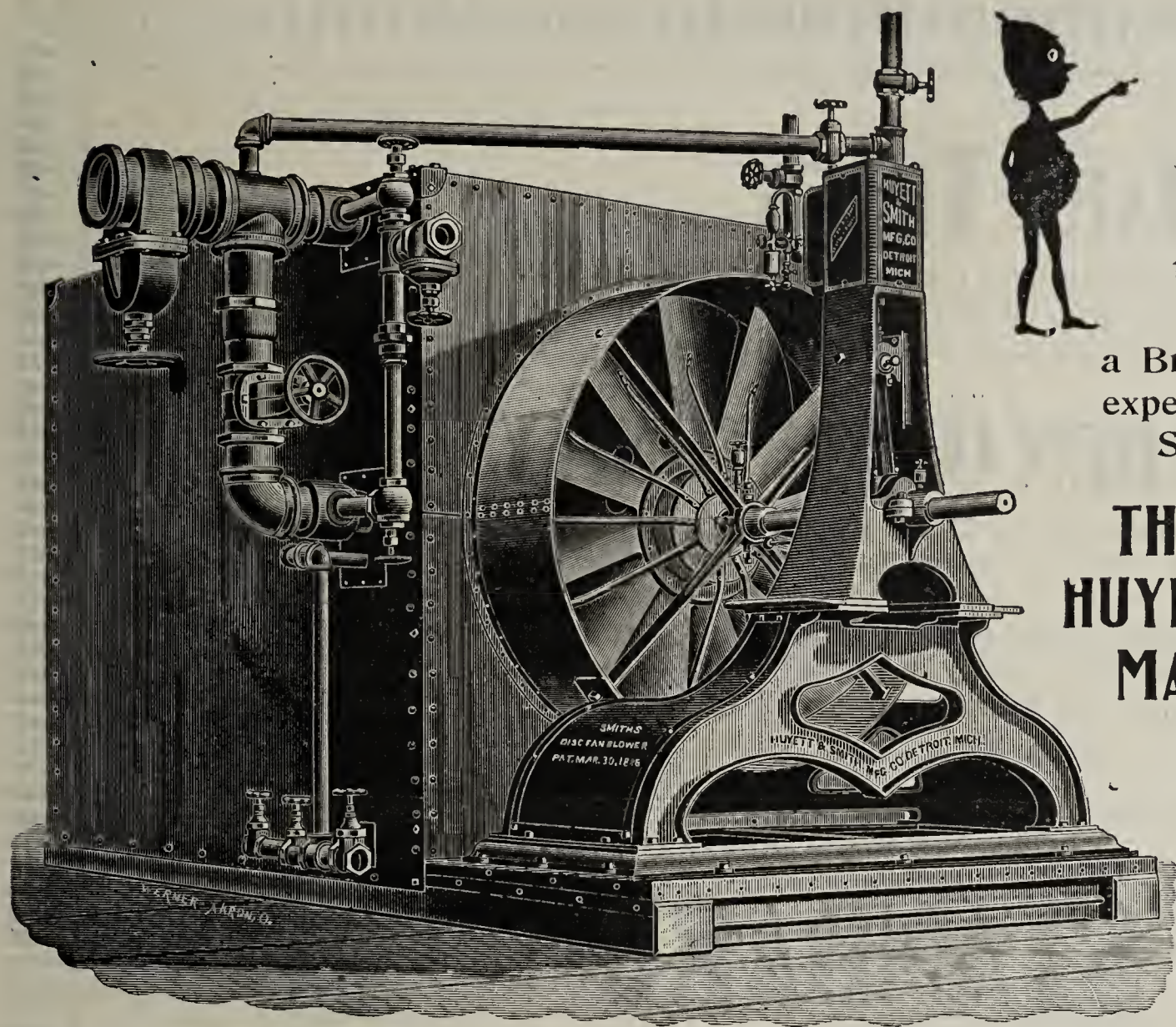
**EASIER IN FIRST COST.**

**RIGHT IN COST OF OPERATION.**

**THE HOOSIER DRYER** in addition to the advantages indicated is constructed and operated in a manner that enables us to guarantee quicker work and more satisfactory results than any other dryer now on the market. By our system, which is covered by letter patents and which does not conflict with any former invention, we can handle clays that heretofore have defied all attempts at rapid drying. Our terms are reasonable and satisfactory results are guaranteed.

Either Gas or Steam used for Heating.





## Old Sol

What about him?

He is uncertain in this rainy weather,

Why not purchase a Brick Dryer that is no experiment?

Such a one is made by

THE....  
**HUYETT & SMITH  
MANUFACTURING  
COMPANY,**

Main Office  
and Works.

ETROIT,  
MICHIGAN.

This Hot Blast Apparatus used in connection with a system of tunnels forms the only perfect and efficient Brick Dryer known for the following reasons:

- 1st. It duplicates nature, the brick being placed in contact with a large volume of air in rapid motion.
- 2nd. The drying can be carried on continuously night and day in all kinds of weather.
- 3rd. Dries more brick to the ton of coal or cord of wood than any Dryer made.
- 4th. The brick are evenly dried, without cracking and will not "mash" in the kiln.



*For full information, prices and references, write*

**The Huyett & Smith Mfg. Co.,**

MAIN OFFICE & WORKS: DETROIT, MICH.

CHICAGO, 31 S. Canal St.

BOSTON, 48 Union St.

NEW YORK, 107 Liberty St.



## THE HARD TIMES

About which so much is being said and written just now, while it has caused a partial suspension in most industries including brick making, at least offords

## A GOLDEN OPPORTUNITY

To make those much needed improvements in your plant. In these days of sharp competition it is absolutely essential to employ modern appliances and methods in the conduct of business or stand aside for your more progressive neighbors.

Keep up with the procession. Dry your product in a modern way by modern means. Use the best to be had, which is

## THE STANDARD PATENT

## FORCED DRAFT DRIER.

Why not prepare NOW for a revival in business which is bound to come very shortly, when it can be done at considerable less outlay than at any other time.

Send for printed matter and testimonials from practical Brickmakers which prove conclusively that we are prepared to furnish you

THE MOST EFFICIENT, ECONOMICAL AND RELIABLE DRIER  
to be found.

---

### The Standard Dry Kiln Co.,

Office and Salesrooms, 923-925 W. Main St.,

LOUISVILLE, KY.



# THE CLAYWORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XX.

INDIANAPOLIS, IND., SEPTEMBER, 1893.

No 3.

Written for the CLAY-WORKER.

## DECORATIVE BRICK WORK.

THE success or failure of any architectural work is, in the end, determined by public opinion. It is not wise for an architect or builder to decry the value of public opinion, for on general principles the public will take the best that is offered. The masses may be a little slow to appreciate, but in the end they discriminate in a just manner. The success in the use of colored brick and brick work laid off in ornamental patterns, depends upon the skill displayed in color arrangement as much as in the mechanical features.

Some weeks ago the writer was driving into a country town, accompanied by one whose principle interest was in fine horses. Some way ahead of us we saw a school house. As we drew near it Mr. Horsey said: "If I have any influence, there will be no more of those yellow brick used here." Now, the yellow brick were of an excellent quality, and had they been used alone, or with those of a similar shade of color, the effect would have been quite different, but used as they were, with a very beautiful dark red brick, the result was disastrous, for the colors did not harmonize. Consequently the brick were condemned, though of an excellent quality. The yellow brick

were distributed liberally all over the wall space in varying patterns, and the result was a glaringly unattractive structure, built of very beautiful and very expensive material. Either material in itself was good, but the combination was bad, and the cause of colored brick work is badly injured in that town.

The accompanying illustration is of a building of the XV century, at Gien, in the province of Loiret, in France. This is a

very successful structure; nevertheless, if we were to undertake to duplicate these forms, say with red and yellow brick, the result would be awful, the contrast would be too great. It requires a very nice discrimination to use the best of information. Here we have some very beautiful patterns of brick work. This comes to us in the light of information.

Yet with this information at hand we may yet be worse off with it than without it. It may lead us to be hazardous. We may feel that we are justified in doing something which we are not. If we were to examine this building carefully on the spot, we would find that there was a very slight variation in color, and for that reason the wall surfaces are merely relieved of their absolute plainness. Their breadth and size are not emphasized by great splotches of color. This is where we make our mistake. We take incomplete information that comes to us from photographs and go to extremes. We have examples of failures of this kind in our own city, and we see many of them elsewhere.

A very beautiful effect is secured in connection with the use of decorative brick by mere difference in texture. For instance, if we take a pressed brick and give it a pitched face, that is, a face which



BUILDING AT GIEN LOIRET, FRANCE.



corresponds to quarry face in stone work, the rough surface of the brick when thus pitched, gives an entirely different texture, and hence can be used very satisfactorily in patterns of the general character, which are shown in the picture on the first page.

The above suggestion is made on the side of safety. Ornamental patterns in brick work can be worked out by decided differences in color, but it takes a high order of developed skill to handle color under any circumstances, and very few people are educated in this way. Hence the suggestion that differences in texture may be safely used, and we also suggest the use of only slight differences in color. For instance, a light red and a very dark red or two colors of brown, but never departing very largely in the shading. The more pronounced the patterns the greater the caution required.

A brick with a ribbed surface, or one with a diamond shaped surface, with the figures not to exceed a half an inch in diameter would present a difference in texture and color, which could be used very successfully for pattern work of this character. The shading caused by the ridges or the diamond shaped protrubances would give the difference in color. If one examines the brick work of the building accompanying this matter, he will see that there is only a slight difference between the two colors of brick used, and an examination of a larger photograph shows that, while there is a difference in color, it is quite as much in the texture of the brick itself.

We call attention to the stone work on this building, and wish to have the reader note how readily the forms and construction could be adapted to building blocks of terra cotta. In truth, it is difficult to devise a form better suited throughout for construction with clay products. This idea is a favorite one of ours, and one which we shall continue to emphasize. Anything tending to the more general use of clay products as a building material is a positive commercial help to the clayworkers, and hence comes regularly in the line which this journal has laid out for itself.

It is pleasing to refer to examples which have stood the test of time and everyday use as has this structure during the last four hundred years. It is not only its ability to withstand the physical strain which pleases, but as well the fact that it has so well with-

stood the best of artistic criticism. It is a beautiful building, one whose details we may well study and be influenced by. Work of this character is an inspiration.

L. H. GIBSON.

Written for the Clay-Worker.

#### FIRE CLAYS AND THEIR PROPER APPLICATION.

**D**ISCRIMINATION in the choice of clays for particular purposes is the secret of success in making fire-brick.

I grant that it seems hardly possible to meet some of the problems, which present themselves to the minds of the fire brick maker with complete satisfaction.

Accomplishing the best results with the material at hand is what we are striving for, and is certainly all that we can expect to achieve.

Chemical analysis reveals many secrets and explains mysteries, which otherwise could not possibly be accounted for. Even it is powerless in attempting to furnish satisfactory reasons for some of the inconsistencies of refractory materials.

Almost the first complaint one hears from a customer concerning a fire brick is: "They melt and will not stand the heat." It is evident the consumer assumes that the inclination of the fire brick to fuse, is entirely due to the action of intense heat alone, when in very many cases it is principally due to the chemical action of substances upon the brick, assisted by heat and where the fire only plays a subordinate part. If the manufacturer understands just exactly what the conditions are and the reactions which are taking place, the difficulty is remedied or partially checked at once.

It may be that a slight change in the brick mixture, will not entirely overcome this tendency to melt, though the improvement has become so marked in the deportment of the next lot of brick, the customer's confidence is restored in the manufacturer.

Note the following analyses of clays dug at the mines of the Ostrander Fire Brick Co., Ostrander, N. J.

These are only a few of the different grades which can be obtained there. The very best in quality, though varying very widely in composition.

| A.                                                          |       |
|-------------------------------------------------------------|-------|
| Silica total (Sio <sub>2</sub> ).....                       | 45.87 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> ).....              | 40.16 |
| Titanic Acid (TiO <sub>2</sub> ).....                       |       |
| Sesqui oxide of Iron (Fe <sub>2</sub> O <sub>3</sub> )..... | Trace |

|                                                              |       |
|--------------------------------------------------------------|-------|
| Lime (CAO).....                                              | .37   |
| Magnesia (Mgo.).....                                         | None  |
| Total Alkalies (K <sub>2</sub> O and Na <sub>2</sub> O)..... | .30   |
| Combined water, }.....                                       | 13.67 |
| Organic matter, }.....                                       |       |

B.

|                                                              |       |
|--------------------------------------------------------------|-------|
| Silica total (Sio <sub>2</sub> ).....                        | 63.22 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> ).....               | 27.26 |
| Titanic acid (TiO <sub>2</sub> ).....                        |       |
| Sesqui oxide of Iron (Fe <sub>2</sub> O <sub>3</sub> ).....  | Trace |
| Lime (Cao.).....                                             | .37   |
| Magnesia (Mgo.).....                                         | None  |
| Total Alkalies (K <sub>2</sub> O and Na <sub>2</sub> O)..... | .73   |
| Combined water, }.....                                       | 8.80  |
| Organic matter, }.....                                       |       |

C.

|                                                              |       |
|--------------------------------------------------------------|-------|
| Silica, total (Sio <sub>2</sub> ).....                       | 82.19 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> ).....               | 13.32 |
| Titanic acid (TiO <sub>2</sub> ).....                        |       |
| Sesqui oxide of Iron (Fe <sub>2</sub> O <sub>3</sub> ).....  | Trace |
| Lime (Cao.).....                                             | .86   |
| Magnesia (Mgo.).....                                         | None  |
| Total Alkalies (K <sub>2</sub> O and Na <sub>2</sub> O)..... | .35   |
| Combined water, }.....                                       | 4.08  |
| Organic matter, }.....                                       |       |

The excellency of these clays is sure to be appreciated if they are only properly applied.

Note the comparative amounts of silica and alumina in each. The difference is very noticeable. It is hardly possible to detect by taste any more grittiness in the first (A.) than in the second (B.) while the third (C.) is decidedly sandy.

Who would know from physical examination and appearances that the first (A.) is so nearly pure *hydrous silicate of alumina*; while the second (B.) is so far from it, in containing such a decided quantity of uncombined silica, if analysis of such clays could not be consulted? Fire brick made from any one of these clays would stand a very intense heat or probably well enough for all practical purposes.

Doubtless there are no clays in existence, which run higher in alumina than those which correspond so closely to the theoretical hydrous silicate of alumina, or

|                                                                       |                |
|-----------------------------------------------------------------------|----------------|
| Al <sub>2</sub> O <sub>3</sub> 2Sio <sub>2</sub> + 2H <sub>2</sub> O. |                |
| Silica Sio <sub>2</sub> .....                                         | 46.3 per cent. |
| Alumina Al <sub>2</sub> O <sub>3</sub> .....                          | 39.8 " "       |
| Combined water H <sub>2</sub> O.....                                  | 13.9 " "       |

At a red heat, basic substances will unite with silica forming fusible silicates, while alumina remains unaffected by them at that temperature or even higher.

On this account fire brick or clay should be kept as high in alumina as possible, where they are subjected to the chemical action of basic substances.

A brick melting as a result of such chemical action, appears to the uneducated eye as made of inferior material which is not necessarily the case. Take



away these bases which are having such a destructive effect and apply the same heat; in many cases the life of the clay or brick would be doubled and perhaps trebled. Generally speaking, silicates of different metals are practically fusible, whereas the silicate of alumina seems capable of resisting even the highest heat.

Every inquiring student wonders at, and ponders over such peculiar properties which are so thoroughly characteristic and endeavors to satisfy a discontented mind by conjuring up an applicable theory, which will furnish a reasonable explanation for this departure from the usual law of chemical substances. As other silicates, why does not the silicate of alumina fuse?

Confining ourselves strictly to *silicon* and *aluminum*, which are the elements from which the compounds *alumina* and *silica* are derived by the addition of oxygen, it is quite true that the chemical properties of each are different.

Silicon will take on oxygen, form an oxide-of-silicon, called silica ( $\text{SiO}_2$ ). Silica with proper treatment will unite with water yielding an acid, called *silicic acid*. Before speaking of aluminum, its compounds, and how they differ in their chemical properties from silicon and its compounds, let me introduce another example, which is even more unlike silicon than is aluminum. It is calcium. Like silicon, calcium absorbs oxygen, forming an oxide of calcium, though upon uniting with water it forms, not an *acid*, but an *alkali*. Compounds of these two elements which are so extremely opposite in their natures will unite themselves forming a silicate of calcium in which they exhibit a great affinity for one another. This is not only a chemical law, that substances possessing different properties are attracted one to the other but it appears to be equally true of humanity.

Do you not find that a short man invariably admires a tall woman; or that a slow, moderate person is charmed by another who is excessively active and a most uncontrollably nervous? It is a universal law and effects a perfect arrangement of conditions. Just so truly and consistently does it govern substances, which are alike by nature in

that they have no bond of union. In other words, two elements which will form oxides, then take up water and yield acids will not unite chemically at any heat, no more than an attraction can exist between two electro-positive poles.

To go back to aluminum, what relation does it bear to its associate, silicon? Aluminum, like silicon, with oxygen forms an oxide of aluminum or alumina ( $\text{Al}_2\text{O}_3$ ), which will combine with water, giving a compound practically neither acid nor alkaline. What hypothesis can the hungry scientific mind draw from these facts? Why, that compounds of silicon and alumi-



OTTO GIESSEN, Secretary and Treasurer, The Royal Brick Co., CANTON, OHIO.

num are enough unlike to possess a slight affinity for one another, thus forming a definite compound, though they are sufficiently alike to prevent that slight fondness melting into an inseparable and destructive fusion.

CHAS. FERRY.

(To be Continued.)

"Say," said the editor's smart little son as he entered the store, "do you keep knives?" "Oh, yes," replied the storekeeper, "we've kept them for years." "Well," returned the boy, starting for the door, "just advertise, and then you won't keep them so long."

Written for the CLAY-WORKER.

#### HINTS FOR AMATEUR CLAY-WORKERS, No. 3.

I FEAR that my letters may become very prosy and not of sufficient interest to induce the boys generally to be stealing their leisure hours to follow my old beaten paths, but if they could look into my studio (the back kitchen) and inspect my surroundings, they would find a little statue of a glorious departed statesman, mounted on an inverted wash tub, and arrayed in wet dish cloths, to keep him moist. Or they might peep through the back window, which I have adorned with an additional pane of plate glass, over which I first poured a film of white wax about 3-16 of an inch. I carefully sketched out a picture on the white wax, and I keep scratching away, sometimes by the early morning light and sometimes by the light of a lamp, and am bringing out my subject after the fashion of the Irishman, who raised his ceiling by digging out the floor. My object is to have a transparent picture in china, pressed from the mould I will take from the wax in plaster. I have, also, a little matrix in plaster. It was my idea of a beautiful girl. I sketched the profile on a clay slab and spent many pleasant hours endeavoring to make a smile at the corner of her mouth, and a wink in her only eye. When I was satisfied with the beauty and expression, I took a mould off of it, and stopped right there, for I found my bas-relief was far more beautiful in the mould, and when I showed it to my friends with a good strong light, and asked them how high they considered it

it was modeled from the back ground, the general reply was, an inch or two. Imagine their surprise, on very close inspection, to find it is all sunk instead of raised, being only a mould, though they cannot see it that way, standing a few feet away. If you try to make this deception, you will find it very interesting, especially if you can get for a model a handsome maiden; one just coming out of her teens. But you must be careful not to get any plaster on the kitchen floor, or you may be compelled to move your studio to the wood shed.

In the other corner of the kitchen I have piled up miniature models of a pedestal,



for my colossal statue. Some models I have run with zinc moulds, while others I have modeled in clay, and moulded in plaster. From such moulds I have preserved a plaster cast only. When the plaster sets, I remove the clay, wash out the mould with soap, and fill the plaster mould with plaster again, that I may preserve my little model in plaster. As the clay will dry up, shrinking and cracking, it is much more desirable to have your original made in plaster. I remove this plaster mould from the plaster cast by means of a chisel, having to cut and break the mould off. This is called waste moulding and is only good for the one reproduction. When the piece is undercut or intricate, I color the first plaster that I put on with a little blue (stolen from the blue bag after the washing) and only apply a quarter of an inch coat. The second coat I make pink by putting in a little cochineal. The third coat I plaster on with only pure plaster, not mixing it too strong, or it might crack my fine blue face. Between those alternate coats I wash a thin solution of clay water; this makes it easy to remove one coat of plaster from the other, and when I start to cut the mould, the soft plaster outside separates from the pink easily, and the pink from the blue. I go lightly on the blue coat, knowing that when I strike the pure white, I am cutting that which I was endeavoring to save.

When all those little fragments are put together, I will have my original model to mould from, and start mixing different clays and taking out different casts to try under the action of fire, for results, which to you will be undiscovered, as every one has his own clay bank that acts differently under different heats, and the only way to find results is by practical tests of heat applied.

Now for you to make something that has cost you more time and patience than you wish to throw away, you must take more care than to rashly put it into a brick kiln, and trust to luck. All fine goods, as a rule, are burned in saggars, and there are sagger kilns, but I am only laying down the rough rules of experimenting to my young friends, who can get a chance to try with what they have got. I do not expect him to build a whole kiln, but he can build a sagger. A sagger is an envelope in which to put your ware or article. It is constructed according to the size of the article to be burned. Cups, saucers and plates are burned in saggars and kept apart by

little spurs made of clay; otherwise, when their glazes flux, they would all adhere together, each sagger containing so many pieces, and one sagger being the cover for the other. Even brick are often glazed or burned in saggars, they being built to contain the desired number of brick.

Now, in your case, consider how large the piece is you propose to burn, and make your sagger the desired size. Suppose a band box would be large enough. Get one and cover it with clay rolled out about three quarters of an inch thick. If you have no sagger or fire clay for the purpose, use what you have and thoroughly amalgamate the clay at all joints, and let it stand until dry; do not dry it too quickly, stop and plug up all cracks and then thoroughly dry, burn your sagger in the brick kiln, and also burn a cover in the shape of a slab. If you do not get all of the old band box out, it will not be in it after the first burn, but I guess you had better take it out to give the sagger a chance to dry without cracking. Put your work, the production of love and labor, into it. If in an up draft kiln, cover with the slab; if in a down draft, set your article on the cover and put your terra cotta band box over it. You need not seal it tight, but stop open cracks to prevent any current of heat going direct to your article.

Many have tried modeling, which is building up clay to get the desired results, and many of my young friends are anxious to carve, which is cutting away the clay to get the desired results, but they do not wish to apply sufficient of the wet dish cloth, and it is too much trouble and expense to cover their work with an air tight tin or box. It is also a great deal of trouble to mould your work and press a nice article hollow and perfect, and to do it well is sufficiently illustrated in the output of art porcelain ware, where one sees so many "seconds" and so few "firsts."

I would like to tell you some of my first experience that has been repeated so often by young modelers, who want their work burned just as they left it; but, alas, when the kiln is opened, it is not all there. No practical burner who has had this experience, now guarantees safe delivery from the kiln for amateurs, or even the professional.

A friend of mine who was ambitious enough to have me make his bust was much interested in the process of modeling, and to entertain him I un-

dertook to strike a few lightning caricatures, and among the last endeavors was a negro of a very exaggerated type. My friend having exhausted all the time at his disposal, left with the promise to sit for his bust on the morrow. He appeared at the promised time; I found my negro model getting rather stiff in the dry atmosphere; nevertheless, I went to work to transform him into my handsome friend, and after several sittings, I succeeded in producing a bust that was to his entire satisfaction. It was duly dried and criticised by his numerous friends. He had a great anxiety to see it in an imperishable material, so I undertook to burn it, and he was on hand when the kiln was opened. Oh law, it was not him, but it was a very good one of all that was left of the exaggerated, contorted darkey, wearing a grin of defiance, as we stared at it in blank dismay. Fragments of my friend's nose and curled corners of his mustache were picked up later in the kiln.

I remodeled his bust, exhausting my patience, but he was never satisfied. It was the other one he wanted, but it was gone where all good negroes go.

M. JAY.

#### BRICK PAVED STREETS.

S. Burgess, City Engineer, Decatur, Ill., speaking of brick pavements says: "We have about twelve miles of vitrified brick street pavements in our city. The first was laid in 1884. About equally divided as between business and residence streets, some in use where our heaviest hauling is done. Contractors do not guarantee the life of the pavement. All depends on the quality of brick. The present condition of our oldest brick pavement is good. As to the average cost per year for repairs, based on contract price, it is uncertain; say 1 per cent. The brick pavement is not noisy it is not slippery. We have some on 6 degree grade, but 4 degree should be the maximum. Our brick are 2x4x8-inch, round corners. My opinion is that their use will become general."

It is stated by one of the officials of the World's Fair Commissioners that to allow three minutes to look at each exhibit that is now on exhibition at the Columbia Exposition at Chicago it would take a person thirty years to see the fair allowing ten hours a day. This will give you some idea of what there is to see.—*Ex.*



Written for the CLAY-WORKER.

## MEASUREMENT OF BRICKWORK.

BY J. A. REEP.

IT IS curious to note how the method of measuring brickwork varies in different parts of the country.

There is almost invariably a feeling of antagonism between the bricklayers and their employers. I do not mean by this, contractors, but the owners of buildings, who hired the mason, or was compelled to pay for the building of the brick walls. The owner or firm proposing to erect a house or store building is obliged to put up a brick structure. As a matter of economy, he begins to make an estimate on the amount of brick required, as upon this must depend the size of building. He first asks a brick mason how many brick will be required to lay a cubic foot of wall, and receives for an answer, from one man, twenty-one, from another, twenty-two, and still another says, twenty. He looks around, secures the brick and builds up a cube to represent a cubic foot, and learns that twenty and one-fourth bricks are sufficient.

With this as a guide, he carefully estimates the wall and foundations of his proposed building. He measures all the openings and deducts them from the contents of the wall and arrives at what he considers an approximate amount of brick required.

Masons and contractors bid on the brickwork at a stated price per thousand. The contract is awarded and the work goes on happily until completion. Then a dispute arises as to the amount of brick used in the walls. The mason asks that he be paid for the walls counted solid. He also counts twenty-one brick to the cubic foot. The proprietor makes a careful estimate of the wall, and inquiry elicits the fact that there has been many thousands of brick delivered in amount less than in the masons estimate in wall measurement. The proprietor feels aggrieved that the mason should ask pay for that which he has not furnished. The custom of measurement adopted by masons is a matter which does not concern him, and is frequently left for the courts to determine.

There is no uniformity in the size of brick, therefore the size of a wall which a given number of bricks will produce is uncertain. The mason is fortified in his demands by a custom long established and defended therein by the Bricklayers Union, which makes the rules governing the size and amount of brick in the cubic foot, as well as the price per thousand for laying in the wall.

There is great need of some well established standard for the measurement of brick work, made to conform with the standard size of brick, as adopted by the N. B. M. A. At present the rules gov-

by the rod, and all that was below the surface with single face, as 18 inches thick and designates each  $16\frac{1}{2}$  feet as a perch. There is in reality  $24\frac{3}{4}$  feet (cubic feet) in each rod of face measure, but for convenience in counting, the one-fourth of a cubic foot was added to the perch and called 25 feet. As foundation work came to be built more extensively of brick, the measurements were designated as by the rod or by the perch, thereby becoming confused. We believe a rod, perch, or pole is  $16\frac{1}{2}$  feet, whether applied to linear measure or to  $16\frac{1}{2}$  cubic feet of brick or stone wall, and if a brick mason or stone mason measures the superficial surface of a wall, it is reckoned in rods, perches or poles, and any fractional part of a foot in thickness, is part of a rod, perch or pole.

The cubic foot is perhaps the best method in use to measure brickwork, as the brick are made to conform rapidly to the space occupied by a cubic foot; and do not vary but little from  $20\frac{1}{4}$  brick to the foot.

Ordinary brick are about 8 inches in length, and with the mortar joint about half that in width, so that each brick on the flat will give a horizontal surface of about 32 square inches, or  $4\frac{1}{2}$  brick to the foot square.

Brick, as usually laid, require 9 courses in height to each twenty-four inches, or  $4\frac{1}{2}$  courses to each foot in height  $4\frac{1}{2}$  courses, with  $4\frac{1}{2}$  brick to each course, gives  $20\frac{1}{4}$  brick to the cubic foot. Waste, cutting and closer joints will easily require an allowance of  $\frac{3}{4}$  of a brick to each cubic foot, and 21 brick will be found a very convenient figure for estimating the number of brick required for a

wall of a given size and thickness. This is based on the standard size of brick.

To lose one-eighth of an inch in each course of brick is a loss of one inch in height of the wall in every eight courses, or one foot in height in every 20 feet. This is made evident in facing up with pressed brick fronts. Both the brick and mortar joint being thinner than in the wall back of it, it can only be bonded together and only partially then, at each recurring sixth, seventh or eighth course, depending entirely upon the thickness and thinness of the two different kinds of brick.

This, at first sight, may look like a



J. A. REEP, Co-AUTHOR, "BRICKMAKERS' MANUAL,"  
KNOXVILLE, TENN.

erning measurements vary considerable in different parts of the country. Some contractors measure by the rod. Again, you will come across others who insist on measuring by the perch. If they were asked to define the difference between the rod and perch, the answer would be, "A great deal of difference. A rod is  $16\frac{1}{2}$  feet and a perch is 25 feet, or very near it."

The old rule of our arithmetics taught us that  $16\frac{1}{2}$  feet make one rod, perch, or pole, and we supposed that it would always remain at that. But the stone mason in measuring his work measured double faced wall, one foot in thickness,



small item; but if it is practiced on both the height and girth of the wall by shortening the bricks, then the loss is two fold. But there is another side to the subject. The brickmason or contractor sometimes lives in a section where building sand is much cheaper than brick, and with no regard to the size of the brick he is using, he mixes his mortar as lean as he dare with small allowance of sand, and where brickwork is built by wall measurement, then his object is to save his brick at the expense of the mortar. He, with a heavy mortar joint, makes a gain correspondingly as great as the small brick is in favor of the brickmaker.

The brick walls with large mortar joints are weaker, and liable to be crushed or cracked. Lean mortar is not a good cement, and is subject to decay or disintegration by the effects of the weather, thereby rendering the wall weak or unsightly.

The loss of an eighth of an inch in each 8 courses on a wall 60 feet high, with the five walls, foundation, inside walls and chimney, etc., of an ordinary store building, would be about 550 cubic feet, or 11,550 bricks, counting 21 to each foot, or if the gain of an eighth of an inch can be made by the selection of the right man to run up the leads or corners, it is just as desirable to do so in his own favor that way. The contractor furnishing brick by the thousand scales up one side. The brickmason laying by the thousand scales down on the other, and, as before remarked, it is the frequent cause of dispute between owners of buildings and the builder.

My experience in the trade for a number of years, confirms me in the opinion that many men are deterred from using brick for their dwellings because of this.

Written for the CLAY-WORKER.

#### BANK CHECKS AS MONEY.

A check is always supposed to be drawn against funds; and there is much authority for holding it to be in some important respects, an appropriation of those funds. As soon as the drawee has notice of it, he is ordinarily bound to pay it; and a bank should not be permitted to affect the right of a holder of a check to the funds in its hands by refusing to pay it without sufficient reason. It is a general rule that a drawee who has refused to accept a bill

of exchange cannot be sued by the payee, upon that bill, without special reason for his refusal to accept. If a check is drawn upon a bank, the bank must have something of the same power and security. And as, in the whole transaction, the bank acts only as the agent of the depositor and drawer, and the bank would be justified in refusing, and would be bound to refuse, to pay a check, if directed to refuse payment by the drawer. A bank may be liable to a holder of a check for a wanton or fraudulent refusal to pay the check, whereby the holder lost the funds, and only in such cases could any action be maintained against the bank for the refusal. One of the many reasons why the holder of a check, upon the refusal of the bank to pay it, having sufficient funds of the drawer to meet it, cannot maintain an action against the bank, is the existence of such a right of action on the part of the drawer, who may sue the bank for the wrong done, or for the breach of the implied contract to honor promptly the customer's checks. In such an action nominal damages may be recovered, though no actual damage is shown; the jury have a right to presume that the wrongful refusal to pay the check would be to some extent injurious to one in trade in every case, and may take into consideration the natural and necessary consequences of such refusal, and award such damages as they may judge to be a fair compensation for the injury sustained from the dishonor. Where a check is drawn payable to order, if it is lost or stolen before it is endorsed, the loss does not fall upon the drawer or the drawee; for the bank cannot pay it before indorsement. Sometimes they are drawn to order merely to secure the receipt of the person in whose favor it is drawn, whatever the reason of this may be, if a bank pay a check so drawn, and with a forged indorsement, it is the same thing as if it paid a check with the drawer's name forged. In New York, and perhaps elsewhere, it is common to draw checks payable "to the order of bills payable," or to the order of a number, or by some similar phrase, to express that negotiability, which only exists in connection with the word order. But as such check cannot be indorsed by any party, it has been held to be a check payable to bearer, and of course transferable by delivery. It has been said that the word "memorandum," or "mem," written upon a check would not affect the right of the holder. There

is a well known custom in all our commercial cities of drawing and using checks in this form, merely as due-bills, or, as they are called, "memorandum checks." It is also usual to run a pen through the name of the bank; as if this were omitted, and the name of the bank left, the holder might lawfully present it and demand payment.

As a check is payable on presentment, it cannot be presented for acceptance, but must be presented within a reasonable time to charge the drawer or indorser, in case of failure of the drawee. The fact that it is presumed to be drawn against deposited funds makes it of even greater importance than in the case of a bill that a check should be presented, and that the drawer should be notified of the nonpayment, and that he and any indorser should be discharged by neglect of notice. If a check is presented long after date, and is refused payment, not on account of a failure, but because the drawer has closed his account or withdrawn his funds, the drawer is still liable. As between the holder of a check and the indorser of it, or the transferrer and the drawer, there can be no doubt that it must be presented for payment within a reasonable time. But as between the holder and the drawer, the drawer is not discharged by any delay of presentment, unless he can show that he has been injured, as by the failure of the drawee, or a change in the state of accounts or otherwise.

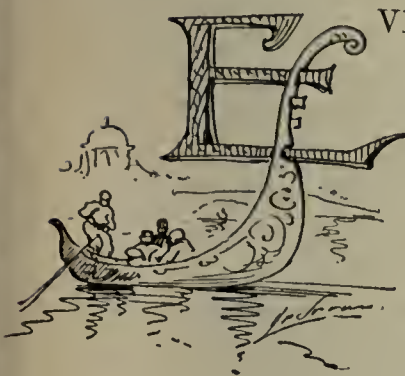
It is quite common to present a check not for payment, but to be marked and certified as good, which is usually done by the cashier, upon whom it is drawn, writing upon it, "Good," over his signature, and then it circulates, or is transmitted, as cash. This marking or certifying, is called in some cases "acceptance." It has the same effect as acceptance and creates an immediate and positive engagement of the bank to pay the check. As to authority of a teller or cashier of a bank to certify checks in this way, it cannot be derived from his general power or duty, or from the nature of his office. But the bank may, by vote, confer this power upon an officer. And even if the power is conferred with limitations, as a thing to be done only when, actually in funds, still if the officers use this power collusively with a customer, and in fraud of the bank, the bank is held in favor of one who, in good faith takes such certified paper for value.



Written for the Clay-Worker.

### BY THE WAY SKETCHES.

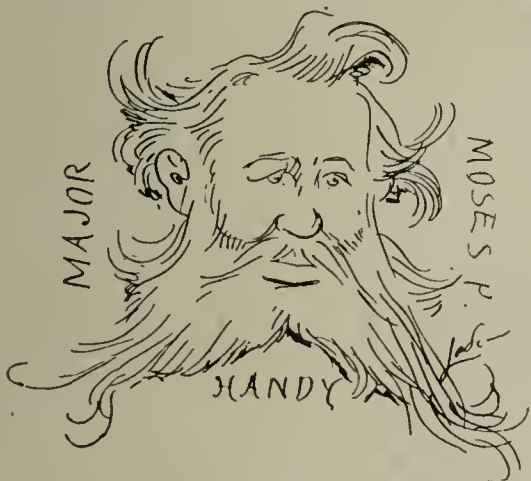
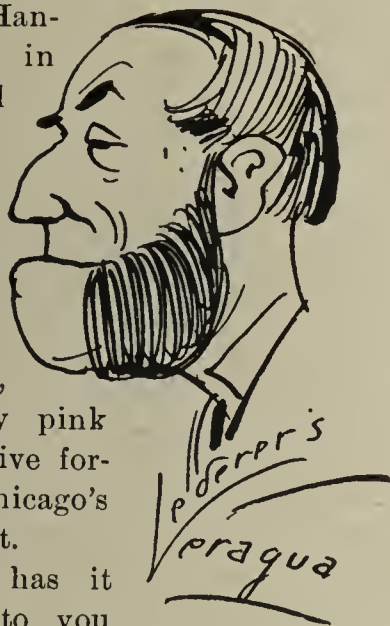
The Clay-Worker's Correspondent and Artist Very Much on the Spot.



VEN dukes "go broke." And I hear that the Infanta Eulalia is going to have her allowance cut down. All this is very discouraging to young men and young ladies who intend to go into the duke and infanta business. I honestly feel sorry for the Duke of Veraqua but not sorry enough to chip in when the hat is passed. If he is really so so hard up he can sell the sketch I made of him and gave him as a souvenir to take back to Spain. It was a beautiful sketch as you may see by this copy.

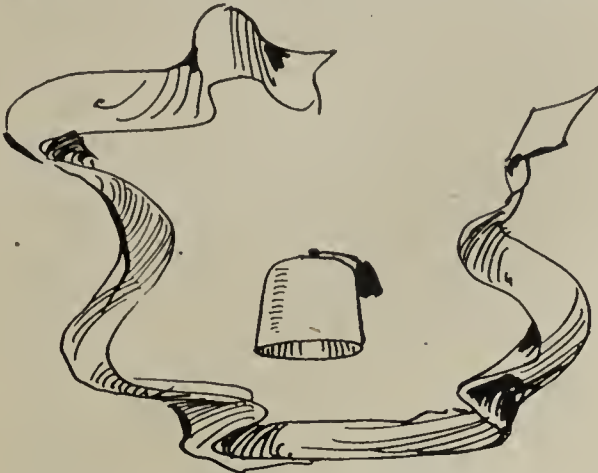
As a mere suggestion I should think it would be an excellent thing to perpetuate Major Handy's whiskers in terra cotta and give them a prominent place in the memorial building. The genial Major may fade away, but his lovely pink whiskers will live forever—in Chicago's memory at least.

By the way, has it ever occurred to you that there is a close similarity between the Algerians, Turks, Arabs, Egyptians, in fact, most of the orientals and semi-orientals of the Midway, and our old friends of South Clark street, who stand outside of rickety clothing stores and



who with an horizontal wave of the hand invite you to "Shtep in shide and look at der beryootful coatsh, yoost shtep in and puy a bair of bants." At any rate South Clark street looks awfully de-

serted of late. Take Mr. Isaacs, a fez, a yard of red calico, wind the latter round



the fez, place some on Mr. Isaac's head and you have a very good article of turk variety.

As for the wild men of the Dahomey village, nine out of ten are men who



couldn't get back to work after the strike of the colored waiters down town. About the only genuine Midwayers are the snake charmers. The ordinary



colored, brother or sematic cousin doesn't monkey with snakes, except the bottled kind.

A few days ago I espied a rather awkward looking Columbian guard who had an expression that was familiar. Strolling up to him I said "Excuse me but while your name is familiar, your face has escaped me." He saw the jig

was up and at once acknowledged to me that he was a reporter for the *Daily Gore*, and that he was masquerading as a World's Fair guard for a day in order to write up his experience—as if experience was required by a Columbian guard.

CHARLES LEDERER.

### BUSINESS GRIT.

"Be firm, one constant element of luck, Is genuine, solid, old Teutonic pluck."

The man who never had financial reverses cannot possibly know whether there is any grit in him. The man who fails, then rises, is really great.

Peter Cooper failed in making hats, as a cabinet maker, locomotive builder and grocer, but he tried and tried again until he stood upon his feet alone sun-crowned, and gave a million dollars to help the poor boys in all time to come.

Horace Greely failed four times but he succeeded in founding the *Tribune*.

Abraham Lincoln did not succeed financially in early life—he did, how-



ever, what he found before him. He chopped wood, made rails, rowed flat boats, kept a country store, surveyed land, etc., all the while gathering force to make a grand character for all time.

Business friends, the way may not seem clear, but use all the means that come to your hand, be alert, persistent, in a word, have business grit, and in a hundred instances, the things which seem to lie in the way, viewed from a distance, will be easily turned to your favor when you get to them. Do not slacken your energy, or fail to use the means at command, to drive your business. Waiting for something to "turn up," like Wilkins Micawber, will never bring business prosperity. Better trample on impossibilities and crown your efforts with a splendid success.—*Drainage Journal*.

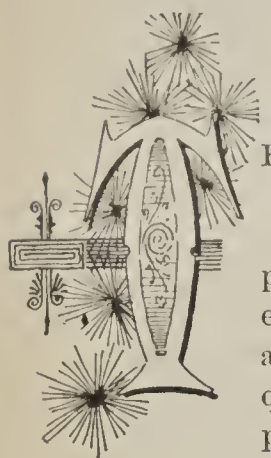


Written for the CLAY-WORKER.

## STREET PAVING BRICK.

## Second Paper.

BY ALFRED CROSSLEY.



THE ever increasing demand of these times is for men who have thoroughly studied the principles of brickmaking in every branch, both in theory and practice, and have thus qualified themselves to take positions of responsibility. How to attain this knowledge, expeditiously and economically, is the question to be presented to our readers. I propose the application of the common-sense principles which govern those who seek to qualify themselves for other professions. The man who proposes to become a physician enters a college of medicine, and there acquires such a store of knowledge as he could not obtain from a whole lifetime of empirical practice (even if the law allowed such a thing). The young man who contemplates a mercantile life, most frequently takes a course in a business college, and so with other pursuits. No one supposes that these young men, as they emerge from their colleges, with their diplomas in hand, have nothing more to learn. Indeed, they will yet learn a great deal, but they have qualified themselves to *begin their life work*. The reader is now prepared for what to many will seem a startling and impractical proposition, viz., the establishment of a college or institution for theoretical and practical instruction in the principles of the science of brickmaking in all its branches, and other kindred clay-working subjects. It is scarcely possible to fully describe all the requirements of such an institution, but I will outline a few of the more salient features. To begin with, it should be conveniently located in some Central State, thoroughly accessible by trunk lines of railway from all over the country. It should be controlled by men thoroughly disinterested in any make of machinery, patent kilns, patent dryers, etc., etc., and its faculty should be above the influence of any such connections. At the same time, one of its principal objects should be to instruct the students in the peculiar features of every machine, dryer, kiln, and, in fact, every appliance known to the brickmaking business. It should be equipped with a first-class laboratory, with a competent chemist in charge,

who should teach the students how to make analysis of clays, and the uses of analysis in estimating the value of clays for different purposes. There should be lectures on every possible phase of the subject, including the origin and formation of clays, the different geological periods to which they belong, the distinctions between different varieties of clay, and how to produce these different varieties by artificial means, the theories of shrinkage and drying of clays, the attainment of definite, positive results by specified formulae of mixtures, the glazing and enameling of brick, and, in short, the whole round of chemical and mechanical processes involved in the manufacture of every kind of brick,—common, pressed, paving, fire, enameled, etc. These lectures should be supplemented by actual demonstrations in the *modus operandi* of positive bona fide brickmaking and burning, the gang being entirely made up, if possible, of the students themselves. Thus theory and practice would go hand in hand, technical and experimental knowledge would both be acquired, and at the end of the course a class would be graduated from which would be evolved the ideal brickmakers of the future. Several other features might also be mentioned. The experiments should be conducted on as wide a variety of clays as possible, in order that the students might become familiar with the difference in treatment required. There would be some expense in bringing large quantities of clay from distant points. This difficulty would be partly met, and at the same time another purpose served, in the case of parties sending clays for the purpose of being tested. New enterprises are being projected nearly every day, and the parties interested are generally desirous of having their clays practically tested beforehand. From correspondence I have had with such parties from all over the country, I am certain that the majority would gladly avail themselves of the privilege of having their clays tested by an independent and competent authority of this kind, and after the fact becomes sufficiently known, there would rarely be a lack of samples to work upon.

It would be desirable also to have all the leading makers of brick machinery and appliances send their machines to be set up and run in these practical experiments. One each of the three distinct varieties (dry press, stiff-plastic, and soft mud), could be set up at the

same time, the question of priority and time of operation of each machine being determined by the Board of Managers. By this means the students would become familiar with the operation of all the leading machines and the special features of each, and by the changing of the machines they would learn much in regard to setting up and starting of brick machinery, and not be entirely dependent on the experts sent out by the builders.

Some of these suggestions are crude, and possibly impractical, yet none are unworthy of consideration, while the idea as a whole is thoroughly practical and worthy of adoption. It may be asked if a graduate of such an institution as suggested could consider himself perfect. I answer, NO,—no more than a graduate of a medical college could be regarded as a perfect physician. But the immense value of such a course of study and training as has been indicated, could be questioned only by a fool.

The question of who should take the initiative in this matter is perhaps not easy to determine. It would be perfectly in harmony with the interests and object of our National Association to take the matter up, but even if it were not found convenient to do this *as an Association*, the most proper and suitable time and place to bring it to the front is at our Annual Convention, where men of unquestioned ability for such a work will be met together. It has been recently stated that among the manufacturing interests that of brickmaking is only exceeded in value and importance by the iron business. If that be so, is it not time that those who have charge of such immense interests should at least have the opportunity of a more thorough and systematic training in the principles and practice of the art? I therefore trust that no apology is needed for bringing the subject before the readers of this representative journal.

I am obliged to plead guilty to a considerable digression from the real subject chosen for this article, but the importance of the subject I have just treated of led me to write on it at greater length than I at first had any idea of. Therefore, with this explanation I will resume the paving brick question in a continuation of this article in the next number of the CLAY-WORKER.

P. S.—I want to say to Bro. Morrison that the above was, for the most part, written before I read his remarks on the same subject in August number of the



CLAY-WORKER. Hence he will acquit me of any suspicion of plagiarism. It is only another case of the same brilliant idea being conceived by two great minds at once. It reminds me somewhat of the Scotchman who on hearing a noted lecturer give expression to some ideas that coincided very closely with those in his own mind remarked, "Hae's a clever mon thot, hae jost-thenks as aw thenk." Of course, I think Bro. Morrison is a "clever mon."

A. C.

NOTE.—This series of papers was prepared for the CLAY-WORKER by Mr. Crossley early in 1892 but for various reasons we have deferred publishing same till now.—ED.

Written for the CLAY-WORKER.

#### HINTS ON BRICKMAKING.

No. 79.

BY R. BRICK.

**M**OST brick plants use steam power now and all the brickmakers who use steam are interested in the subject of boiler explosions. We occasionally hear of explosions at brick plants as well as at other kinds of factories. The writer, at the risk of being jumped upon by practical, as well as scientific, engineers, will venture to discuss the much debated cause of boiler explosions—not being a practical engineer—from the standpoint of observation and reflection. I have seen the wreck and ruin caused by two explosions of batteries of boilers, five in one battery and four in another, where large boilers 20 feet in length were thrown 400 yards, leaving destruction and death in their wake, rending large buildings of iron in twain, leaving no room to doubt that terrific force hurled them from their foundations of brick and stone. It does not seem reasonable or possible that high steam pressure could do this. The force exerted by an explosion is too great for steam pressure of from 50 pounds to 100 pounds per square inch. A boiler with a pressure of 100 pounds pressure per inch will not blow up if the safety valve is thrown open and the steam is allowed to rush out. If a flue gives way there is no explosion, although steam is released suddenly. This would go to prove that pressure mentioned above would not exert the force shown at explosions. Steam pressure in an ordinary boiler increases gradually. With all the heat the best coal will generate, it takes several minutes to raise pressure from 50 to 100 pounds. Boilers explode when the pressure immediately preceding the

explosion was ordinary, hence it cannot be attributed to high pressure of steam. The U. S. government caused some old boilers near Pittsburgh, Pa., to be tested to determine at what pressure they would give way with the best coal and wood. The pressure was brought to 300 pounds per inch and yet there was no explosion. Boilers, sometimes, under high pressure, give way at some weak point; the steam simply rushes out and the boiler remains in place.

The question arises if explosions are not caused by high pressure of steam—What is the cause? The humble opinion of the writer, is, that nearly all, if not *all*, explosions are caused by water in the boiler running too low, exposing the crown shaft or roof of fire box, in a flue boiler, or below tubes in a tubular boiler, allowing those surfaces to become red hot, then when the water arises and comes in contact with this heated surface the result is an explosive force sufficient to destroy strong walls and buildings. The explanation of this force, or how it is so quickly generated, must be left to the scientist.

That explosions are caused by what is commonly known as "low water" seems conclusive. It is true that the engineer nearly always say there were two gauges of water—that is, if he can be found—when the boiler exploded. This is material. If he didn't have plenty, he was clearly responsible for the explosion. We give a case to illustrate:

The writer was on a brick works in Norfolk, Va.; a new portable boiler was in operation there. We heard a great noise at the boiler of escaping steam, which soon filled the engine house. As soon as possible the proprietor and engineer began to investigate the matter. The engineer was interrogated as to the amount of water in the boiler when the trouble occurred. He replied: "I had two gauges of water in the boiler." He claimed to be an old steamboat engineer. As the steam appeared to come from the fire box the engineer thought it had given way in the flues, but there was no sign of water escaping anywhere, and, if he had two gauges, where was the water? The writer suggested that perhaps there was a safety plug in the crown sheet. Upon examination we found there had been one there but it had melted and fallen into the furnace, and the steam rushed into the fire box through the opening thus made. This demonstrated the fact that the engineer did not have two gauges, or even one

gauge of water, but that the water was below the crown sheet, and, had it not been for the safety plug, the readers of the CLAY-WORKER might not have had this *infliction* to bear. If that engineer had started his pump and caused water to flow over that red hot crown sheet, there would have been an explosion. That safety plug prevented a serious accident and caused that engineer to lose his job.

This goes to prove that an engineer may be mistaken about having plenty of water. He is deceived. The water is foaming, or there is something wrong with the glass gauge. How shall we lessen the chances of an explosion? First, have a practical engineer, sober and reliable. Have an unfailing supply of the best water you can get. Then have the very best and surest appliance to force the water into the boiler—a standard inspirator or injector, one that will work all the time that it is needed. Do not require your engineer to do too much. If he has a large engine, have a fireman to assist him. The engineer, however, should know that his fireman is doing his duty. Neither should he depend entirely upon his gauges to tell him how much water is in the boilers; he should soon learn how much water he uses to furnish the power required. If he shuts off the water and finds after running sometime the water still shows as high as ever, he should notice this, and conclude that the water was foaming and the gauges deceiving him. If, on the other hand, when he starts his pump or inspirator, the water fails to rise, find the cause at once. First of all, he should ascertain whether there was water in the tank, if there is, then look to the pump. An engineer should never start his pump *if he don't know how the water is in the boiler*. By making this mistake countless explosions have occurred.

It might be proper here to offer some suggestions about keeping the boilers clean and free from mud and lime deposits. We will leave this to some one more competent.

This subject is an interesting one to every man using steam, and I will be pleased if this little article provokes some discussion on the subject, from some of the able engineers that read the great clay journal. We will all then learn something of great value to us, that will enable us to make safer the lives of our employes, and we should throw every safe-guard within our power around the men who are exposed to explosions while performing their duties.

In conclusion allow me to repeat, *keep plenty of water in boiler*.





THESE, the latter days of the Fair, is the time that the interesting things occur in the ranks of the very people who are looking at the sights. The "crowd" is the best part of the whole show. Such varieties of people, such aggregations of diverse characters. One forgets the great things about and marvels over these two legged bits of God's handiwork. They are marvelous. Clay? Yes, human clay. Some are well-baked specimens; others are cracked, crazed, warped, good and bad, but one and all, intent upon seeing, yet some see naught of each other. It is an interesting case of but one object in view: "To see the Exposition."

As we have heretofore delved into the clay of the Exposition. Let us now see what we can find in the way of

#### CLAYWORKING MACHINERY.

Looking across the basin and down the South Canal, one first observes the Cleopatras' Needle raising its graceful shaft towards the sky, and at its feet crouch the lions, that caused the place to be called after the famous fountain of the Alhambra, "The Court of Lions." The lace-like towers upon the right belong to one of the most beautiful buildings of the Exposition, the Palace of Mechanic Arts, or as it is more popularly called Machinery Hall. And it is in this end of the building that is to be found one of the idols of modern brick-makers. This is the Simpson Brick Press.

For certain reasons which we will now pass by, and which will figure most properly in oblivion, the exhibit of American brickmaking machinery so far as it is made, and that is not very far, is placed under the banner of our sister Canada. That nation in a manner has turned the tables for the nonce, and annexed the American brick presses.

#### THE SIMPSON BRICK PRESS.

The Simpson press that is shown, is a four mould, and with the expenditure

of about 8 horse power, will turn out over 20,000 bricks per day. It is furnished with power, and one can "see the wheels go round." The smooth running of the ponderous machinery speaks favorably of the precision with which it is constructed.

There are several points about this press that have made themselves apparent to the visiting brickmakers; one of which is the fact that the entire pressure remains upon the brick for an unusual length of time, the result of this fact being that the product is closer and firmer than it would otherwise be. And another is the quickness with which a variation of the thickness of the brick

used upon the machine, and there is apparently no limit to the field of its usefulness.

The power in this press is applied directly by a series of simple levers, these however developing an enormous power. While the brick is near the bottom of the mould, the maximum pressure is given, and as the brick is being raised for ejection, the upper plunger maintains its pressure upon the brick, thus resulting in a superior solidity and surface for the product. The forged steel rods that take all of the strain of the press will sustain a pressure of 2,000 tons. A neat and novel device upon this machine is that for the regulating the size of the bricks in the depth of the press. Over the moving journal at the top of the machine are placed inverted wedges connected with a right and left threaded rod, the latter being connected with nut which regulates the position of the wedges over the journal and the length of the resultant stroke of the plungers.

#### THE BOYD BRICK PRESS.

Another handsome press, which, though shown in this same Canadian section, is, as a matter of fact, one of the



AT THE WORLD'S FAIR—LOOKING DOWN THE SOUTH CANAL FROM THE BASIN.

may be made, this being accomplished in a few minutes. It is accomplished by an adjustment of the bottom plunger. Then the heating of the feed box for dry pressing, and the large mould-travel combine to make an ideal press. A great number of moulds for the manufacture of ornamental bricks can be

best known American presses. It is one of the four mould Boyd presses, that has won a firm hold upon the public approval. It covers a floor space of 7x9 feet, and is 8 feet high. The machine exhibited is for the manufacture of high-grade pressed brick from semi-dry material. They are built to contain 2, 3, 4 or 6 moulds.



Three functions must be performed by such a press, for each of which a train of motions is provided, namely: the "feed motion," for filling the molds; the "pressing motion" for forming the brick, and the "lift-out motion" for ejecting the brick from the molds.

**THE FEED MOTION.**—A cam secured to the main gear operates a lever or a feed arm journaled in the frames. Rods connect each side of the sliding feed box or charger with the feed arm. These rods are adjustable and can be instantly disconnected, to remove the feed box without disturbing the adjustment. When connected the rods guide the feed box laterally, obviating the necessity of ways or lateral guides for it. The feed box has a long stroke and fills the

molds evenly throughout. It is provided with a breakable front to avoid serious accidents should it meet with an obstruction.

The hopper or magazine rests lightly upon the feed box and is free to rise should roots or other foreign substances get between it and the feed box, also permitting the feed box to rise should such obstructions find their way between it and the molds. This feature of the hopper also entirely prevents the "building up" of clay upon the top or bottom of the feed box, and obviates the necessity of employing steam heaters in it.

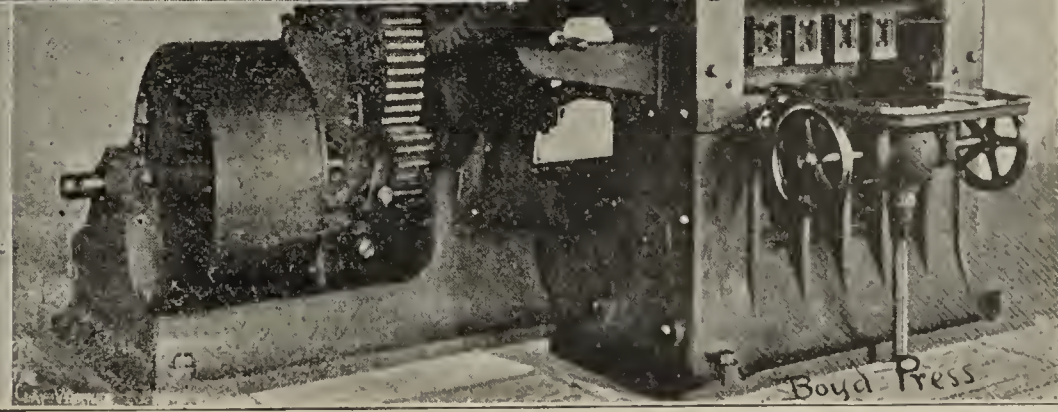
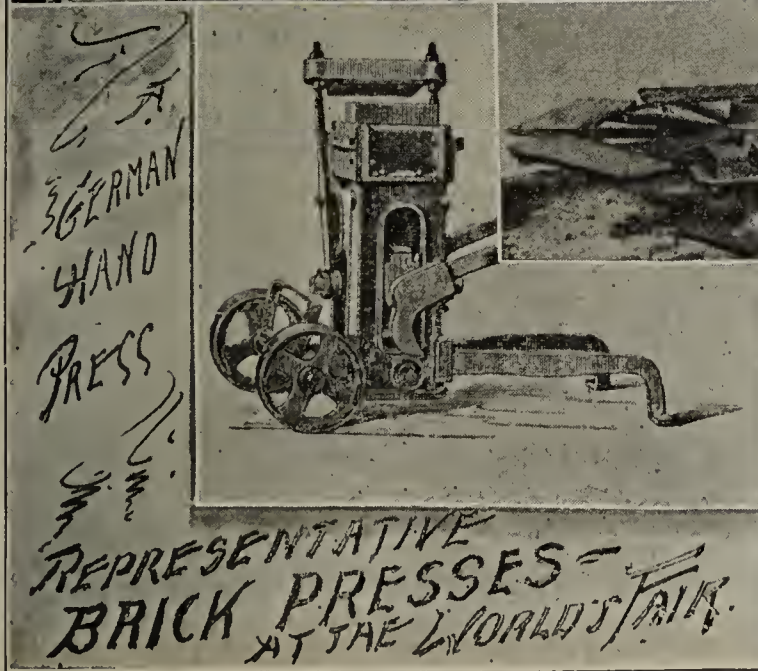
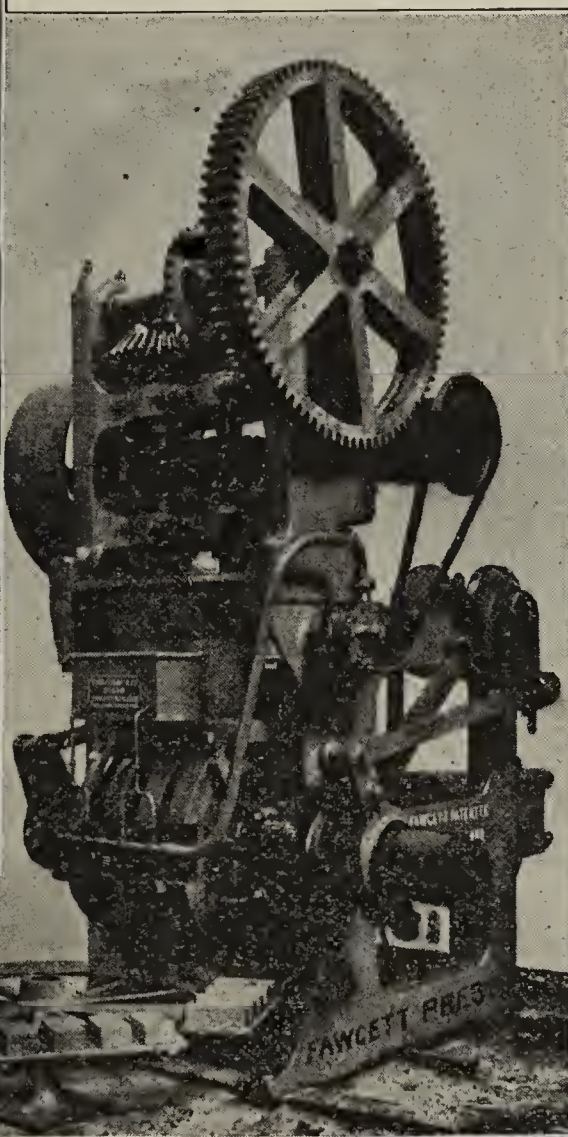
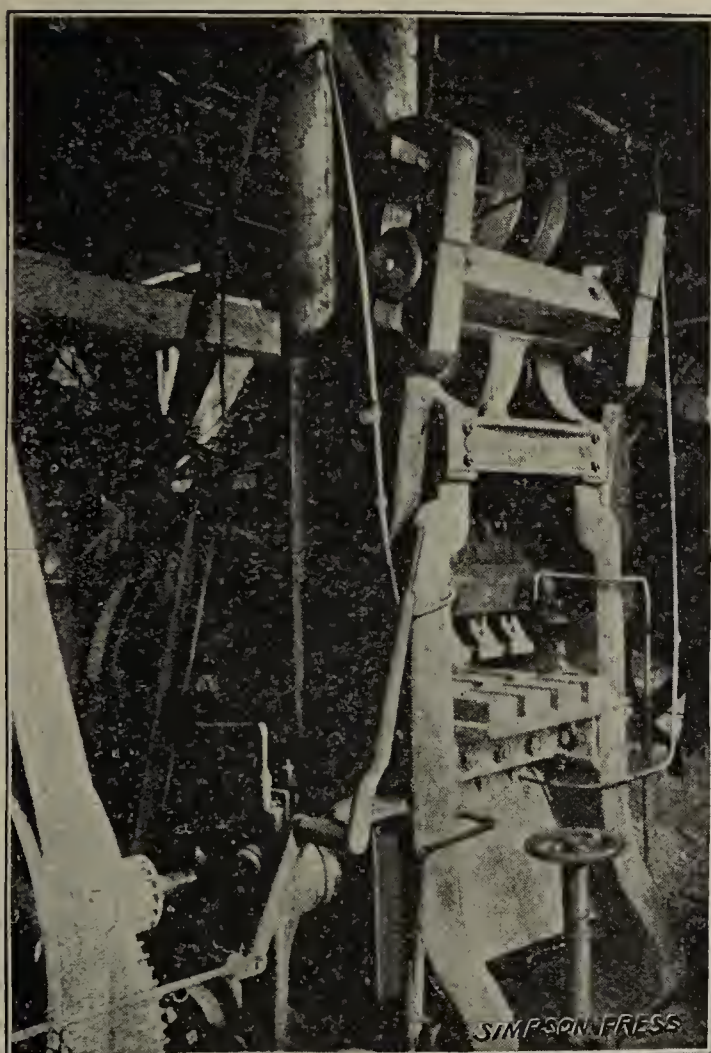
**THE PRESSING MOTION.**—The train of gearing rotates a solid forged crank shaft. A steel connecting rod adjustable at both ends connects the crank to the middle joint of a powerful toggle lever. The toggle lever is connected at its upper end by heavy

forged side-bars to a lower cross-head, to which they are hooked and bolted. These side-bars entirely relieve the frame of the pressing strain. They are forged 3x8 inch in size at smallest section, and are finished to slide vertically in guides in the frames. The guides are all located above the mold table.

**THE LIFT-OUT MOTION.**—The press proper, or the toggles, crossheads and side-bars, are raised and lowered in relation to the molds by a pair of large rollers (in one piece) operated by the cheeks or throws of the crank. These rollers are mounted in and between two steel levers or "lifting beams," fulcrumed on a journal of great strength.

The adjusting hand wheels at each side of the apron convenient to the operator, control the depth of mold or the descent of the lower plungers, but in no way affect the descent of the lower crosshead, permitting the use of the simple lifting and lowering devices, and securing at the same time a constant stroke for the side-bars and lower crosshead, thereby maintaining a fixed proportion of upper and lower pressures on the clay.

The pressure exerted by these parts, as above described, is applied to the clay in such manner as to secure great density, thorough cohesion of the clay and the highest quality of product in all respects. It presses first on the top, then on the underside of the brick. At the maximum the plungers rest with a





long dwell. The pressure is slightly relieved and then renewed, again relieved, and the brick lifted out under a continually decreasing pressure. This movement insures a high degree of finish to the brick, perfect form, and entirely precludes all granulated lines, which always result from the imperfect application of pressure.

One of the most important results obtained by the form of mold adjustment used is that the proportion of top and bottom pressures remains unchanged at any "depth of mold" at which the lower plungers are set. Were the lower plungers secured to the lower crosshead in the usual way, the least change in the

blades set at an angle, the latter ensuring firm downward pressure. The moulds which are sixteen in number, are arranged in series of four each about open cylinders placed directly beneath the mill. When beginning the process one row of these are below the pug mill, and is filled with clay. The bottom of the mould is raised about half an inch above the bed position by means of an independent cam, this being to prevent too much clay entering the moulds. At the quarter of a revolution, the moulds stop before rammer presses, these latter being actuated by a simple toggle. These rammers are pressed twice by the back and forth mo-

are all provided with automatic carrier aprons for clearing the bricks when finished from the bed of the press.

While considering the subject of brick presses, it will be noticed that there are none represented in the splendid German exhibit of machinery. With the exception of a small hand press made by Jordan of Darmstadt, we would know nothing of their devices. It is a solidly built little machine and is of the movable truck pattern. The same firm makes a tile press, and a combined clay grinder and pug mill. Both indicate considerable skill in the making of brick and clay machinery.

It is something to be very much regretted that there has not been a thorough exhibit of the machinery of this class, but as far as that is concerned, the Exposition of machinery is anything but illustrative of the state of the machine world, even so far as our country is concerned. There are none of the industries that are thoroughly shown throughout. Weaving is shown, and spinning not. Brick presses, but not a pug mill in the building. It is this way with them all.

In another portion of the same building, the Germans have a fine display of machinery in many lines. When Herr Krupp of Essen makes an exhibit, he does it with a thoroughness and enthusiasm that is worthy of an American. His own building is a short ways from the end of the basin near the Peristyle, a spot of singular beauty even in this great collection of the art of the world.

Herr Krupp always does things with a lavish hand. His own building contains some of the greatest works ever accomplished in the fashioning of iron and steel. In the Machinery Hall are also some of his stupendous fabrications, and some in the line of clayworking machinery. What do you think of a wet pan clay roller, each independent wheel of which weighs 12,000 pounds. It is the giant of its kind, and one marvels over the genius of mechanics while watching the ponderous wheels roll around with hardly an effort.

#### A PRETTY PICTURE.

Far up the basin is the Administration Building, graceful and brilliant with its great gilded dome glittering in the bright sunlight. It is the court of honor and is presided over by the golden statue of the Republic near by, standing upon a pedestal in the water. This statue is one of the least understood



AT THE WORLD'S FAIR—UP THE COURT OF HONOR FROM THE PERISTYLE.

depth of mold would increase or decrease the lower pressure, while the upper pressure would remain constant.

#### FOREIGN CLAYWORKING MACHINERY.

Not very far away in the British section is an interesting exhibit of brick presses made by the Thos. C. Fawcett company of Leeds, England. They are the representative makers of similar machinery in England, and have carried away many of the highest awards in that country. Their largest press is known as the Leviathan, and as the name indicates, is a monster. It is built to make 40,000 bricks in ten hours. The process is somewhat as follows:

The clay is fed into two pug mills where it is mixed with great thoroughness, this being accomplished with

tion of the toggle, the last pressure going deeper than the first. In the meantime the moulds at the top are being filled with clay from the pug mill. The next quarter of a revolution brings the brick to the bottom position of the mould cylinder, and the movable bottom by a cam motion presses the completed brick from the mould, out upon a revolving table. At the remaining quarter of the revolution, the moulds are subject to a spray of oil spread by a current of air. The motion of the mould cylinder is given at the ends through powerful ratchets, and between the pulsations the drum is, locked in such a manner as to preclude any movement.

Several other machines are shown, one for dry work, and another with auxiliary repress attachment. They





AT THE WORLD'S FAIR—INDIANA'S BUILDING.

things in all the Exposition grounds. It is supposed to typify the spirit of the Republic, but the vast number of sight-seers remark with grave wisdom: "that's Chicago. Ain't she pretty? How much did she cost?"

On either hand towards the end of court, spread the vast buildings of the more important branches of the Exposition. The buildings are lost one within the other, and although their styles of architecture are at a striking variance, here they blend in a beautiful and surprising manner. Upon the right hand are three buildings in order, Liberal Arts, Electricity and Minings. Upon the left hand are but two, Agricultural and Mechanic Arts. Just to the right of the dome of the Administration Building will be seen in the picture a little tower, square and with a smaller extremity. This is the Cold Storage Tower, the building that will be remembered for the awful fire that burned 15 brave firemen, and cast a pall over the joys of the Exposition. Having been an eye witness of that lamentable affair, the writer can assert that it will never be effaced from the memories of the hundred thousand people who stood below, and saw the flames in one short hour eat up the work of many months. It was the Gettysburg of the Exposition, and Providence alone saved the Exposition; for had the wind but been from any other quarter of the heavens, there would have been no White City left for

the millions who now flock within its gates.

#### THE INDIANA BUILDING.

The CLAY-WORKER in common with all good Hoosiers is quite proud of the Indiana Building, which, though not so pretentious as some of the State Buildings is a handsome structure. Spacious and cosy, it is a haven of rest to the weary sight-seeing Hoosiers who gather together under its inviting portals at

lunch time or between trips about the grounds and enjoy a social chat with friends and neighbors while resting.

Upon the broad balconies are great comfortable rockers, and ensconced in these a host of good people are usually busy in comparing notes or swapping experiences. It is a good place to sit awhile, and listen to what is going on, for when people talk here, it is for the ears of all who care to listen.

"Well, Lige, what do you think is the biggest thing you have seen to-day?" asks a portly dame of her lord. He is an elderly man, and the whiskers will grow out from beneath his throat, do what he will.

"Tell ye, Semanth'," replied the old man, "I think that there gate on the Transportation Building about takes the cake."

That "gate" referred to is the marvel of all who view it. It is a grand entrance in fact as well as name. The colorings of the building are in the main of red terra cotta tints, and the massive and elaborate gold and silver decorations of this main portal contrast with it, giving effects that are simply regal. One recalls some of the dreams of the golden Incas, and might well imagine it a bit of marvelous history of the days when the wealth of nations was the wealth of monarchs.

In quick contrast is the wealth of the toiler as exemplified in the agricultural exhibits. A painting in corn in the



AT THE WORLD'S FAIR—GRAND ENTRANCE TO TRANSPORTATION BUILDING.



Illinois Building tells of the natural king. It represents a typical home of the farmer in the rich alluvial plains of the Ohio Valley. It is as high an artistic work as the grand portal, and carries greater meaning.

#### OHIO'S CLAY EXHIBIT.

In the Minings Building there are a number of very fine exhibits in the clay line, but it is admitted upon all hands that the display of the State of Ohio is by far the handsomest of them all. The pavilion belonging to this State, is upon the east side of the long central aisle, not very far from the central portion of the building, and is in itself a handsome exhibit of brick and tile work. The front is after the pattern of an old Grecian temple, and the wall is of light Roman bricks. At the top is a large panel of highly glazed bricks and here is the name of the State worked out in a chocolate color over a white ground. At the sides of the doorway are placed little chapels with pillars, these however being wrought of sandstone, the only portion of any other material than clays. The main front portion is constructed of a pale buff brick with a broken surface. They are of a particularly fine manufacture. The arch proper of the doorway is made of gray Roman bricks. These latter are of the finest workmanship. The little chapels upon each side of the entrance are roofed with a red Spanish roofing tile, a familiar form.

The left hand side of the State pavilion as you enter is walled completely with a fire-proofing of the usual form, as next door there is the exhibit of another State. The opposite side, however, is opened from the display cases to the ceiling. It represents a sort of colonade, several pillars supporting a colonade roof. This latter is covered with great red Spanish tiles. The floor of the pavilion is composed of every conceivable style of floor tiles, in mosaic, arabesque and other designs. Both glazed and vitrified are shown.

Upon the left hand as you enter are several niches or alcoves in which are placed some of the individual exhibits. One is devoted to an exposition of pottery clays and specimens of the coarser wares. Stoneware is shown in tea pots, milk pans, jugs, and a few encaustic tiles. Some glacial clay from the Muskingum valley is shown. Some Liverpool ware and pieces of biscuit, and salt glaze completes the exhibit.

In another alcove is the exhibit of the

Haydenville Mining Co., comprising in the first place an exhibit of fire-proofing. These are arranged so as to represent a mantel piece, and in their rude way it is quite an ornamental affair. The tiles form sundry pigeon holes for the disposal of this, that and the other, and one would not esteem a row of them along the upper edge of a desk a bad file case for placing papers. Granite and white bricks are also shown, and as well, a number of flooring tiles. The most prominent of these latter is a salt glaze tile of medium size. The tile is divided into a square central portion with concentric corrugated rings, and about this are panels of divergent bars. The color is a natural brown, and when in a number, they look very much like some of the old Dutch work.

Of all the State exhibits in clay, that of Ohio is the most perfect in the detail



AT THE WORLD'S FAIR—A "CORN PAINTING" IN THE ILLINOIS BUILDING.

of its elaboration. It indicates what a mammoth industry that of the clays has become in the valley of the Ohio. Handsome cowl for chimneys are exponents of what can be done in the way of ornamental things, and the fire-proofings are of the substantial type. J. C. Ewart, of Akron, furnishes the tiles for the roofing purposes, and some of the flooring tiles come from the factories of the American Encaustic Tile Co., of Zanesville. C. E. Holden also shows a very general line of his work.

The greatness of Ohio in the line of clay industries is not alone in the way of great manufacturers, although these are considerable. But besides them are a host of smaller makers who seem to be scattered broadcast over the great state, and none of whom do such a very large business. However, in the aggregate, they accomplish a marvelous quan-

tity of business, and could alone attend to the local demand and even send products out of the state without the assistance of the great makers. Every cropping of clay has its little plant for the production of bricks, and in many cases of other potteries. As a rule the plant is of an old pattern and could be replaced with modern machinery with beneficial results to the product. It is one of the scattered resources of the State and contributes to its wealth in a great measure.

#### THE ILLINOIS BRICK, TILE AND DRAINAGE ASSOCIATION'S DISPLAY.

About the only well organized effort upon the part of any of the clayworkers of the county to make a thorough exhibit at the Exposition is that of the Tile, Brick and Drainage Association of Illinois. The result of their labors is located in the gallery of the Minings Building, and is worthy the visit of every clayworker both for the excellence of the display itself, and as a mark of commendation for their energy.

While the subject is in hand, a brief report of the organization of the Illinois Tile, Brick and Drainage Association will not be out of place. In the first number of Volume I, of the *Drainage Journal* for January, 1879 there appeared this notice: "The Tilemakers of Illinois will meet in convention at Springfield, January 21st, 1879." The meeting was the result of correspondence between Charles F. Mills, then Assistant Secretary of the Illinois State Board of Agriculture and J. J. W. Billingsley, Editor of the *Drainage Journal*. Some forty persons met at the time designated and the following officers were elected: President, J. K. Reader, Auburn; Vice President, T. A. Smith, White Hall; Treasurer, Abram Horrocks, Bardolph; Secretary, H. L. Barnett, Carrolton, Ill.

The very beginning was marked with great enthusiasm in the work, and ideas were exchanged, and a useful career mapped out. One of the first acts of the new association was a memorial to the State legislature urging the State to enact a drainage law enabling land owners to lay out systems of drainage, securing the right of way for properly draining their lands. At this time there was much poverty among a large class of the agriculturists, and the proposition for State aid in the work of drainage was discussed, but no action taken. It is with some pride that the association views the fact that to-day there is little necessity for any help,



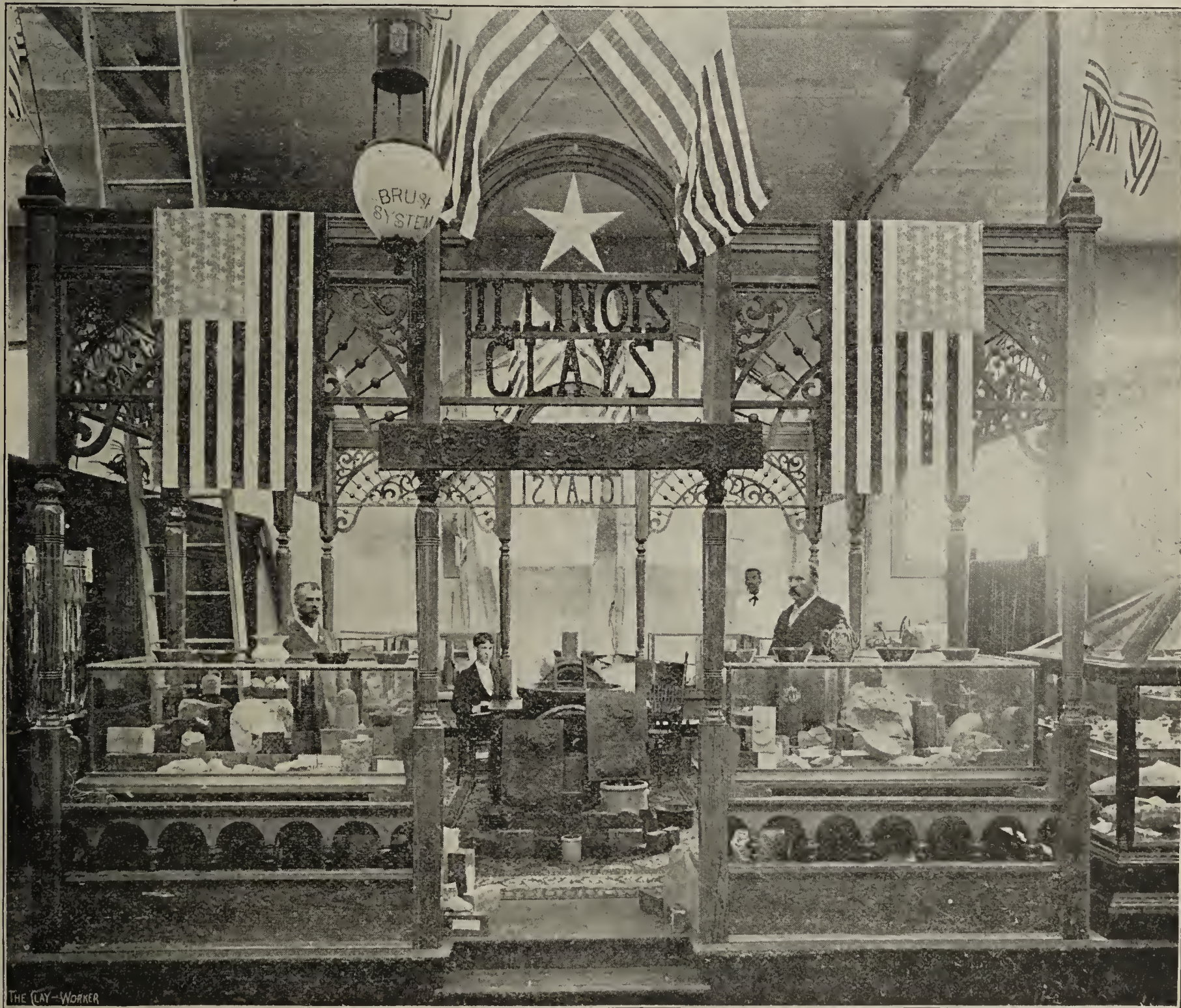
financially, in the prosecution of the work.

During the years that followed, the association met annually with varying success, there being at all times, however, a goodly number of representative manufacturers present. Mr. E. M. Pike, of Chenoa, was the executive for many years, probably one of the most popular presidents ever at the head of the society. In 1885 some effort at collecting statistics in relation to the amount of drain tile made, demonstrated that for the one year alone, the State of Illinois must have made close to 50,000 miles of the material. In 1890, the scope of the society was somewhat broadened, as the present name will indicate, and as a quick result the activity in its circles became more apparent. The present executive is J. E. Chandler, of Bushnell, Wm. Hammerschmidt, Lombard, is the

Vice President, G. C. Stoll, Lexington, Secretary, and John McCabe, Rushville, Treasurer. All of these gentlemen are very well known in the circle of the clayworkers of Illinois, and as well outside of the State. Their banquet of 1893 resulted in something more than pleasure, as it was then that the idea of a combined exhibit at the Exposition was first canvassed. With great energy they went to work, and successfully invoking the aid of the legislature, their present display is the result. The bill was not, however, signed until the middle of May, and for this reason many things at first intended have been left undone. However, the display is a great success, and great commendation is due the managers who have accomplished so much in so short a space of time.

The individuals who exhibit are some

43 in number, a very good showing. Briefly, they are the American Ceramic and Terra Cotta Co.; Alexis Stoneware Co.; Alexis Tile & Brick Co.; Alton Fire Clay Co.; Anderson & Leonard; Bronough Bros.; Bardolph Fire Clay Works; Bushnell Brick & Tile Co.; Capron Tile Co.; Danville Tile Co.; Dawson & Son; Elcock & Seltzberger; Eagle Pottery Co.; Elmhurst Stone Co.; Good Hope Tile Co.; Hutsonville Tile Co.; Wm. Hanner; J. Davis & Co.; D. W. Ludquist; Leaman Clay Co.; Lombard Tile Co.; Monmouth Mining Co.; Monmouth Pottery Co.; Meister & Son; Naperville Brick Works; National Clay Co.; Pike & Castle; Pioneer Brick Co.; Peoria Paving Block Co.; Purington Paving Brick Co.; Wm. Reisting; S. Russell; Sibley Tile Co.; D. W. Smith; Smithfield Clay Co.; G. C. Stoll; C. Solfishburg; Spurck Paving Brick Co.; Trecker Bros.; D. W. Utt;



AT THE WORLD'S FAIR—THE ILLINOIS BRICK, TILE AND DRAINAGE ASSOCIATION'S EXHIBIT.



Geo. J. Walter & Co.; F. D. Wilson; Wessels & Son and Anthony Ittner.

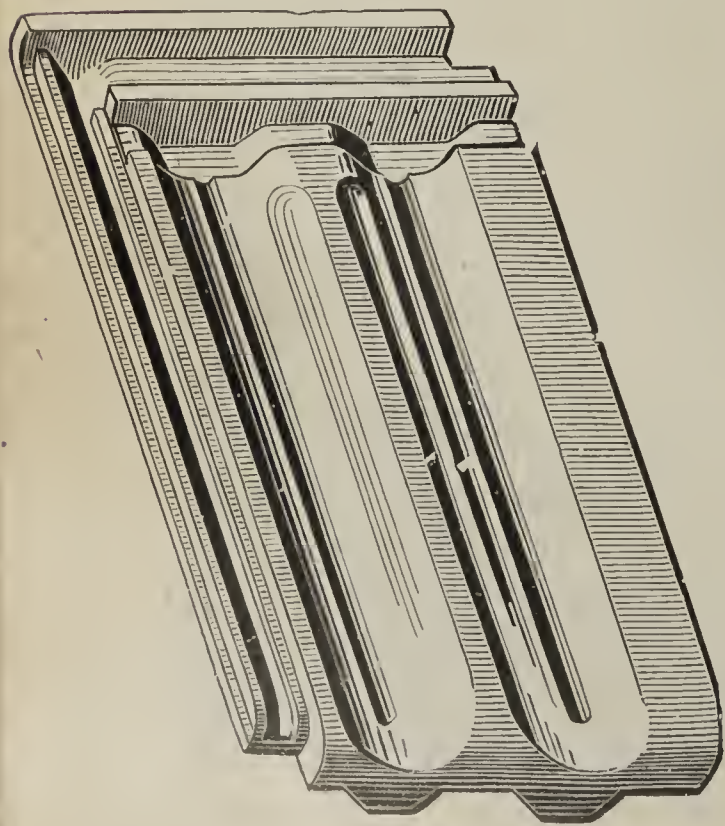
The exhibits made by these firms are of a very varied nature. They are arranged in a series of cases, while a great many of them, especially the larger pieces are arranged in an artistic manner about the pavilion. One of the fundamental ideas of showing both the crude clays and the finished product from the various sections of the State has been faithfully accomplished. Bricks, drain tiles, terra cotta and stonewares, are the visible exponents of the finished products. Some of the pressed and ornamental brick are handsome examples of modern work.

The drain tiles are shown in every possible form and size, and in both soft and salt glazed wares. One huge T joint is a center piece for the pavilion, and about it are grouped many other pieces of wares. While it is true that some of the pieces are inferior in grade, as a whole the collection is above the standard, and is creditable to the association.

Mr. Stoll, the secretary of the society has received many congratulations upon behalf of the association, and also for his individual interest and energy in accomplishing the result.

#### GERMAN ROOFING TILE.

Over in the Mines Building there is a little pavilion, roofed with a brown glazed tiling, that would attract little attention except from those who have a direct interest in such things. It is however, an important display to all identified with good building. It is a roofing tile that requires neither an inner roof especially prepared, nor nails, and is what is known in Germany as the Ludowici



LUDOWICI GROOVED TILE.



AT THE WORLD'S FAIR—THE GERMAN BUILDING.

Clay Roofing Tile and is made by the firm of Carl Ludowici of Jockgrim.

The Ludowici Roofing Tile Company has been organized in Chicago, which is vested with the American rights for this manufacture. The Company's Chicago office is at 318 Chamber of Commerce and they are now turning these tile out successfully at their factory at Chicago Heights. The form of the tile is very difficult of description, as it is made in such a form as to key into each other both at the sides and the ends. Each one is also provided with a rib or projection upon the under surface which engages with wood or metallic strips that pass transversely across the rafters. This gives the individual support to each row of tiles and these latter are at the same time to a certain extent capable of supporting each other. The keying renders them absolutely waterproof.

What perhaps renders these tiles of special interest is the fact that they are used for the roofing of the German building at the Exposition. This building is by far one of the handsomest that has been erected by those nations that accepted the invitation of the United States to exhibit in the Columbian Fair. It was made after the design of Johannes Radtke, the architect of the Government of Germany.

#### THE GERMAN BUILDING

In its architectural style it is a pure gothic, the buildings of Aschaffenburg

Castle, Goslar, and the city hall of Rothenburg, having been called upon to act as models for the working out of the details. The main tower is 180 feet in height and the building is upon the Lake front about 135 feet long. The extreme depth is 160 feet. The outer walls of the building are decorated with sgrafito painting, the artist being Max Seliger, well known in his native country. Over the main entrance is the coat of arms of the German states, and over them spreads the wings of the German eagle. In ancient German rhyme is the motto:

"Fruitful and powerful, iron, corn and wine  
on every hand,  
Filled with music and thoughtfulness, we  
praise thee, Fatherland."

On the north side of the building is represented St. George killing the dragon, and all the niches and corners are given up to decorative and pleasing designs. The high gable and windows, balconies, turrets, and glazed roofings all go toward beautifying the structure. The cost of the building approached a quarter of a million dollars, and the rare things shown in the interior are worth much more.

I have just said that the architecture was a pure gothic. Closer inspection reveals that it is of the early renaissance, being the first transition from the pure gothic. It is a brilliant structure almost entirely of stone and iron, and





AT THE WORLD'S FAIR—SECTION OF ROOF OF GERMAN BUILDING, SHOWING LUDOWICI TILE.

the great probability is that it will remain standing after the Exposition is over. After the scrafitto paintings, which will be a reminder of the fact that it can be lastingly and closely imitated in terra cotta, the roofings of glazed Ludowici tiles is the remarkable feature of the building, and the element that contributes to its great beauty.

This material is deservedly popular in the German land and has entered into the roofing of many of the noted and handsome structures of that country. Some of the most artistic of these roofings are those of the church of the Holy Cross in Berlin; the People's Theatre in Worms; and the Mayor's villa in the latter city. In viewing the roofs of the German buildings, one cannot but admire the brilliancy of the glazed tiles, and the possibility that rises before the thoughtful eye is one of great beauty. There is no limit to the colorings that may be employed and it is an added power to the architect. The features of the construction of each individual tile are such as to make it practical in its application in any place that it may be wished, requiring in no case special construction of the roof preparatory to its being put into place, excepting the adjusting of the metal or wood strips that have already been mentioned.

JEFFREY MANUFACTURING CO.'S EXHIBIT.

The visitor to the World's Fair is at-

tracted as much by the Machinery Hall as by any other of the wonderful structures in the grounds. In this hall are the extensive power plants which furnish power and light for the entire grounds, so that this special feature as well as the large number of foreign and domestic exhibits, make it possible for one to spend a great deal of time with profit in this building alone.

On one of the main isles in the center of the building will be found the exhibit of the Jeffrey Manufacturing Co., of Columbus, Ohio, in section O. P. 31. Here they found it impossible to secure over 400 square feet of floor

space. Consequently, it was a difficult matter to erect on such a limited space, a line of devices that would give you any full idea of the adaptability of chain belting for elevating and conveying purposes. They have, however, been able to get together one of the most attractive exhibits in this building. The attention of the passer-by is immediately called to this display as they have it so arranged as to show their machinery in constant operation. The cut which we are able to show will give an idea of the arrangement of this exhibit, but the exhibit itself is one that a person can examine carefully and get some benefit from. As you enter their space, you first find a complete coal handling elevator with centrally hung buckets. Beyond and on each side of their space, you will find barrel elevators, tile elevators, grain elevators and elevators for handling ores and broken stone, while all around their space is a complete array of samples of their manufacture of chain belting. As they manufacture one of the largest lines of chain belting made by any one in the world, it is of special interest to examine the different styles of chains here dis-





played. At the back of their space they have a collection of sections of iron and wooden troughs which show exactly the necessary construction of run-ways for conveyors, giving a person an accurate idea of the best forms of troughs for the different classes of material to be handled. To better show the adaptability of their manufacture to the handling of all commodities either in bulk or package, they have two large portfolios full of blue prints of machinery manufactured within the past few years. In charge of this exhibit are competent men who are thoroughly able to explain and give any information in regard to the best form of elevators and conveyors for any special purpose.

A complete 200-foot Jeffrey conveyor can be seen in practical use in connection with the Paper Makers' Exhibit in the same building, while a complete line of elevators, conveyors and screens is shown by them in their Exhibit in the Mines and Mining Building.

Written for the CLAY-WORKER.

#### DRY PRESS HINTS.

##### Seventh Paper.



THE time is now drawing very near when the work of reconstruction on many yards will commence, a few hints on the matter, from a practical man, may very naturally assist the operation, and present that too common expression, "If I had this to do again," etc. If you have not been in the dry press system of manufacture before, your first course must be in the line of ascertaining whether or not your clay is suitable for that class of brick. My experience has been such that I believe there are very few clays that will not make a very presentable brick by the dry or semi-dry process if handled right, and in this connection, any of the machines advertised in the CLAY-WORKER will make good brick if the clay is prepared in the proper way.

You have been advised by writers in our trade journal, and by speakers at our Annual Conventions, to take your clay to the different machine men, and see it made into brick, to mark it yourself, then and then only can you be

sure that the brick you receive are the product of your own material. There is no denying that this is an excellent plan, but when it is not practical, neither is it absolutely necessary to do this, as the machine man has too much at stake to practice any fraud for the sale of a machine, even if his honorable nature (for machine men, as a rule, are both honorable and conscientious,) would allow the action. I fancy I can hear you say, "I'll bet a machine man wrote this paper," but you are mistaken, but 'tis nevertheless true, that it was my good fortune to be—for three years—connected with a first-class machine, and in that time I constructed and started a good many brick works in various parts of the country, gaining a valuable experience with a variety of clays. Therein lies my good fortune. But to ease your mind, I will here state that I am not now, in any way, interested in a machine, other than the successful operation of those in the works of which I am superintendent. But to return to our subject. Sending clay to a machine man is just as much for his guidance in making a contract, as it is for yours in the matter of making the change. After testing your clay and finding it unsatisfactory, can he afford to make a contract with you on any such terms as appear in the CLAY-WORKER advertisements? Note: "Will place the machine in your yard and guarantee *entire* satisfaction, and the loss to be *our own* in case of failure," and many others of like import. After all, the sending of clay to be tested is but of secondary importance, what is more to the point, is to get a machine that is an "every day" machine, one that will make brick all day, with perfect edges and corners, and without that ugly defect—a granulation seam around the face of the brick.

On receiving your samples from the different makers, reject such as the latter defacement, and investigate the merits of the others by visiting the works where they are in use, and seeing their general class of work. The selection of machinery and kilns has been thoroughly discussed in the preceding articles of this series.

In laying out your plant start with a definite plan. Before you can make this plan, you must decide on just what appliances you will use. Now is the time to decide whether or not you will use a drier. The question "Is it necessary to use a drier for dry press brick"

must be answered conditionally. I have made them both with and without a drier, and the experience gained leads me to the belief that to make a dry or semi-dry pressed brick of first-class quality and do it economically, a drier is a valuable assistant. My reasons for the belief are, 1st. The preliminary water-smoking is done much better, and cheaper in a drier than in the kiln; better because the heat applied is regular and increased slowly, steadily and uniformly, and because, the brick being in small bulk, the heat is allowed free circulation, and cheaper, because it is done in less time and without any special attendant.

To sum up an answer to the question, I believe it is necessary to have a dry room of some kind. It may be from some cause your setting gang is stopped temporarily, you don't want to stop your machinery waiting for them, or it may be your machinery needs a little fixing. With a dry room your setting could go right on. In making shape or ornamental brick it is absolutely necessary to have a store room (whether you use a drier or not,) heated with steam pipe sufficient to prevent dampness, and in cold weather to keep the frost out of the bricks. A good place to put this is on the end of the machine house in close proximity to the kiln.

Every brickmaker knows that there are only certain places in any kiln (except muffle) suitable for the burning of ornamental brick, consequently there are only certain times or seasons in the setting of a kiln that the setters can use ornamental brick, hence the necessity of a store room. Changing moulds from square to ornamental brick is an expense that must be incurred as seldom as possible (and by the way, some makers claim special features in their respect), consequently if the shape be a standard, i. e., a shape in general and continuous demand—it is economy to make as many as possible before changing moulds again. The best way is to hack these brick on pallets eight on eight. These pallets are made of three strips  $\frac{3}{4} \times 2\frac{1}{2} \times 28$  inches, nailed onto a cross-piece  $\frac{1}{4} \times 5 \times 9$ . This leaves  $\frac{3}{4}$ -inch space between slats for circulation, and the cross-pieces being wider than the bricks, prevent the bricks from resting on each other, which, with some shapes, would be impossible. Some makers hack them flat without pallets, but I consider that a very poor way, as the



edges and corners get more or less damaged in the handling and the drying is very imperfect. With pallets they need not be handled between machine and setter. The expense of the pallets is soon made up by the better quality of the bricks and the saving in handling.

In making arches and "ground" work it is the best plan to put the grinding room at or near the stack sheds, using a small engine and boiler for this purpose independently. This building can also be used for the making of "rock-face" and "tool-face" brick, the fitting of angles, returns, etc., and, in fact, for almost all the special work. Being near the stock sheds the transportation of brick to and from is reduced to the minimum.

The foregoing operations will be fully discussed later in this series, under the head of "Ornamental and Special Work."

Now, to sum up the place of construction, commence at railroad track, wagon road, or river, as the case may be, laying out stock sheds, reserving one for ornamental brick and leaving passage ways through each opposite kilns, so that brick may be wheeled direct from kilns to cars, and coal from cars to kilns. Another very good plan, where practicable, is to place switch between stock shed and kilns. This arrangement prevents the wheeling of coal through stock sheds, and makes shorter wheeling all round. Now, lay out your kiln, ends to the switch, and your machine engine and boiler houses, parallel with and at one end of the line of kilns, with boiler house close to switch. Your coal can then be thrown from car into boiler house. Don't put your dry pan or pulverizer in the same building with your brick machinery. It is much the better plan to put these in the clay shed immediately behind the partition wall, with the elevator boot just inside the building. Do what you will, you cannot prevent dust from these machines, which, if allowed to circulate through the machine house, will cause an unnecessary wear and tear of all open bearings, a big waste of oil, and perhaps many an expensive stop, waiting for a hot box to cool off. Don't forget that prevention is better than cure.

PRESS.

#### THE DIFFERENCE.

Who steals a ham, however much his need, By social law is deemed a thief indeed; But he who steals his millions from the bank Is deemed a business man of foremost rank; Learn, then, this lesson from the thieving ring—A little thieving is a dangerous thing.—*Ex.*

#### BETTER THAN THEY LOOKED.

##### Some of the Advantages of Oil Over Coal for Burning Brick.

“UNDER the heading Brick Roadways in Winona, Minn., the current number of the *Brickmaker* contains the following:

‘When the work was commenced upon Washington street, between that and Fourth, in Winona, Minn., there were difference of opinion as to the durability of the paving. But the blocks that are furnished present such an appearance that all doubts are removed and all are satisfied. When the work is finished there will be thirty-eight blocks on the principal streets of the city.

‘About 5,300,000 brick will be used. A short time ago there was considerable trouble on account of poor brick, 375,000 of them were marked with the cross which condemned them. These brick were worth fourteen dollars per thousand, and therefore \$5,250 worth of brick were refused. The reason of this is not generally understood. It seems that the Purington Paving Brick Company's manufactory, at Galesburg, Ill., burned, disabling the company to such an extent that they could not furnish brick. But the Puringtons did not wish to lose the contract, so they made an arrangement with the St. Louis Paving Brick Company, which had a plant in the same town, to furnish the brick to fill out the contract. The St. Louis Company's brick were not vitrified to the required extent and so were condemned. One block on Second street, between Center and Main, had to be gone over and nearly one-fourth of the brick were condemned.’

‘If these brick were condemned as stated, there may be a reason in the fact that the St. Louis Company had just started, and the brick sent out so early may have been defective. Between the lines, however, there crops out something of a personal feeling, giving the animus for the publication of an article reflecting on these brick sent out from here by the Puringtons. It is well known in brick circles that the editor of the journal mentioned entertains anything but cordial feelings for the Purington Company and so incidentally for the St. Louis, controlled largely by the same parties.’

The above is taken from the *Galesburg Republican Register*. Mr. D. V. Purington, President of both of the paving brick companies, when called upon to explain what it meant said:

The trouble with the St. Louis Company's brick was simply that they were burned with coal instead of oil, as the Purington Company's were burned. That brick burned with oil present a

much more granite-like appearance, are not discolored with sulphur and other gases from the coal and are, in every way, much more presentable to look at. That they have met objections on this score and on this score alone, and, as a consequence, have changed the fuel on the St. Louis Company's yard from coal to oil. He further says, that he has grave doubts whether the coal burned brick are not equally as durable in every way as the oil burned brick, but their appearance is decidedly against them.

In regard to the remarks of the *Republican Register* as to a personal feeling on the part of the editor mentioned and himself, Mr. Purington said, that there is nothing whatever of the kind so far as he knows. His relations with the editor of the *Brickmaker* have always been of a pleasant character, and he does not understand where the *Republican Register* could have obtained such an impression. The statement is very much exaggerated, and Mr. Purington feels that he has a right to question the courtesy of a trade journal that will go out of its way to injure any firm of manufacturers.

The fact that the Purington's factory was burned and that for a few weeks they were unable to supply all their contracts is true. That the St. Louis Company did furnish a part of the Winona contract, and that a small proportion of the brick so furnished were rejected by the Inspectors at Winona, is also true, but the St. Louis Company has settled the matter without the aid of the newspapers, and cares nothing whatever for the remarks of anyone in regard to it. In other words, both these Companies can run their own business without the assistance of the press.



A MISSING-WORD CONTEST.

Any person sending to this office the missing word in this picture, together with post-office order for two dollars, will receive the *CLAY-WORKER* post-paid for one year.



Written for the Clay-Worker.

# CHEMISTRY FOR CLAYWORKERS.

Paper No 14.

FOR the present we will drop chemical nomenclature, and for a number or two take up one or more interesting features in chemistry and then return to it, merely taking one element and putting it in order with its compounds or at least some of them; take for example, sulphur, and it makes sulphides, sulphites, and sulphates. If we take another, say chlorine, and it makes chlorides, chlorites and chlorates, this is only a reminder of what has been said before.

Now let us examine briefly *chemical affinity*; this is vastly more interesting than chemical nomenclature, nevertheless they are alike, indispensable. They are alike in another respect; they become more interesting the more you know of them.

Chemical affinity is full of wonders, every step fills you with amazement. Well, say you. What is this wonderful affinity? Does it play any part in brick-making, or clayworking in general? Oh, yes, it plays a very important part indeed. Not a kiln of bricks or ware can be burnt without it, moreover without it there would not have been an ounce of clay to make brick or ware of. As to what it is, I am unable to tell you, but will refer you to what Dr. Wilson says of it.

"The real nature of chemical affinity is very imperfectly understood. We can study its effects, examine the conditions under which it acts and determine its equivalent in other forces; but we are as ignorant of the nature of the force itself as we are of the nature of gravitation. What we do know is that, when certain substances are brought into actual contact with each other, they disappear, and a substance appears which differs, more or less, in properties from the original substance; and, moreover, that from this compound we can usually, by the employment of a certain amount of force, obtain again its elements, with their properties unaltered."

Now although we cannot thoroughly define chemical affinity, its phenomena have been so closely observed and recorded, that we have evidence sufficiently reliable to frame laws on its action, etc.

We must not be led away by the common definition of affinity, as being *relationship*, by blood or marriage. The chemist loses all sight of relationship in

chemical affinity, the term appears to be badly chosen; chemical force or capacity for combination expresses it much better; however, as the term has been adopted, and is still retained, we will use it in the sense defined above.

In the first place let us observe some of the variations of chemical affinity, for it acts with widely different degrees of force with different elements and compounds; for example, if magnesia is added to a compound of sulphuric acid and ammonia, the sulphuric acid leaves the ammonia (sets it free) and combines with the magnesia; if now we add lime to the combination of sulphuric acid and magnesia, the sulphuric acid will desert the magnesia and combine with the lime, then again it will leave the lime for a satisfying quantity of soda, and even soda will be left if we place within its grasp, strontia, finally strontia will be ousted by baryta.

From an experiment of this kind we may reasonably conclude that, the chemical affinity of sulphuric acid for baryta is stronger than for any of those elements which preceded it; and its affinity for ammonia is the weakest.

This is an experiment that the reader ought to make for himself, it is simple enough and will put him in possession of some interesting and *practical* facts, besides, clearing him of any indebtedness to "hearsay" for his knowledge.

It will be observed that the re-actions that take place in the above substances are not simply combinations, but decomposition also takes place on the addition of the next element all through; then follows the combination which forms the new compound.

It would perhaps have been in better order if I had taken for the first example some simple combinations without decomposition, we will therefore consider the burning of coke, or, of anthracite coal, as an example of chemical affinity. I say coke or anthracite advisedly because the burning of soft or bituminous coal, is a very different matter, especially in the first stages. Now to make this subject as plain and familiar as I can, let us suppose a kiln of brick or ware is to be burnt; your burner may know nothing whatever of the chemical affinity of oxygen and carbon, the very terms are a sealed book to him. But he is perfectly aware of the conditions required for the combination of these elements. He knows he must set fire to something else before the coals will burn, he therefore proceeds to

raise a little heat by friction—by striking a match—by this means he raises sufficient heat to arouse the chemical affinity of oxygen for the substance on the end of the match, the phosphorus, the sulphur, or the paraffine, and this combination of oxygen—from the atmosphere—with the aforesaid substances generates heat enough to ignite the wood of the match which is then applied to some other easily ignited substances usually shavings, paper, or straw these in turn setting fire to substantial pieces of wood which raises the temperature of the coal to that degree that oxygen begins to exert its affinity for the carbon of the coal and the resulting heat of combination goes on and is easily sustained if coal is supplied in a proper manner and a free passage kept open for the supply of air—oxygen—with an ample outlet for the products of combustion. You must bear in mind I am not treating on burning a kiln of brick or ware technically; holding the fire back for water smoking and other little points in firing do not alter the principles of combustion; of course when the fire is held back or dampered, you throttle chemical affinity, and *vice versa*, if you urge on the fire you accelerate and strengthen affinity.

From this example you learn that this miraculous force is subject to temperature. The coals might have lain on the grate until dooms-day, enveloped in oxygen, but no sensible change would take place without the assistance of heat, to start it. Not only does heat influence chemical affinity, but when affinity manifests itself by chemical combination, heat is generated, and the example just given—the burning of coal—is a well known and beautiful illustration. This, then, is the philosophy of burning coal, or, inciting to action the affinity of oxygen for carbon, briefly told, and the philosophy of extinguishing burning coal, is, to reduce the temperature of the fire below the degree where combination commences, and it then has no course left but to go out. The means used to put it out makes no difference, except in the *time* to cool it below combining point.

There are other conditions besides temperature which influence affinity, and there are a few substances that appear to have no affinity existing between them. It is said that fluorine and oxygen have never been made to combine, nor has any such combination been found in nature, but this is not conclu-



sive evidence of the non-existence of the one, nor of the impossibility of the other.

Solids rarely combine with each other, it requires a *closer touch* than can be effected mechanically to produce chemical effect. The finest grinding and most intimate mixing fails to make the contact close enough. Iodine and phosphorus are two of the solids that do combine in that state.

Heat has been spoken of as starting and assisting affinity; this is not invariably so, for in some instances it actually retards and completely destroys the affinity of substances for each other.

W. WAPLINGTON.

Written for the CLAY-WORKER.

#### ENAMELED BRICK.

AS I sat down to breakfast the first day of May the postman handed me the CLAY-WORKER, and as I am always anxious to see what new thing is coming to the front in clay-working industries of our country, I at once began to turn over its pages. I was very glad to find that another correspondent had taken up the question of Enameled Brick. I must confess to a feeling of disappointment that there has been no hostile criticism on the papers I have sent you on this subject during the last two years, but I am pleased to think that this will now be reversed, for amongst a multitude of counselors there should be found a little wisdom, and from a discussion of the points of difference, will bring out those points more clearly and your readers will reap the benefit.

It is very evident from what I see that our methods of making enameled brick are as widely different as possible. I will now proceed to set before your readers some of the various methods and expedients that have been adopted to overcome the difficulties and defects set out in my last paper.

The early method of applying the enamel was by brush and then dipping, but as this was applied, while in a liquid state, it was thought that the contraction was so great that it could not be made to agree with the foundation, and that this was the cause of its falling off. The idea that then sprung up was, to make a stiff paste as near the stiffness of the brick as possible and to apply it with a pallet knife. I presume this is the method adopted in New Jersey, and is called a new method of glazing brick,

and may be the new discovery by which enameled brick are to be made to supercede, in quality, the English made brick. Well this method may be new in New Jersey, but it is 40 years since the baby was born, and, comparatively speaking, it was like Jonah's gourd, it withered in a night, and some who tried it withered also. This was one of the methods that had the shortest life, for it is totally unsound in theory and in practice. You will see that the idea that lay at the root of all this speculation and experiment was, that the fault was in the brick or in the clay materials from which the brick were made, or in other words, that the contraction was so widely different from that of enamel that they could not agree, and that some point of agreement must be found, and the point to start from must be, to take out the contraction from the brick before the enamel was applied, or at least before the glaze was put on.

I said in my last paper that in some cases the enamel would come off just when they were dipped into the glaze. Now, this gave rise to three distinct methods, leaving out the one already named. The first method was to press the brick, putting some work on the face to be enameled and then put them on the floor to dry, and when quite dry to take them up and dip them in the enamel, then into the glaze. But this did not meet the case, the evaporation of the water was so quick, causing the enamel to contract so rapidly that it would crack in a very few seconds. The other two methods I have to name, have been tried with a large amount of success, and much can be said in favor of both of them, that is, twice burning in some form or other, or what is called biscuit and gloss. By this process brick can be made that cannot be made by any other, and besides it is easier and safer for an inexperienced man or a new beginner, but success has not always followed this process no more than it has any other. The process is to put on the enamel and burn the brick and then dip in the glaze and burn again.

Now, I have said that this method has its advantages and very good brick can be made by it, but if the clay contracted very much then they would double on the face, and other things I have named would still happen. Well, as time went on another idea sprung up, which was to bring in a new era, all the difficulties were to disappear and a perfect brick was to be the result, and a name was

given to it with a sound to it which was to distinguish it from all other methods. It is called the new dip. The process is to burn the brick with some little preparation on it just as it come from the press at a short fire, then when the brick come from the kiln they are dipped into a buff body, then into the enamel, then in the glaze. The spare is then cut off around the edge with a knife and the brick returned again to the kiln and fired till the glaze is properly fused. Some good brick have been made by this process, but it has not done all its promoters said. The fact is, it has now been discovered that after these brick get into work and have had a few years wear, the tendency is for the enamel to come off, and this being so, they must inevitably bring discredit on the manufacturer. Brick are now being made by this method in your country, where other methods have failed to produce them, not because of any defect in the process tried, nor in the materials from which the brick are made, the defect being in the knowledge of those who have had the matter in hand.

I do not intend your readers to understand me to mean that enameled brick can be made at one firing from all clays the world over. Nothing of the kind, but I do mean to say, that they can be made by this process in a great many places where they are not. The failure to do so being in the defective knowledge of the operator, and not, as it is said to be, in the unsuitableness of the clay materials. There are a great many other things being tried, such as burning in saggers, to which we will refer later, and burning in muffle kilns, which has been referred to in a previous article. Then there is the crock glaze theory, and the frit glaze craze, and the enamel made easy on a brown brick with minute particulars of how to set them in the kiln to prevent the enamel from running to one side or off altogether. Now I don't intend to say anything offensive, but I am bound that this is sheer, absolute and undiluted nonsense when applied to enameling brick. Let me tell you readers, that this has not the remotest claim to be called an enamel. The proper enamel for brick will not flow or run at all, no matter what position it may have in the kiln, or how hard it may be burned.

Crock glaze and frit glaze are interchangeable terms; they both mean the same thing; they have their uses and are important when so applied, but they



never were intended to work on heavy bodies, and this class of glazes never did work for enameling brick, or never were intended to do so. I. H.

Written for the CLAY-WORKER.

### DRYING BRICKS.

BY S. GREEN.

#### SAVE THE EXHAUST STEAM.

SUFFICIENT attention does not seem to be directed to the importance of saving the exhaust steam from the engine, and for manufacturers of brick, so much in need of heat or means for drying their production, it appears to be worthy of especial consideration.

Many are inclined to the belief that after the steam has passed through the engine and thus furnished the power; its "Mission of usefulness" has been practically fulfilled, and it should be allowed to escape in the exhaust as so much waste, when it is claimed that it has really parted with but 5 per cent. of its heat.

Not only is it quite authoritatively contended that but so small a portion of heat is lost in the transmission of the engine power, but also that it costs one-third to heat the feed water for the boiler; and as provision may be made to heat the boiler supply of water from the surplus heat or heated water directly as it issues from a properly constructed radiator; or in case the oil in the condensed engine water be not objectionable, the hot condensed water be used for the boiler. The full heating capacity of the exhaust steam should be permitted to flow directly to the radiators after having left the engine to secure its heat, first, and more fully, for drying purposes.

To merely use "live" steam, to pass directly from the, and probably a separate and possibly an unnecessary, boiler, only the radiating capacity of the steam is to any material extent employed, as the expansive force, except the very slight pressure needed to convey it to the radiators of the dryer, is quite ignored.

In first using the steam to expend its expansive force to drive the engine at such little cost for loss in radiation, and then let it flow toward the radiators with the little power, or force so needed, and as also before noted, its radiating force or capacity may also be advantageously employed.

Therefore, to use either the "live"

steam for heating, or to drive the engine without employing its exhaust steam for the dryers, would be meeting this important question of economical expenditure for fuel in generating steam, only about "half way."

It may not be generally understood, but in the manufacture of brick, especially of stiff tempered clay, the heat to be obtained from the steam used in the power to so prepare and make the brick is ample to dry the product.

There is evidently a mistaken impression that in using the exhaust steam, that "back pressure" necessarily occurs to such an extent as to seriously obstruct the engine and make it as desirable to use "live" steam, and this objection may apply with some force to the ordinary means of supplying the steam to, and radiating the heat from, the heating pipes, for I know of cases where in the attempt, securing but a limited amount of heat for drying, the engine was perceptibly checked. For instance, where the exhaust pipe was of 4-inch diameter, the weighting of the back pressure valve to force the steam for considerable distance through a horizontal pipe of the same diameter, resulted in serious restraint upon the engine. Yet, in supplying another pipe of the same diameter, branching from the other end of the 4-inch T, the increased carrying capacity of the pipes to the dry house, afforded very marked relief.

It has been found to be well to provide an inch more in diameter for the horizontal pipe to carry the exhaust steam, for the necessary considerable distance to connect with the radiators, when they are from 4 to 6 inches, as there is but little pressure left in the exhaust steam to force it to the radiators, especially if the engine works to any considerable degree of expansion, and thus about half as much more room should be allowed to obviate back pressure, and when used in connection with radiation especially adapted to the use of exhaust steam; even such steam has been successfully employed to supply all the heat needed to dry the entire output of brick, and yet a steam gauge attached to the exhaust pipe near the engine, did not indicate an appreciable amount of back pressure. This fact is regarded to be so remarkable and interesting to brick manufacturers as to warrant the communication.

The foregoing results have been stated and provision noted for conveying the

exhaust steam, yet the description of the favorable conditions for radiation is reserved for another communication.

Written for the CLAY-WORKER.

### BRICK BURNING AND SETTING.

Serial No. 3.

BY J. W. CRARY, SR.

IN my last article on this subject I said that the common error of setting brick in the arches of a kiln so that the spaces between the brick are covered, thereby making it impossible for a free draft to be had up through the body of the kiln, was probably the reason for the *down draft* idea for a brick kiln. The common old fogie know-all brick setter would set his benches and over hangers so that his arches would be a sort of reverberatory furnace, where the combustion of fuel is slow and imperfect. Now, just imagine a series of arches like this, and a brick kiln set over them, then try to think how you can get a draft of heat up through that kiln sufficient to burn the brick, and if you have reason and logic enough to know a dilemma from a demonstrated success, you will find yourself enveloped in an inextricable fix, and hopelessly paralyzed, unless you run away from your kiln, or set it all over again, so there will be plenty of common sense in the arches.

"REASON IS THE SOUL OF LAW," ALSO OF INVENTION.

Take away the reason and only a picture, a whim, or absurdity is left. I would feel much obliged to some good friend that would give, in plain talk, the reason why a down draft is better than an up draft for burning brick. I am not begging a case, I do not wish to "Join issue" with any down draft man, as against up draft, and argue the case, I only want the plain reasons for down draft in preference to up draft, given so that the scales of my obtuseness will fall off, that I may see the beauties of down draft. I have learned from experience, as well as theory, that when fuel is in a state of combustion, the products of heat and gas being lighter than atmospheric air have a natural and almost uncontrollable force to ascend, whether it be in the open air or in some confined space or flue. True, it does not follow that the ascent must be straight up without a turn; it may be vertical, horizontal, or decending, provided that the outlet is higher than the



furnace where the heat and gas is generated.

A draft flue acts inversely as a siphon. It may be carried in any direction, up, down, level or lateral, if in a comparatively air tight flue, whose top is sufficiently high above the furnace to insure a draft.

ALL DOWN DRAFT KILNS MUST NECESSARILY HAVE A SMOKE STACK.

The smoke stack must be high enough and large enough to largely over balance all diversions from a perpendicular ascent of the gases from the furnaces. If the gases pass through a horizontal flue to the smoke stack, the stack must be increased in drawing power. If there be a down draft, then the height or drawing capacity of the stack must be equal to the force necessary to carry the gases down. For every foot of draft there must be at least one foot added to the height of smoke stack.

NOW WE WILL SEE THAT A DOWN DRAFT KILN IS EXPENSIVE.

The kiln must be tight, so as to prevent the escape of heat only down through the brick. Then the flues carrying gases to smoke stack must be ample, and the smoke stack well built. Then there must be a lot of dampers, etc., to control the draft and heat. All these are expensive and require vigilant, skilled attention. I do not know the cost of a down draft kiln, say for 200,000 brick, but I will venture the assertion that it would cost at least three times more than an up draft kiln.

THE ONLY TRUE CRITERION FOR A WELL BURNED BRICK KILN

Is the appearance of the heat on top of it, and efflorescence of the oxidized minerals or salts in the clay. When a kiln of brick is well burned the "plating" on top will show a sulphuret, characteristic of the mineral salts in the clay, and the heat under the plating will be about the same in appearance as the heat in the arches. Now how all this is to be seen in a down draft kiln, I am at a loss to explain, and would be glad to get instructions. But these gentlemen of the down draft theory (if they have a theory,) say that "There is no danger of melting the bottom of the kiln." I agree with them there, and venture to go a little further with them and say, that there is scarcely a possibility of getting the bottom of the kiln better than a good salmon.

But it is said that down draft kilns are great fuel savers and labor savers;

here again we have the conclusion without the premises, the assertion without the proof. A given quantity of fuel, under certain given conditions of combustion, whether in a furnace of an up draft or down draft kiln, will invariably generate an equal amount of heat. Now if this heat be any hotter in descending than it is in ascending, then the assertion that down draft kilns are better than up draft kilns is good, but if not true, it only stands on the old women's logic,—“It is because it is.”

“But,” say our enterprising, wide awake down draft friends, (and I certainly wish them success,) “We have tried up draft kilns and abandoned them, because we found down draft kilns much the better.” I don't doubt that, but I very much doubt your knowledge and skill in being able to fairly and properly test the up draft principles of burning brick. I fully agree with you, if you set and burned up draft kilns in the old way, and as many are now doing, but if you will read and notice what I have written and what I may still write, you will see that my theory of setting and burning brick is well founded on scientific principles.

I do not propose to antagonize any patentee of brick kilns or brick machines; my desire is to do all I can to aid real improvements in clay work. There are doubtless some good features in down draft kilns. The up draft for watersmoking and the down draft for burning certain kinds of clay and clay goods, I think can be used with advantage. But to supercede the natural up draft principle for burning clays generally, will be a task that will require something more than mere novelty in construction of kilns. I do not intend or expect to enter the field of criticism on clay work, or to occupy the position of a disputant or hypercritic; I only wish to see and aid real meritorious improvements in a line of clay work in which I have been practically engaged for over sixty-five years. If I had only a practice in one place and in one kind of clay, I don't think I could have much courage or desire to talk brick. I have made brick of every kind of clay on the earth, have burned brick with all kinds of wood and coal, in many parts of the United States. What I have learned of brickmaking, that is really worth knowing, has been since I served my apprenticeship. For over fifty-eight years I have been my own instructor. I have seen neither books or men to teach me

how to make and burn brick. In the South, I have been a pioneer in the business. There were no skilled white men in the business of brickmaking in the Gulf States 58 years ago, and the negroes, called “brick moulders,” had a sort of monopoly of brickmaking as an art in all the Gulf States. They were perfect botches, and never made a brick that could rise to the dignity of respectable Salmon.

BRICK BURNING AND SETTING THE CASH PART OF THE BUSINESS.

Some people think that true brick burning is a lost art, but it is more reasonable to think that it has never been found. It is only a small fraction of brickmakers that invariably succeeds in turning out first-rate, perfectly burned brick. It is not so much the want of scientific knowledge that brickmakers fail, but it is because they have no natural talent or fitness for the business.

Our able and interesting friend, Alfred Crossley, has commenced a series of articles in *CLAY-WORKER* on “Paving Brick,” and I am sure they will be instructive and valuable. He seems to think that we can have text books and a scientific formula, that would enable the intelligent amateur brickmaker to become a complete, successful master of the business. I fully agree with Mr. Crossley, but, in all cases, our amateur must have good and varied practice before he can be called No. 1 master of his business.

#### WHAT BRAND DOES HE DRINK?

THE Newton, Mo., *Journal* says it has a new subscriber who gets drunk every little while and invariably insists on paying a year's subscription. He has his paper paid up in advance to 1926. If the editor will find out what brand of whisky the fellow drinks and send us a few gallons we will pay him double space rates for the information.

#### SIGNS OF BETTER TIMES.

IT is gratifying to know, says the *American Machinist*, that recently the attendance at the World's Fair has considerably increased, and that it is not true, as many were asserting, that the people were feeling too poor and too uncertain of the future to admit of their spending the necessary money to get there. Though it is true that we are passing through a period of commercial depression, there are strong grounds for the belief that times are soon to improve.



## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## A Burning Question.

*Editor Clay-Worker:*

We would be very grateful if some of your correspondents who have had practical experience with crude oil as a fuel for burning drain tile and brick, would give their opinion as to its advantages (if any) over wood and coal, good soft wood costs us \$2.25 per cord on yard, but we find it costs a good deal to get it to place ready for the burners, and requires two men to fire a six arch kiln, or four men for 24 hours.

We are highly pleased with the CLAY-WORKER, it seems to give good general light on all subjects, except the one above referred to, which it seems to us, would be very interesting to many subscribers.

JASPER BRICK & TILE Co.,  
Jasper, Mich.

## Kiln Building.

*Editor Clay-Worker:*

I quote extracts from the letter of inquiry written by Mr. Jos. Marxer of Millstadt, Ill., and will try to reply to same.

"I built a down draft kiln.....24 feet long and 16 feet wide inside, with a tunnel through the middle and on each side of the main tunnel are smaller tunnels running into the main one, six on each side. The main tunnel is 20 inches wide and about the same depth connected with the chimney, which stands about 16 feet from the kiln. The arch is 18 feet above the floor. Height of same 45 feet. I fired twelve days and a half and saw the fire on the bottom of the kiln four or five days. I have a peep hole through which I can see the fire. Upon opening after letting them cool for 8 or ten days, I found that my kiln of brick, about 70 or 80 M. had a slight touch of red color but too pale for front brick.....I would like to know if it would be advisable to burn the above mentioned brick over again as they are setting."

The difficulty which Mr. Marxer experienced is not an uncommon one and is one that is very naturally made by burners of limited experience, and in burning clays that are somewhat refractory or hard to burn.

His mistake, I think, can be stated and explained in a single sentence. He

did not get his kiln hot enough. He "saw the fire on the bottom of the kiln four or five days," and yet his brick are too soft. Evidently it is not enough to get his clay red hot. It must be made hotter than red hot before the changes will take place in the clay, under heat which make good red brick. With some clays it may suffice to get the "heat down," to "see the fire on the bottom of the kiln," or to heat the clay red hot, but his clay will not undergo the desired changes at so low a temperature. Mechanical and chemical changes, such as fusion, evaporation and chemical combinations and decompositions always occur at certain fixed temperatures, other things being equal, and they positively refuse to act at lower temperatures than those established by nature.

In burning a kiln of brick or other clay goods, the object sought is to produce such mechanical changes as will transform the clay into a material, that will be durable and that will have certain other desired characteristics, such as color, density and imperviousness. The modifications produced in burning brick are both mechanical and chemical, and the immutable laws of nature have decreed that certain temperatures must be reached before these changes will be made, it matters not how long the clay may be kept at a temperature, only a little below that required by nature to produce the transformations. Unless this degree of heat is produced the clay will not take on the desired conditions, although the burning at the lower temperature may be continued for many days. The distinction between quantity and intensity of heat, must be understood by the burner of clay goods. Sometimes, as in the case of the kiln under consideration, probably a quantity of heat, considerably greater than would be necessary to burn the kiln, was produced, and maybe enough fuel consumed to burn the kiln, twice, but at no time the intensity of the heat, was sufficient to transform the dried clay into merchantable brick, or to produce the necessary changes referred to in the preceding paragraph.

To repeat, it is not the amount of time consumed in burning, nor the quantity of fuel burned, but the intensity of heat in the kiln that is essential.

I have in mind a certain down-draft kiln that has been burned within a certain time and the ware came out in prime condition. At other times, I have known the same kiln set with the same

kind of ware, to be burned one-third longer and one-third more fuel consumed, and yet the ware was not as well burned as in the first case. The explanation is to be found in the statement that the necessary temperature was produced early and maintained sufficiently long, in the first instance, while in the second the temperature was continually lower than the particular clay required. More heat was produced in the second case than in the first, because more fuel was burned, but the intensity was greater in the first than was reached at any time in the second.

A foundryman produces heat intense enough in his cupola within a few hours to melt iron, and a brick burner might do the same in his kilns were it not for the fact that the quality of the ware would be injured by the unequal expansions due to the sudden heating of the clay. Clay conducts heat very slowly, and time must be given for the ware to be heated through gradually, so that, practically, a uniform temperature may be maintained throughout the body of the ware. The same is true in cooling clay goods. If it was not for this peculiarity of clay, a kiln of brick might be burned within a few hours after the watersmoke is off just as well as a cupola of iron is melted. The burning of clay wares does not consume so much time because it is necessary to attain the desired degree of heat but to preserve the quality of the ware.

After the watersmoke is off in a down draft kiln, the heat should be increased in intensity quite rapidly until that degree is reached which will produce the desired results in the top of the kiln, and then it should be maintained, with all allowable intensity until the kiln is done.

A down-draft kiln that required twelve and one-half days to burn would not be popular with modern clayworkers.

Sometimes in burning down-draft kilns there are certain places in the bottom that do not become heated as soon as the other parts of the kiln floor and the burner is led to continue firing longer than he otherwise would, hoping to improve the dark places. This he seldom accomplishes as the draft and heat travel in certain channels and the more they become heated the more they take the draft and continued firing will not drive the heat to the dark places. By prolonging the burning and increasing the heat in attempting to force the



heat into these cold places the top of the kiln is in danger of being overheated and damaged. My experience with down draft kilns has led me to the conclusion, that but little is to be gained by burning long after the heat is down. Do what you have to do as vigorously and quickly as possible, without overheating the top of the kiln.

I confess that I hardly understand the plan of the kiln, but the fact that Mr. Marxer is an experienced burner in up draft brick burning, makes the mystery of his failure greater. He evidently failed to settle the kiln. Whether this was through his inability to heat the kiln hot enough, or for some other reason does not appear. He does not give the number and capacity of the furnaces. Possibly they do not have sufficient capacity for the size of the kiln. In reply to his last inquiry as to the advisability of burning the brick over again without moving them, I will venture the thought that if they are too soft to be sold advantageously, they should certainly be burned over again as they are sitting, if the furnaces can be made to produce sufficient heat to burn the brick to the degree desired.

D. W. STOOKEY,

Cedar Rapids, Ia.

#### New York Market.

*Editor Clay-Worker:*

##### LOG OF SHIP BRICK TO SEPT. FIRST.

The weather bureau has been warning the coastwise trade that a cyclone was sweeping along the coast, and it would be advisable to prepare for it. Some of the captains did so, others who have firm belief in their own judgement and the staunchness of their vessels, put to sea, never more to return to port. The Ship Brick has had some heavy weather this season. She was preparing to begin her voyage on a smooth sea of a seven dollar price, but before she reached her port of destination, the barometer showed as low as \$4.37½. With such a showing it was necessary for safety of vessels and cargo that great judgement should come in to play, with the result that the barometer began to rise, so that there was some prospects of steady weather, when, without any warning, the mercury dropped to a \$5.00 point with a large fleet in port.

Once more the captains shortened sail, some laid their vessels up. After a while the barometer reached \$5.75, with all the skippers sending cargo as fast as possible, thinking that they had

struck the "Trade winds" of steady demand that would last the season out, with an advance, when production had ceased.

There are some of your readers who have, no doubt, been before the "mast" (before they tackled brickmaking) and know that a vessel may be sailing along when the wind suddenly shifts and she is taken back with the attending danger of losing her spars, if no worse danger befall her. Without any warning, a fleet of fifty was caught with a decidedly falling barometer. Still other captains left port, thinking perhaps that they could work around the cyclone, but they soon found that their seamanship was no better than the others. There was a steady falling in value. Was there more heavy weather coming? Still captains left port to find on his arrival vessels that he left there when he departed to unload. As day followed day, more arrivals, less call, another drop in value and still other vessels in sight, coming to keep company with some that have laid at the dock for three weeks waiting for some one to buy. Each day sees no change for the better, with a barometer that shows a lower figure than has yet been reached. Will the storm signals of the trade warn the captains, or will they continue to send? Some of the large captains will think, "My vessel can survive," still, large vessels have gone down, when smaller crafts have pulled through.

##### SUPPLY AND DEMAND.

1893 has been a good brickmaking season so far as weather is concerned. There was no rain to speak of, and steady time was made. As I have said before, the scarcity of men has kept some manufacturers from a larger output. Still the continued fine weather allowed an increase of stock under sheds. The backward spring retarded consumption till midsummer, so that the stock in sight to-day is much the same as this time last year. The demand is very small and from the present standpoint, will be no better this fall, as the number of plans filled from week to week show a large falling off from last year. Brooklyn is doing nothing to speak of. In fact, unless there is a marked improvement in the near future the masons and carpenters will have but a very small amount of work this coming winter.

##### WHAT THE MANUFACTURERS ARE DOING.

In some cases, moulding and shipping. "Why?" No one but themselves can tell, as anyone who places stock on

the market at present must enjoy seeing good material go for nothing, as well as money spent in getting it in shape to send to market.

I do not think that there is a business in the United States of the volume of the brick trade of the Hudson and adjacent points, in which so little judgement is shown, and it is not the younger members of the craft either; men who have made brick for years, and have passed through depressed times, like the present, are among the first to make and ship. I know of a manufacturer on the Hudson, who is loading extra boats at present time, and his brick will not bring to day over \$4.5 per M, and possibly not that. When spoken to about the low price and asked if he was going to stop, his reply was, "I have not made my complement;" by that he implied that his partner was not in with him, and he was running the yard alone, and had to make so many at a given sum, say, 50 cents per M to the partner. As the weather has been good he certainly cannot have many to make to get room to set what he is now making. He is sending them to the market at a loss per M more than he would have to pay if he did not make his complement, but paid for them. There are many leased yards that are making and shipping under the same conditions in the hope that they will not lose quite as much as if they stopped and paid for them. They will wait to see what their neighbors will do, not thinking that they are losing money as well as their neighbors. Some of the Up River yards have cut wages twenty-five cents per day, and loading extra boats at a reduction of one shilling per M, or nine shillings freight, thinking that they will pull themselves out of a tight spot thereby. It is about as likely a job as a man trying to pull himself out of a hole by his boot straps. In the history of the brick trade wages are cut first, freight next, as they are the only things that he can control. The woodman tells him, "That is my price, do you want it," the coal man the same, the hay and feed man tell him, "I cannot make a reduction," and so along the line. If a man represents a production of a thousand a day twenty-five cents are taken from him. It seems that he is saving that per M. If he saves one shilling in freight, he is reducing expenses of production fast. Does it help him? Follow the market and one will find that as soon as he "cuts" the dealer will buy



his stock as low in proportion. It has always been the way of the market and always will till—well, I give it up.

Adam was not man enough to say that he ate the apple, but tried to let himself down by saying, "The woman gave it to me." The proprietors of property that make brick say to the men who lease yards, "You keep the price down by sending." Let anyone go along the Hudson, Hackensack, Raritan or South rivers, and see who is loading the most brick, then visit the brick market and see if he will not find as many boats on the market, belonging to those who own the property from which the brick came, as of vessels from leased yards, in proportion to the number of each, as the leased yards are in excess of the other.

In conversation with Bric-a-brac a short time ago, I said to him, "Why do they pursue such a ruinous policy," and he candidly said: "I cannot explain it, unless we have a class of men in the trade who drift with the tide, thinking they are making both ends meet, when, without warning, they strike a snag. Then they cease to be brickmakers." It certainly looks that way.

#### HACKENSACK MANUFACTURERS

Are preparing a wind up for the season, as they have concluded that it is about as well to "Rust out as trust out." Last week one yard stopped, to-morrow another moulds its last pit. Before the week closes two more will finish for 1893. The local trade has fallen off very much. There is one yard here that has quite a supply of last season's stock on hand. When it stopped last fall, it had over four million on hand, and not to be able to dispose of that quantity in a year is indeed slow work. They have only run one machine a day or a trifle over 30 M per day during the past season. The proprietors ship all by rail, none to the New York market. Once in a while we find a manufacturer who runs his yard as he thinks best for his own interests, not because his neighbors make a large number, he must. If all in the trade would make brick to make money, and the way to do it would be as one of the most successful brickmakers of Hackensack did when he was in the business,—make and ship when there was profit. When no margin; fill up his shed and stop and hold; some seasons not ship at all, but pile out what brick his shed would not hold. He often remarked that he met those Haverstraw fellows on change and that

they were always talking about how many brick they were marketing. "But," he said, "I never heard them say that there was any money being made, simply that they shipped so many at a low figure, that the small quantity that brought the advanced price, about left them whole."

#### COLD SPRING.

There is one manufacturer here who has always held his stock for the winter market, as he was so placed that he could ship. This season he is only making 10 M per day. He must have been badly scared this spring.

#### HAVERSTRAW.

Majority of the yards still moulding, but talk of stopping. To date four yards have ceased to mould.

#### FISHKILL

Has four yards that have wound up for '93, with more in the near future. One of the yards have cut wages ten per cent.

#### NEW WINDSOR.

There are two yards that have concluded that it is as well to stop. The proprietor of one is a dry goods merchant. I guess there is more profit in a yard of calico than in a thousand of brick.

#### THE UP RIVER YARDS

Have, in some place, stopped, and on others they have curtailed in the output. Some of them cut wages and laid still till the men went to work.

#### STORMS.

August did well, as far as heavy weather is concerned, to help deplete the pocket of the brickmaker. On the night of Aug. 23rd a heavy northeaster came along. My! how it did rain and blow, and to make matters worse, the tide backed up on some of the yards. All the brick that were moulded the day before were so badly washed that they had to be put back into the pit. Hacks were blown down. On one of the yards the loss of green brick was about 150 M. On an average of about 30 M to a yard would cover all. There was a yard at Fishkill where the amount of loss was over 70 thousand, none of the sheds were injured, or pit sheds.

On the night of Aug. 28th along came another blow. I think some of your western cyclones must have gone adrift and reached here. Little rain, and did not do much damage to yards. At New Windsor it took the top off of one shed, and demolished two at Haverstraw. One of the barges belonging here, was unloaded at Croton, opposite Haverstraw.

The tug boat towed her off in the middle of the Hudson on Monday afternoon and left her at anchor, for the tow boat to take her to New York. During the night a heavy southerly wind came up and the crew had to take to the boat at 3 A. M. Just as they left her she went down with 250 M brick on. How the four men ever reached shore in an open boat is wonderful. The owner, Mr. I. Gardner, was one of them. After reaching shore Mr. Gardner went for a tug boat, and they went out to where she was the afternoon before, but she was not in sight, as she laid in 20 feet of water.

#### MARKET.

Slow shipments; lighter than for some time past, but far in excess of demand. Haverstraw, best, \$5.00, seconds, \$4.50 and \$4.75 and \$4.74; Hackensack, \$4.50, top; Up Rivers, \$4.00 and \$4.50; South Jersey's \$3.50 and \$4.00; Pale \$2.00 for good.

#### BURNING WITH COAL.

One of our manufacturers has six arches all ready to set fire to, waiting for a man that has been burning with coal for some years. If a success, more of the yards will use coal next season.

A. N. OLDTIMER.

#### Size of Bricks, and Other Matters.

##### Editor Clay-Worker:

Mr. R. M. Greer, in August issue, criticises some remarks in my letter on "A Trip to Europe." I did not write that with any idea of raising a controversy, but rather jotted down, in an off-hand way, the thoughts suggested by what I saw and heard on my trip. I can hardly think that my remarks would be misunderstood by the great body of your readers, but as Mr. Greer has got hold of some things *by the wrong end*, I feel that I must set myself right before the large constituency of the CLAY-WORKER.

In regard to size of bricks, the question of appearance is, indeed, "a matter of taste," as the old woman said when she kissed the cow, and on this ground I am not afraid to leave it to the verdict of the majority of those who have observed both the English and American sizes.

But when Mr. Greer argues that there is more profit in making large size bricks than small he is "away off." The isolated instance that he cites from his own experience cannot be held to be conclusive by any means. I suppose I do no injustice to Mr. Greer in the assumption that he is not *laid out* for pro-



ducing common bricks *cheaply*, from his own statement that is only a "side issue" with him, hence he ought not to judge of the trade at large from his standpoint. In the fire brick trade the orders call for a large proportion of what we call "shape work," which are really bricks out of the ordinary size and shape. But it is well understood that they cannot be produced as cheaply as the standard size bricks, and many of the leading makers have a rule to charge a higher proportionate price. In times of sharp competition this rule is more often laid aside, and the manufacturer is "out" that extra cost.

But, to confine the discussion to common building bricks of the ordinary shape, but with a difference in the size. Mr. Greer says, "A brick is valuable almost exactly in proportion to the cubic contents of building material it represents. *Intrinsically*, we may admit this to be true, on the same principle that a goose egg would be worth more than a hen egg. But *commercially*, this is not true. Throughout the United States there is quite an appreciable difference in the cubic contents of bricks made in different sections, and if Mr. Greer's theory was correct, those making the largest bricks should be getting the biggest profits, but if it were possible to get the statistics, I venture the assertion that Mr. Greer would find that the prices bear no relation whatever to the size.

If Mr. Greer's hypothetical contractor was a *reality*, and was willing to pay for bricks according to their size, as he says, then I would admit that his argument was sound. But, let either Mr. Greer, or any one else, try the experiment and make a few kilns of bricks the English size, and see if they could sell them at a price in proportion. If such were the case it would actually pay to import them from England. I think the average price of hard bricks in this country will run about \$6 per M. The English brick would be worth in proportion about \$11, and at that price there could be money made in importing them. Custom, however, is so firmly established on both sides, that the English size brick would not sell here at all, neither would the American find a market there, but I will say this, that if the small brick *could* be introduced there, and they came to be in demand, that the price would be a good deal more than *half* the price of the larger.

And herein lies the point of my argument, that small bricks were "more profitable to manufacture," viz.: that the cost of production is less in proportion to the market value. And now, as Mr. Greer "invites refutation" of his argument as to the comparative cost, I will endeavor to prove to your readers that I was right in my statement, and that it is "just exactly the other way about."

"The average American brick is about *three-fifths* the size (cubically) of the English. For the sake of easier comparison, however, we will consider it is *half* the size. Now, suppose we take, for instance, a modern plant, using shale clay, and equipped with machinery by the stiff clay, wire-cut, process. The plant consists of dry pan, elevators, screens, pug mill, auger machine, tunnel dryers, and permanent kilns. Now, it is self-evident that the same quantity of shale has got to be handled, clear through, whether we make 40,000 American or 20,000 English size bricks. The men who mine or dig the shale, fill the dump wagons, feed the dry pan, tend the pug mill, are all the same whether you make the one or the other. So, also, are the foreman, engineer, men who operate the cars in and out of the drier, kiln, firemen and others. It makes no difference to the dry pan, elevators, sieves, pug mill, brick machine, engine and boiler, the same amount of material has to be handled in the one case as in the other. If the drier has a drying capacity of 20,000 large bricks per day, it will certainly dry 40,000 small, with the further advantage that the small bricks will stand drying quicker, and there will be less waste than with the large. The same applies to burning, both as to kiln capacity, labor, fuel and waste. In each of these items the advantage is in favor of the small size bricks. There might possibly be a saving in labor in favor of the large bricks, in cutting off and taking away from the machine, though where an automatic cut-off is used, it would only be in transferring the bricks to the drying cars. When it comes to setting, there is, perhaps, a little advantage in favor of the large bricks again, but not much. It is a pretty good day's work to set 15,000 English size bricks. A good setter will easily set 25,000 here, and I have heard of different instances where one man sets 30,000. In emptying the kilns the men will handle 40,000 small quite as easily as 20,000

large. Now take a kiln of say 200,000 small size bricks and there will be a larger percentage of good bricks than if filled with the large, for it must be remembered that in order to have the same *proportion* of waste, there must be two small bricks spoiled to one large one. I ask any candid mind to go over this carefully and tell me, *all things considered*, how the small brick is going to cost more than half what the large ones do, and as the manufacturer gets considerably *more than half* the price, there must evidently be more profit in making the one than the other.

Mr. Greer next makes me to say, that "the English bricks are superior, very much so." Will Mr. Greer please read over my letter again, and he will find that what I did say was, that the common bricks, *as a whole*, are superior, but in reference to the finer grades I claimed, very emphatically, that the American were the best.

Again, Mr. Greer takes me to task for what I said about American brick machinery. What I said was strictly true, whether Mr. Greer knew it or not. I do not know that it can serve any good purpose to go into particulars, but let me mention just one or two things to show that I knew what I was talking about. I have seen the claim made by different parties that they were the "original inventors" of the auger machine, when, as a matter of fact, the auger machine was in use in England years before it was brought out here. Up to about two or three years ago there was a repress on the market here, advertised as a patent, that had been a real "back number" for a long time in England. The same is true of cutting-tables, more than one, and others that I could mention. And yet some of these things have been so much improved upon since first brought out here, that now it would not pay a man to use one of the originals if he could get it for nothing. Great credit is due our machine men, for the ingenuity they have displayed in the many valuable inventions that are their own creation, and also for the valuable improvements made to the inventions of others. The machine men have to take lots of abuse, but the brickmakers would be in a sad plight to-day if it were not for their aid. No one is more ready than I to give every credit to the brick machine men of this country, but Mr. Greer should not forget that in the land of his birth, improved brick machinery had been in



use for years while bricks were still being made all over this country in the most primitive methods used by our ancestors. I agree with Mr. Greer that American brick machinery (on the whole) is in advance of the English, and yet there are a great many things that our machine men here could learn on the other side that would be to their advantage. For Mr. Greer's information, I will say that I know of at least one very prominent firm here who made a strong effort to introduce their machines in England, but without success.

Mr. Greer's letters in the *CLAY-WORKER* have always been so very interesting to me that I dislike very much to have to disagree with him, but I trust he will accept my remarks in the spirit of candor and good feeling in which they are written.

ALFRED CROSSLEY.

#### Making Brick in the Gas Belt.

*Editor Clay-Worker:*

Having heard much about the great gas belt of Indiana, I long wanted to investigate the same and see if all said for it is true; so on my way to Chicago to visit the World's Fair, I stopped at two or three points in your state and witnessed natural gas displays, that convinced me that it is indeed, one of nature's greatest gifts to man.

My first stop was at Alexandria, Ind. This I am told was two years ago, only a sleepy country town. I found it a full grown city, full of manufactories, glass and iron, being the principal industries. I also found one of the most complete brick plants there, that it has been my pleasure to visit. It is the Indiana Brick Co. I was all the more surprised at the size and completeness of their plant when told that the clay is only 18 to 24 inches in depth. It is carted to machinery from bank. Making sixty-five thousand brick a day, it don't take long to clean off a good big track of land, but they have thirty acres I was told, so they can run on for a good while yet.

They use two Pott's Horizontal Stock Brick machines, which are driven by a 65-horse power engine. They use the rack and pallet system for drying, burn in clamp walls, using natural gas for fuel. This I was told is the only yard in the gas belt which uses the open yard, and trusts to "Old Sol" for drying the brick. It is a very complete plant and judging from outside appearances it is run on business principals, the owners expecting a fair profit from every brick

made. The machinery and yard was clean and tidy. I cannot understand why brick yards should commonly be such dirty places, with pallet boards broken and scattered all over the yard. Broken barrows, trucks and moulds strewn about. Why cannot brickmakers keep their machinery clean and tools in place, as you will find done in other manufacturing industries.

But I am wandering from my subject, so will quit finding fault with something which cannot be helped. I found the Alexandria yard to be a model one in every respect, the bricks are clean and true when set in the racks to dry. they handle them carefully in wheeling to the kiln, therefore the brick are nice when burned. They had several kilns burned and open, all of which were hard.

From Alexandria I journeyed on north to Marion, Ind. I had heard about the Marion Brick works from those who visited it at the time the N. B. M. A., met in your city, and have been curious to see it for myself. I met the foreman Mr. Piner, he being an Englishman, you may know I met with a hearty reception; he kindly showed me over their plant, of which I will try and give a brief description, starting first with the clay, which is gotten from low and level land, averaging six to twelve inches deeper than at Alexandria; this is drawn in cars by horses to the machine house. They have three soft mud machines, the first one being a Pott's Horizontal; this machine Mr. Piner said, was put in four years ago and has been run almost every day since, excepting Sundays and holidays, a day's work being 33 M. brick. The clay is worked direct from the bank; at this season it is very dry and hard. It is passed through a Pott's Disintegrator then into the brick machine. I was surprised to find such good work being done with such clay, it was thoroughly tempered, the brick made having clean sharp corners, and smooth surfaces. They use an Iron Clad Dryer for drying the brick made on this machine, the same was working nicely, they have six large clamp walls for burning, holding from 300 M. to 500 M. brick.

Passing on to another part of the works I found they were just starting a new all iron Horizontal machine made by C. & A. Potts & Co., which I found to be a very large and heavy machine. In fact I never saw one to equal it, it was my idea of a brick machine. It

was working very smoothly for the second day. They were making good brick and lots of them. The brick made by this machine are dried on a hot floor. The superintendent stated that they had always had trouble to get a machine strong enough to work their clay stiff enough to admit of their being dumped on the floor and not spread while drying. The brick shown me on the floor looked as if the new machine was doing the work for them, as they were as true and straight as those dried on the pallets. They have eight clamp walls on this side of the yard having a capacity of 250 M. to 300 M. brick. They use gas for burning. The superintendent informed me that they still have an abundance of gas after five years. The superintendent said he thought they were making the best brick in Indiana. Those I saw in the kilns were very nice. The company does not depend upon the local market, but ship brick into many points in northern Indiana, some going into Ohio and Illinois.

I also visited a smaller yard at Marion but it was not in operation. They use the Monarch, dry the brick on pallets, set in portable racks, these racks are trucked to the machine, and pallets placed on them, one man with a specially made truck picks up truck and all and wheels it into long sheds, the floors of which are raised five feet above the ground. On the ground under these floors they run gas pipes in which are drilled small holes through which the gas escapes and is burned, thus they obtain the heat for drying, taking about 36 hours to dry the brick. When dry the same style truck is used in trucking to the kiln, the rack and all being picked up. This avoids any danger of defacing the brick as when barrows are used, one trucker at the machine and one at the kiln handle the days work. The brick made looked well when set in the kiln. The ease with which they are burned with gas makes the old methods that we have to follow seem slavish and I am afraid I will be less content now than ever when burning with wood and coal.

A KENTUCKY BRICKMAKER.

#### AN AMATEUR CARPENTER'S SENTIMENTS.

Breathes there a man with soul so dead,  
Who never to himself hath said,  
When on his thumb the hammer fell:

—————!—————!—————!—————! ?

—Inland Printer.



## The Perfect Brick.

*Editor Clay-Worker:*

In your July edition, page 31, I found an article headed, "*The Perfect Brick.*" I read the same most carefully. The writer of the article appears to me, not to be fully conversant with the market or with the condition of "brickmaking" of to-day, or else he would not have started his essay with such a far reaching assumption, or, rather positive assurance and sweeping statement, "The perfect brick has not yet been made probably will never be \* \* \* \* \* There is no one among the brickmakers striving to produce a perfect brick as a product."

The writer of this article is merely acquainted with the operations of common brickyards, where *quantity* is preferred to *quality*, and entirely overlooks the fact that brickmakers of more advanced ideas strive to put upon the market a product of superior quality, of equal shade and size, and also of various colors, so as to assist the architects and builders in the exercise of their tastes in arranging fronts and facades, and it is to the credit of the "*brickmaker of to-day*," that he places in the hands of the architects and builders by his own efforts, and not through desires of the former, a product which demands recognition, because it is "perfect," and as perfect as perfect can be, and buildings in New York City, Philadelphia, Boston, etc., bear ample proof that "bricks" have been perfected to such an extent, that they have superceded stone or other materials of equal durability and neatness.

In some of the latest and most improved brickyards, or, as I prefer to call them, "brick factories," such methods as referred to by the writer of the article in your July edition are entirely abolished, and would never be tolerated.

The making of bricks, during the last ten years has steadily advanced and improved, and one well acquainted with affairs can say, that there never, at any time, have been better bricks made than just during the last year here in the East. I express you two sample bricks that you may see what Yankees consider "Perfect Brick."

G. OTTO ETTERICH.

[The sample bricks which Mr. E. sent us are very fine indeed. The edges are good, the texture fine and homogeneous, and the color bright and clear. One is a beautiful white brick, the other a pale

grey mottled with chocolate. They reflect great credit upon the maker, if they are being produced in merchantable quantities. As fine as they are, though, they are not *perfect*, and so proves the truth of Mr. Reep's statement, to which Mr. E. takes exception. The white brick is a full sixteenth inch thinner at one end than it is at the other. We do not mention this as a reflection on the brick but simply to indicate to Mr. E. that the word PERFECT may not be applied literally to any product of the hand of man.—EDITOR.]

## Philadelphia News.

*Editor Clay-Worker:*

Business is improving. Builders are doing more work. Building material which has been stagnant for several weeks is being called for.

The brick business has not been so good this season, and fewer men are now employed. Cleaning up works is being done in some yards. In some cases contracts have been annulled and orders cancelled. In other cases delays of delivery have been requested.

The Jarden Brick Company have been quite busy during the past season. They manufacture, very largely, fancy and colored brick and they are in good demand.

The city yards, as a rule, are well stocked, and are in a position to supply any reasonable demand. The last change in prices put brick as low as possible, and makers report, therefore, that prices are firm.

There is talk of opening some large brickyards at points a little more remote from the city; country yards have been doing very well. It is doubtful whether as much building will be undertaken next spring on account of this year's depression—but that is too far ahead to borrow trouble.

Our Trolley Companies have miles of streets torn up, putting down new pavements and trolley lines. Several million dollars will be expended before winter sets in. Philadelphia badly needs the new lines and the new pavements.

Our City Building Commission wants Councils to put their hands into the city's pocket and hand out about two million dollars to push work along on the City Hall, on which sixteen million dollars have been expended already, and which will cost four millions more to complete.

The city is building a big hump on North Broad Street, over the Pennsylva-

nia railroad on the New York division. Workmen are as thick there as flies around a molasses barrel in August.

Our brickmakers have stood the racket very well. There is not much to fear now. The skies are brightening, and prospects are improving. Our notion is, that the late fall and winter is going to be active. Wages have been very generally reduced ten per cent. outside of the building trades. These branches will probably escape any reduction, as the season is so near over.

ANON.

## Among the Brickmakers.

*Editor Clay-Worker:*

As I have been "a rolling stone" for the past month or so, I have neglected my rather pleasant task of trying to bore your many readers. So here goes once more.

Mays Landing, the present mecca of all land speculators of South Jersey, is without doubt covered with more sand, pine trees, underbrush and — mosquitoes than any other territory upon God's footstool, but for all these blessings (except the mosquitoes) a pretty fair quality of buff clay underlies the surface, and under the leadership of our old friend, Mr. Philip Gibson.

The Industrial Brick Company have erected a very large and complete plant for the manufacture of buff brick. The plant consists of very large clay sheds, two large water tube boilers, large engine of T. M. Nagle's make, of Erie, (my old home), two of Penfield's wet pans, elevators, Penfield brick machine, and steam and hand presses, a very complete dryer built after the Louisville patent, which I think leads all I have seen, so far, for it's allowing itself to be under complete control at all times; four Strasholm muffle kilns, of about 30,000 capacity each, with three Eudaly kilns of 100,000 capacity each, complete plant. All this is very conveniently laid out and well built. The clay is brought to machine by cars on narrow gauge railroad from clay bank several hundred yards from plant.

A peculiarity of this clay is that when burned soft the brick are almost red, and after it is properly burned—which, by the way, takes an intense heat—the brick come from the kilns a very nice buff color.

Of course, this being their first season, many obstacles have had to be overcome and the panic coming on during the past month or two has made building



operations somewhat slow. Very few of the brick made by this company have as yet found a market. The residents and employes of Mays Landing will be sorry to have Mr. Gibson leave the management of this large plant; his resignation was handed in on the last of August, to take effect immediately. After a visit to the World's Fair he expects to rest up awhile, as he has indeed been a busy man for many years in the manufacture of brick and erection of plants. A monument to his skill in the latter line is the very large plant at Clayville, N. J., which is said to be the most complete of the kind in this State.

During a vacation of three days last week, we took a flying trip to our old stamping ground, Perth Amboy, stopping on the way in the city of Brotherly Love to admire the Philadelphia and Reading R. R. Station, which is now almost completed. This building is most certainly a monument to the brick and terra cotta manufacturers of America. The front on Market Street is *very* imposing, being composed of a reddish brick with an immense quantity of buff terra cotta of *extremely* handsome design, topped out with a very rich cornice of dark chocolate colored terra cotta, making truly a very handsome design. We noticed also an extensive addition to the Broad Street Station, of the Pennsylvania R. R. Co., this is carried out with red brick and terra cotta to match the older part. For all the New York bankers claim the Philadelphia men are slow, these grand structures lead a tenderfoot to believe that after all 'tis not always the *fly* men who build to last. Undoubtedly Philadelphia is growing wonderfully, and those few genuine Quaker dressed ladies one meets upon the streets there are just *too* nice looking for anything.

We found at Perth Amboy that while many friends were talking hard times, the terra cotta business is fairly good, and during our few minutes visit to the old works a regiment of good looking fellows filed up to the paymaster's window and took their wages of *gold* just as though Uncle Sam never made any other kind of money. We found many changes, at the place where formerly a very large force of men were engaged making all manner of brick, only a small force is retained. The firm has given up that branch of the clay industry almost entirely. Mr. James Toomey, formerly with this firm is now with The Staten Island Terra Cotta Lumber Co.,

of Woodbridge, N. J. Mr. C. T. Fitch, who left this place also sometime ago to take the management of the Isaacs Works back of Amboy, has also resigned and is now in Buffalo on vacation, so he writes me, and before his return expects to see the World's Fair.

Our friend Mercer, who has erected all the kilns at this great big plant, I was somewhat surprised to find with a trowel in his hand spreading mortar again. When I saw him last he seemed so much like a bloated bondholder that this mortar business rather surprised the writer. When he caught my smiling "phiz" he said, "Well, you *would* have a change in the administration." "Yes," I answered, "*you* would vote for a change and you have got it in the — neck. However, brother George, if you don't go out across the street too often, I guess you will be able to stand it, until I get a chance to vote again."

The city of Perth Amboy is destined to be the center of a large clay industry in the near future. Vast quantities of splendid clays are found in the surrounding districts, and this with, good shipping facilities via R. R. and water, will always be an inducement to capital that may want to seek an investment.

I understand that the Jarden folks of Philadelphia have made a change in the management of their yards also, I did not learn who the new superintendent is, however. As I expect to make the East my home in the future, I shall not endeavor to tell you *all* the changes I perceive, in this one letter, as it is already too long, but shall reserve until my next something that may interest your readers. W. R. O.

Mays Landing, N. J.

#### Ohio Valley News.

*Editor Clay-Worker:*

Never since this section of the upper Ohio Valley has developed into a clay manufacturing region, has business been as dull among the sewer pipe and brick manufacturers. It would indicate nothing to say collections were slow, for at present such a statement is proverbial, but the demand for the products is light and prices miserably low. Nearly all the works however are running with their force of employes much reduced, in order to keep their stock up.

There is a variety of opinions among the manufacturers regarding the business prospects. Some look for a revival of business before winter sets in, and others think trade will be comparative-

ly light until the spring. All are wishing for a mild winter, as then more or less paving and sewer work may be done, which has been prevented by the present financial stringency.

The Royal Clay Mfg. Co., of Uhrichsville, Ohio, have resumed operations, at their plant after a brief suspension, with about half their former force.

Superintendent McElfresh of the Standish Clay Mfg. Co., of Andersons, W. Va., notified his employes that the plant would at once suspend operations, and their services would not be required until next May.

They have plans and specifications for a new and most complete plant to be erected on the site of their present one, and will contain 100,000 feet of floor space.

During the present financial trouble the brick manufacturers and sewer pipe men were much more fortunate than many other manufacturers in different lines of business. While they were compelled to close down on account of their bankers being unable to accommodate them with currency for their pay rolls the clay men were able to effect better arrangements with their employes. Some of them agreed to accept store checks for the living necessities and allow the balance to stand for the present, others paid a small percentage in cash and gave notes for the balance, and another firm called the men together and stated they had so much in finished pipe and brick, and had good accounts due them to double the amount of their indebtedness, and their property was unencumbered and said they could not get money for their pay roll, but if they would agree to work they would divide the money as it came in from accounts due, and not insure them any regular pay day. The men agreed to these terms and work was resumed.

The Jno. Porter Co., of New Cumberland are shipping about thirty cars of paving brick per day, mostly from their stock which is being rapidly reduced, and they are making arrangements to resume operations at their Union and Sligo works which have been closed down quite a period.

They have just completed the mammoth continuous kiln at their Clifton works, and if it is a success they will immediately construct three more. This kiln is looked on with much interest by clay manufacturers, and if it does what the inventors promise for it; it certainly will be a great labor saver, and a great economy in fuel.

Many of the brick firms took advantage of the slight rise in the Ohio River and shipped quite a lot of brick in barges to points in the south, netting them a neat profit in the saving of freight rates, as they had figured on delivery by rail, and by water is much cheaper. BUCKEYE.



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**THE BUSINESS OUTLOOK.**

The world of business is moving once more. With the bank reserve in New York assuming its normal condition, with an increase in bank deposits throughout the country, and through a feeling that the worst is past, there is no occasion why an irrational panic should not lose itself in the abundance of our natural resources. Congress has done what was expected of her in the house, and the senate may follow suite. In the meantime the general condition improves, and the merchant who checked out his balance and put it in the safety deposit vault, and the farmer who took his money from the country bank and buried it in the garden is now returning it to the bank. We talked with a banker in a little town of four thousand inhabitants a few days ago who said that one-fifth of his former deposits had been returned to him within the week. In our own city there are now vacant safety deposit boxes. A few days ago the demand was much greater than the supply. Some of our banks which a few weeks ago were carrying a little over \$600,000 in currency now have over \$1,000,000. They are beginning to let it out. In any bank in this city one can see evidence of the return of currency which was taken out in the spirit of panic. Building enterprises which were shut off for want of funds are now resuming. Loans which could not be

made from Eastern companies for new building enterprises are now being considered. A contractor who had a large amount of work cut off for want of supplies and which he thought would be carried over until spring, now says that work is being resumed. It now appears that the return to prosperity and its outward manifestation will be quite as rapid as the recent decline.

**THE EMPLOYERS OPPORTUNITY.**

Now is a good time for manufacturers to do effective work in removing many of the evils involved in the labor question. It is the time to cut out dead timber and so completely do away with the pernicious influence of labor agitators. A great deal of the trouble of recent years grew up slowly, and, for a time, unconsciously to many of those who were large employers of labor. The troubles of the last decade were practically the first of a very serious character with which the ordinary manufacturer has had to contend. The railways and other very large corporations have known these troubles before, but the small manufacturer, those who employed a comparatively limited number of men, have not known the serious annoyance of arbitrary dictation from organized labor until within the past few years. These troubles have grown so serious, however, as to threaten the life of many industries. It is clear enough that during past years manufacturers generally were without experience in handling labor troubles, as they were without knowledge as to what labor troubles really were. In recent times we have all looked upon it, we have felt its influence and it is to be hoped we will be wiser in dealing with it in the future.

The ideal condition will be attained when exact justice is dealt out by each side. However, few of us are ideal beings and we can only be expected to live up to the best that we know. An employer who steps boldly outside the lines of justice is sure to suffer under any circumstances. The employee may be arbitrary and yet be sustained by a large organization. An organization of intelligence and justice is not to be feared. One of ignorance, selfishness and cupidity alone can be dangerous. The owners of manufacturing property and the employers of labor can never do full justice to labor itself, while their hands are tied or while their business resources and business prosperity is

effected by unjust and unreasonable interference with proper business methods. Now is the time to do much to prevent future trouble. Standing in the light of past experience, we can study the cause of previous trouble, see how it grew upon us, note where the seed was planted and how, by insidious movements, many industries were seriously threatened and not a few grievously crippled.

The successful operation of any business demands equal justice both for the employer and the employed. One of the best business organizations in this country is the Pennsylvania railroad company. It is so large as to appear almost unwieldy in dealing with help. The company is loyal to its help; they expect loyalty in return and they are in a position to enforce discipline. Any attempt to do anything which will prevent the company from taking energetic and prompt action in enforcing discipline is nipped in the bud. To prevent a recurrence of trouble in the future our brickmakers and clayworkers and those who manufacture supplies for them should take heed that no disloyal and disturbing element is retained. Foster a spirit of loyalty by just methods encourage self-reliance that employees may be less susceptible to the influence of mercenary and irrational agitators. Thus may be secured immunity from labor troubles in the future.

**AN OBJECT LESSON IN PATRIOTISM.**

During last week there was held in our city the annual meeting of the Grand Army of the Republic. The knowledge of this meeting and its doings has gone out through the country at large. Those who have not participated in it, it is to be hoped, have been influenced by its doings as the record thereof has gone before them. The careless man is apt to say that ours is not a patriotic nation, but if he looks back upon the history of the country he can see nothing to justify such an opinion. Beginning with the war of American Revolution there was a practical demonstration of the spirit of a patriotic nation—seven long years of struggle in a new country with poverty and all of the horrors of war. Our great civil struggle, beginning in 1861, affords an example of valor, of love of country and an affection for the flag and all that it typifies than which there has been none greater in the history of civilization.



Our streets during the last week have been filled with the brave boys in blue. The flag has appeared from every house and the emblem and spirit of patriotism has been felt by all alike. There is no greater tie which binds men together than that of a common experience in suffering and exertion for the benefit of a great cause. Those of us who were too young to enter into that great contest should endeavor to understand just what it meant to leave ones family, go into a devastating war without the knowledge of possible outcome or the effect upon those at home. Those of us who have wives and children to-day must think not only of what it means to face death as a soldier must, but what it would mean to turn our backs upon home and march off to war when there was in all probability no provision for the proper care or sustenance of the loved ones left behind. A very large portion of those who went into the war, went under just such circumstances. When we realize this we know what true patriotism means. It should be a part of every child's education to know what has been done in the name of the flag. This knowledge need not be imparted solely through the memory of a civil war, but through the general history of our country, which is filled with deeds of valor and patriotic expression. If the history of our civil war was properly studied and properly taught in our schools the last remnant of sectional feeling would disappear and a high and noble regard for the flag and the nation would take its place.

#### INDIANA'S MONUMENT.

##### To Her Silent Victors.

We have, in Indianapolis, a Soldiers' Monument, than which there is none grander or more beautiful in the world. This statement may sound like an Americanism—the careless saying of “the Greatest in the World.” However, our characterization of it is knowingly and cautiously made. Artists who have travelled abroad confirm it. Let anyone look upon our monument or a good photograph of it and then ask where is there one more beautiful. It is not in London, nor in the United Kingdom; nor is it in France where great monuments are so abundant; it is not in Berlin, or in any of the cities of the German Empire; nor is there anything in the southern countries which approaches it. Where else shall we seek? It was

an inspiration to look upon it during the week of the Grand Army Encampment; it was beautifully decorated and at night wonderfully illuminated by thousands of electric lamps. On the top, two hundred and sixty-five feet from the ground, is a beautiful bronze figure, Miss Indiana, she is called. Certainly it is a credit to our country to have in it such a work of art as this.

#### OUR VISITORS.

Genial Captain S. P. Crafts, of New Haven, Conn., spent encampment week in our city and was a frequent and welcome visitor to our sanctum during that time. Owing to the fact that his factory was still in operation, he did not feel that he could spare the time to go on to Chicago and visit the Fair, but said that he expected to be there in January when the N. B. M. A. will meet in annual convention.

R. L. Jones of Mershon & Co., Saginaw, Mich., and his daughter, were in attendance at the G. A. R. Encampment, and favored the CLAY-WORKER sanctum with a brief visit. Mr. Jones says that, in common with other manufacturers, his company is doing very little business now, but expects a change for the better soon.

Mr. and Mrs. Irving Estey, of Society Hill, S. C., looked in on the CLAY-WORKER on their way home from the World's Fair, on the 11th. inst. Mr. Estey has had a fairly good year, the demand for brick being fully up to that of former seasons.

Many manufacturers are now arranging for various improvements in their works for the fall season. The putting in of new machinery of large capacity will leave them with small machines and appliances that are, to all intents and purposes, as good as new, which may be easily disposed of by a small “ad.” in our “For Sale, Wanted, Etc.” columns.

#### A NEW PLANT DOING WELL.

A great sensation amongst the brick-makers at Des Moines, Iowa, was caused a few days since by the introduction into that market of home made pressed brick, made by the Dale-Goodwin Pressed Brick Co., which lately started a large yard near that city. During the past few years several pressed brick companies starting there, have for some cause or other failed, and it has been

supposed that the Des Moines clay would not make pressed brick, but the first lot turned out by the Dale-Goodwin Co., are as fine as were ever seen in Iowa; the weight and color being equal to the celebrated St. Louis brick. Mr. Goodwin the president of the company purchased their land for the purpose of making paving brick, but as two other large companies were just opening up for the same purpose, thought the paving brick business would be over done, so his company concluded to try the pressed brick business. “I then went,” said Mr. Goodwin, “to look for pressed brick machinery, and after examining all others, I bought the Ross-Keller six mould machine on trial, and after giving it a thorough test, I have no reason to regret my choice. The press was guaranteed to make 30,000 brick in ten hours, but we have made 36,000 to 37,000 with it right along, and feel confident we could make 40,000 per day with perfect safety. We have a 150 horse power Corliss engine and two 66 inch tubular boilers, and it is our intention to put up a larger plant, we have congratulated ourselves many times upon changing our minds and making pressed instead of paving brick.”

#### NEW INVENTIONS.

The following is a list of patents appertaining to brick, tile, terra cotta, sewer pipe, pottery, etc., and the machinery used in their manufacture, issued since our last number:

- 501,620. Brick or Tile Cutting Machine. Samuel Jeffries, Stroud, Eng.
- 501,980. Brick Kiln Furnace. I. C. Wheeler, Carthage, Mo.
- 502,738. Brick Truck. Jas. F. Mock, Muncie, Ind.
- 502,987. Brick Protector. Nils Olsen, Superior, Wis.
- 503,524. Automatic Cutter for Brick and Tile Machine, Davis Brown, Decatur, Ill.
- 503,619. Clay Screen. John C. Schroeder, Onkama, Mich.
- 503,729. Regenerative Kiln. Edward Walsh, St. Louis, Mo.
- 503,958. Brick Machine. Samuel E. Haskins, Avoca, N. Y.
- 504,141. Brick Machine. A. D. Thomas, Keokuk, Iowa.

THE *Cincinnati Tribune* says an advertisement is “The Limited Express on the way to success.”



Written for the CLAY-WORKER.

## THE TRIAL OF METAL VERSUS CLAY.

BY LIZZIE CRARY.

ONE day there rose a contest among the sons of men  
 As to which of all the metals was most enduring, when  
 A modest little maiden, in a robe of sombre gray,  
 Came up for recognition, and said her name was "Clay,"  
 Came up for recognition, and said she alone  
 Of all earth's many products, should sit upon the throne  
 Of change defying power, by reason of her age,  
 For the earliest of earth's history was written on her page.  
 'Twas then they were astonished, these sons of men I say,  
 For the modest little creature was bonnie as the May,  
 So very fair and youthful that they would not take her word,  
 Until from Time, the tester of all things, they had heard.  
 So they summoned Gold and Silver, and their brother Iron ore,  
 From the mines where they had hidden, in the ages long before;  
 Copper, Lead, Tin, Zinc, a jolly band of handsome brothers they,  
 All to stand the test of Time in the trial against Clay.  
 While the sons of men were waiting, all impatient to begin  
 This momentous trial, hoping that the metal side would win,  
 From his realm at their bidding, came the monarch wise and old,  
 Holding in his hand the secret of a destiny untold.  
 Then he called the shining metals, and placed them one by one,  
 In the crucible of years, where the testing must be done;  
 And alas! they came forth tarnished, eaten with corroding rust,  
 Worn away, their beauty vanished, turning slowly into dust;  
 Faded, faded, like the glory which mortality may own,  
 Lasting but a day, then passing to oblivion's unknown.  
 Then he placed the small clay maiden, in the crucible, and lo!  
 When he drew her forth, no traces of the trial did she show;  
 Fair, untarnished, just as perfect as when first she came that way,  
 And they placed the victor's laurels on the brow of modest Clay.



## AN AMATEUR.

When Polly takes your photograph,  
 Woe unto you if you should laugh;  
 If you should sneeze or even blink,  
 Or let her catch you in a wink.  
 The breeze, *pro tem.*, must cease to blow,  
 The sun must shine exactly so;  
 All nature work in her behalf  
 When Polly takes your photograph.

E. H. B. in Truth.

## TRUTH AND POETRY.

IF you'd sail o're the billows of business as light  
 As the seamew skims ocean by day and by night,  
 Remember these words—you will find them pure gold—  
 There are *Six Points of Trade* for your compass to hold.

FIRST, never forget that *Few Goods Sell Themselves*.  
 This is oft shown to bankrupts by very full shelves.  
 Then SECOND,—a fact every day helps to prove—  
*Good Printing Brings Business*, starts goods "on the move."

THIRD, armed with good printing—and good should be best—  
 The right kind of salesman, polite and well dressed,  
 Binds the seller and buyer in unity bond,  
 Dead sure as grim death or a government bond.

FOURTH, always remember, as oft has been seen,  
*Mean Printing, Mean Goods* may too frequently mean,  
 Or at least, if the printing is not of the best,  
 A grave doubt of your goods it is apt to suggest.

Now you can't have good printing or anything nice  
 If you don't (in this world) pay a fairly good price.  
 So then as to FIFTHLY—keep that fact in sight—  
 Our prices are low as can be—to be right.

SIXTH AND LAST in our bundle of honest advice,  
*Beware of the Printer whose Cheapness of Price*  
*Is his chief commendation*,—for generally, too,  
 'Tis the only advantage he offers to you.

—From Specimen Book issued by L. Barta &amp; Co., Boston.

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## BOOKS FOR BRICKMAKERS.

"BRICKMAKER'S MANUAL,"

Morrison and Reep, \$3.00

"BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

"TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

"DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of  
 them to one address for \$5.50. Address T. A. Randall  
 & Co., Indianapolis, Ind.



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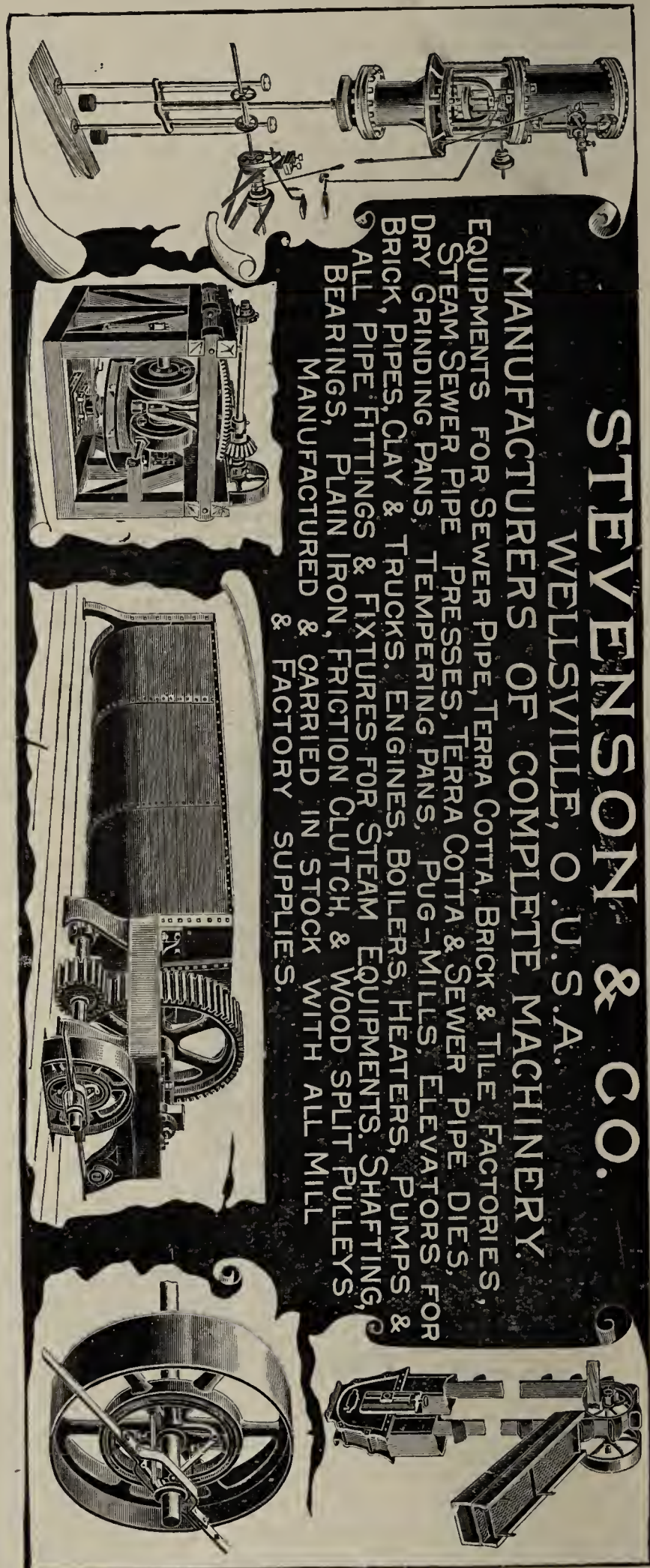
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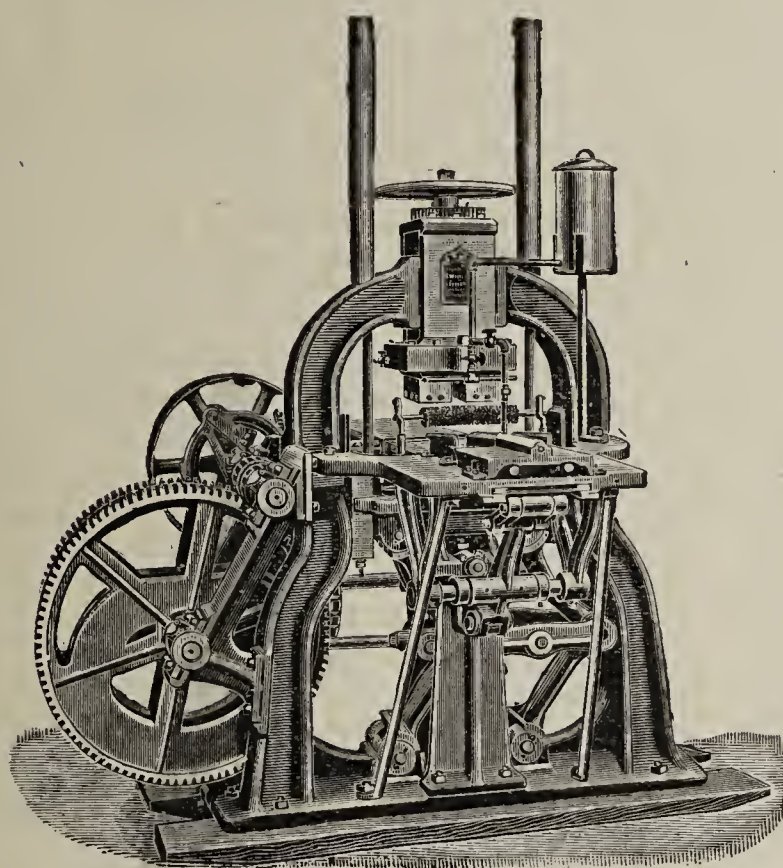
**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS, FOR BRICK, PIPES, CLAY & TRUCKS, ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS, MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.



THE LARGEST LINE AND GREATEST VARIETY OF  
RE-PRESSES IN THE WORLD.



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✦ The Columbian Special ✦  
RE-PRESS.

The No. 1 Perfection,  
The No. 2 Perfection,  
The No. 3 Perfection,



The Columbian,  
The Columbian Special,  
The Columbian Grand.

C. W. RAYMOND & CO., Dayton, Ohio.



## EDITORIAL NOTES and CLIPPINGS.

Royersford, Pa., is to have a new fire brick plant.

A brickyard is to be established at Milldale, Ky.

Boothwyn, Pa., is to have a vitrified brick factory.

C. H. Chamblin will establish a brick plant at Paducah, Ky.

The brickyards at Springwells, Mich., has closed for the season.

The Camp Brick & Tile Co., at Greentown, Ohio, have resumed work.

Fire clay in large quantities has been discovered near Brockwayville, Pa.

The Sioux City and Sergeant's Bluff Brick Co., Sioux City, Ia., have resumed work.

Jno. Adams, Philadelphia, Pa., will add a brick drying kiln to his brick plant.

The Tuttle Brick Co. has been incorporated at Decatur, Ill. Capital stock \$18,000.

Dubois Press Brick Co., Dubois, Ind., has been incorporated, with capital stock of \$40,000.

A new sewer pipe works will be established at Penrith, Va., by the Standish Fire Clay Co.

The Barnard Brick Works of Bellaire, Ohio, will increase their capacity to 35,000 brick daily.

A brick factory will be established at Eddy, N. M., by Messrs. Every, Ellice, Bryant and Skeats.

The Novelty Tile & Terra Cotta Works, Stoutsville, Ohio, are in the market for a flower pot machine.

The brick works of Miller Bros., Allegheny, Pa., was destroyed by fire the 24th ult. Loss \$12,000.

A brick plant will probably be established at Streator, Ill. Mr. Leech and B. T. Stofer are interested.

The Cartwright & Green pottery at Leetonia, Ohio, resumed work the 21st ult., after a ten weeks shut down.

Chas. W. Allen, foreman of the Hydraulic Pressed Brick Co., of Findlay, Ohio, died on the 20th of August.

Dempsey's brickyard, at Dempsey's, Pa., which has been closed for machine repairs the past week has started up again.

If you want anything you haven't got or have something you don't want, read or advertise in our "Wanted, For Sale Etc." columns.

The mayor and city councils of Holidaysburg, Pa., have been held in contempt for failing to pay the claims of A. A. Stevens and the Asphalt Brick Company of Philadelphia. The claims amount to \$10,000.

Fred Minzing, of Delphos, Ohio, has purchased twenty-four acres of clay land adjoining his present plant, which he will enlarge.

When writing to an advertiser, our readers will confer a favor on both the advertiser and publishers by mentioning the CLAY-WORKER.

J. W. Penfield & Son, Willoughby, O., announce on page 295 that they now offer the trade a new and improved dry press brick machine.

The Warren Brick Co., Jamestown, N. Y., that has been shut down for a short time past, opened up the 4th inst. with a full force of employees.

L. M. Patterson and A. S. Grow have purchased 300 acres of fire clay land near Lock Haven, Pa., and a brick plant will be erected next summer.

A company, of which H. E. Hallwood of Columbus, Ohio, is at the head, will be organized at Saginaw, Mich., for the manufacture of paving brick.

The brick and tile factory of J. M. Campbell & Son, at La Harpe, Iowa, was destroyed by fire the 3rd inst. Loss about \$1,500, with no insurance.

T. J. Halstead, Goodland, Kan., writes that he wants a soft clay brick machine and will be pleased to receive catalogues and price lists from manufacturers.

An iron wedge was thrown with the clay into the disintegrator at C. P. Merwin's brickyard at Berlin, Conn., causing a breakage and about \$800 damages.

The summer residence of brick manufacturer James C. Dobbins, at Collingswood, N. J., was robbed and \$300 in cash and some jewelry and clothing carried off.

The Valley Camp Brick Works, formerly owned by J. W. Robinson, has been purchased by Jacob Will, of Kensington, Pa. Work will be commenced at once.

The Westfield Brick Co., Westfield, Mass., lost several hundred cords of wood by a forest fire recently. The company suffered from just such a loss last year.

The South Bend Improvement and Construction Co., commenced burning brick with oil the first of this month, fires being started under a kiln of 170,000 bricks.

Groverman & Behlmer's brickyard at Summerville, S. C., was damaged to the extent of \$600 by a storm recently. Mr. Glenn's yard at Camden, S. C., was also damaged. Loss \$200.

Albert Bush has brought suit against the St. Joseph Paving Brick Co., St. Joseph, Mo., for \$10,000 damages for injuries received while employed by the company to clean out a clay crusher.

There are 7,000 idle pottery hands in Trenton, N. J., many on the verge of destitution. The eight potters in the

syndicate known as the American Pottery Company have also shut down, throwing out 3,000 hands. Potters have large stocks on hand and are shipping very few goods.

The brick machinery is being put in the new Meyenberg fire-proofing works at Keokuk, Iowa. It is thought now that everything will be in readiness to start up by the middle of this month.

Jno. C. Schroeder, Onkama, Mich., has invented a clay screen and separator, also a cut-off device for which he has secured letters patent. He wants to sell the right to manufacture same on a royalty or otherwise.

The Omaha Paving Brick and Tile Co.'s plant has been purchased by W. J. Welshan and Geo. W. Port of that city. The plant will be overhauled and put in operation next spring under the firm name of The Nebraska Clay Co.

The C. H. & D. R. R. have issued a handsome panoramic view, five feet long, of Chicago and the World's Fair, showing relative heights of the prominent buildings, etc. Also a handsome photographic album of the World's Fair buildings, either of which will be sent to any address postpaid on receipt of 10 cents in stamps. Address D. G. EDWARDS, General Passenger Agent World's Fair Route, 200 W. 4th Street Cincinnati, Ohio.

The J. H. & D. Lake Co., have been in their new works at Massillon, Ohio, for some weeks and report a very satisfactory business, considering the dull times. They have a large, well-equipped plant, and are working about two-thirds of their usual force on full time. The business of the company has been practically built up by judicious advertising. Having a good device, with a large field, they have not waited for the slow and often uncertain results from agents and travelling men, but have aided both these methods by extensive use of printer's ink. Their sagacity and push achieved success.

THE IRON KING Brick Machine is introduced to our readers for the first time on page 278 of this issue. The Iron King is a product of the inventive brain of Mr. W. J. Woolley, well known to the clayworking craft as the inventor of the "New Departure" Tile Mill and other clayworking machinery. It has been in successful use now a year or more, has passed the experimental stage and proven itself to be a brickmaker of superior quality and capacity. For full description of the machine, including the special features which make it very desirable, address the Woolley Foundry and Machine Works, Anderson, Ind.

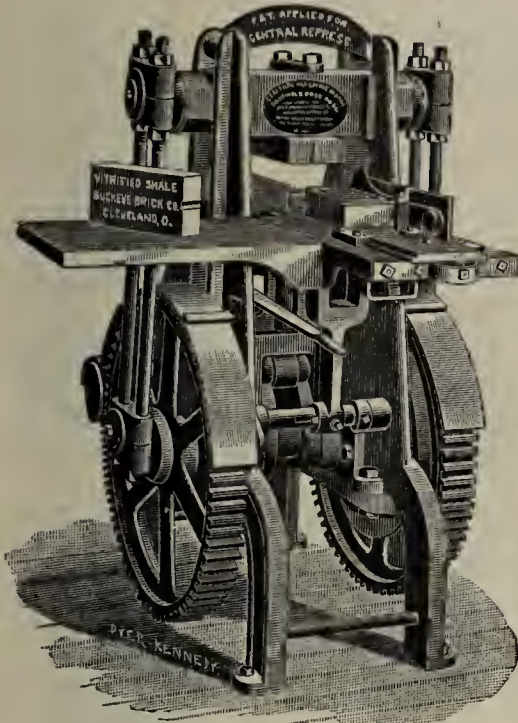


# CENTRAL MACHINE WORKS,

226-236 Abbey St., CLEVELAND, OHIO.

—MANUFACTURERS OF—

## The CENTRAL Power Repress.



It is the most complete ever offered to Brickmakers.

The capacity is from 12,000 to 15,000 brick per day.

It does the same work as others of two and three times the weight.



ALSO MANUFACTURERS OF

Brick Machinery of all Kinds.

Write for Descriptions.

## FIRE BRICK.

Below are analyses of the PLATT BRICK & FIRE PROOFING CO.'S Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

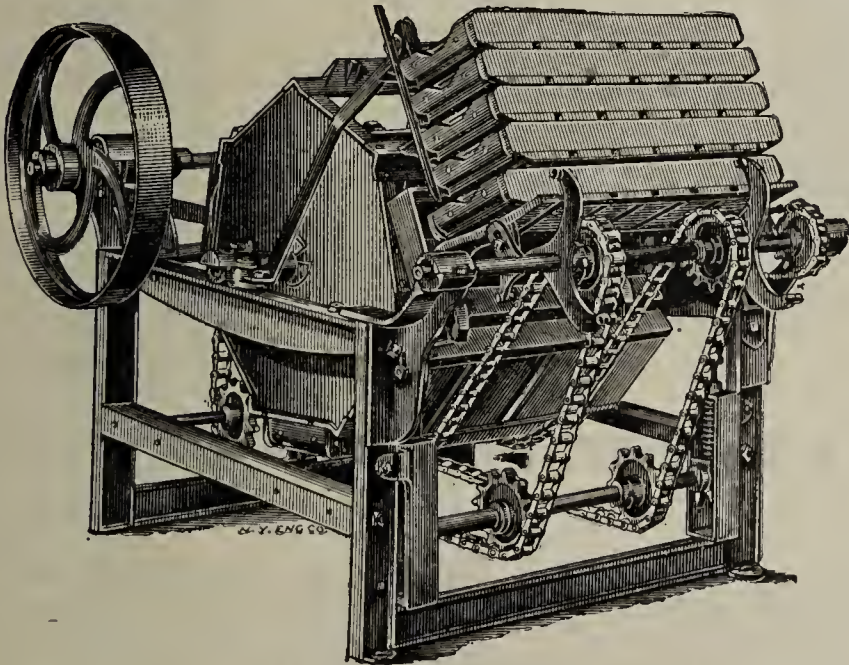
Analyses by W. S. Robinson, Chemist, Omaha, Neb.

Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick. Address

PLATT BRICK & FIRE PROOFING CO.,  
706 Youngerman Block, Des Moines, Iowa.

## J. A. BUCK'S NEW CHAMPION BRICK MOULD

### SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine—having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letter patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications to

J. A. BUCK, No. 76 Oneida St., COHOES, N.Y.

[Mention the Clay-Worker.]

### A GOOD MACHINE.

SALT LAKE CITY, Utah, }  
Aug. 25, 1893.

STEDMAN'S FOUNDRY AND MACHINE  
WORKS, Aurora, Ind.

Gentlemen:—The Pulverizer we purchased of you this spring (44in.) works to perfection. It prepared clay for 2,000,000 brick in the months of May and June, with no perceptible wear; in fact, it simply got to work when the financial depression set in, and will probably remain idle until silver is restored to its proper place as money.

We heartily recommend the machine to any and all Dry Press Brick manufacturers. Respectfully,

SALT LAKE PRESSED BRICK CO.,  
[Signed.] W. S. Simkins, Mgr.

### WILL WORK TEN HOURS A DAY.

The following letter recently came under our notice, and as it is of interest to the brickmaking trade, we take the liberty of publishing it.

MALVERN, Ohio, July 28, 1893.

C. W. RAYMOND & Co.,

Dayton, Ohio.

Gentlemen:—Referring to your letter of inquiry of July 21st, relative to the use of the Columbian Special Re-press, we have to say that we have had the press in constant use since it was placed in position, making the "blue granite" block, the "blue granite" paver, the McReynolds patent paver, and our "Standard Paver," at a rate of 25,600 per day of 10 hours, running the machine at a uniform speed of 130 revolutions per minute. We regard the machine to be perfection in all that the word implies, easily accessible, light running, durable and absolutely noiseless in all its construction.

The machine not only re-presses the above number of brick per day of 10 hours, but does it perfectly, and every brick is a photograph of itself and they are not a shapeless mass of pressed clay such as are frequently placed upon the market as high grade pavers by some of our competitors. We are highly pleased with the machine and the success of the sales of re-pressed product, and will cheerfully answer any inquiries which may be referred to us.

Yours truly,

THE CANTON & MALVERN CLAY PAVING BRICK CO.,

Per JOHN S. MELBOURNE, Gen'l Man.



## FOR SALE, WANTED, ETC.

**16** Advertising rates in this column 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**FOR SALE CHEAP.** A 3-mould Boyd Dry Press, in first-class order. Been very little used. Good reasons for selling. Apply to Box 174, 91 c. care "Clay-Worker."

**FOR SALE.** Eagle Soft Mud Machine, in good condition, with gearing for both steam and horses. Will exhibit working here. \$150.00 F. O. B. ELFER BROS., Pugh P. O., Lafourche, La. 91 c.

**WANTED.** A second-hand Chaser Clay Mill, for potters use. Give size, make and price. Address, "X," 91 C. care "Clay-Worker."

**WANTED POSITION.** A practical brickmaker as foreman or burner. Experienced in burning and setting of bricks, in up-draft, down-draft and continuous kilns. Best recommendations. Address, "A. T.," 91 d. care "Clay-Worker."

**WANTED.** Party with experience and some capital to take an interest in paving brick plant. Only one in city of 30,000 people. Address, W. R. UPDEGRAFF, Station A, Springfield, Mo. 92 cm.

**WANTED.** Position by a man thoroughly practical in every detail of the manufacture of paving and building brick, competent to superintend erection of plants, good burner, best references. Address, PRACTICE, 91 lp. care "Clay-Worker."

**WANTED.** A situation as foreman or superintendent of brick works. Thoroughly competent to take entire charge. Understands various methods of manufacture, but would prefer a dry press plant. The best of reference as to character, ability, etc. Address, J. W., Box 7, 8 tf. d. Care "Clay-Worker."

**FOR SALE.** We have on hand at Louisville a very fine brick machine, manufactured by the E. J. Codd Co., Baltimore, which manufactures brick from tempered clay. This machine is new and has never been used; will sell same cheap for cash. Please address C. B. COMPTON, 91 d. G. F. A., L. & N. R. R., Louisville, Ky.

**FOR SALE.** New tile and brick plant (only one in the State), clay inexhaustible, will make fire brick, paving brick, drain tile, sewer pipe and the finest grade of pottery. A splendid chance for a man with capital; owner has not enough. Cheap at \$10,000. Will be sold for \$6,000. A. E. BEADLE & SONS, Little Rock, Ark. 91 dm.

**FOR SALE.** A nice, small brickyard containing 13 nice acres of best clay, without stones; now in operation. A 26 year established business—100 yards from a switch and station of P. S. & L. E. R. R. Natural gas for fuel. Price of brick made here, \$8 per M. Reasons for sale, old age and failing of eye sight. A. STOLZ, Meadville, Pa. 93 c. m.

**WANTED.** Party with capital of \$12,000 to \$15,000, or part of above amount, to join advertiser in a lease of a brick plant, now erected and in splendid location, excellent shale and clay mixed. Will answer for street pavers or fine grade of front brick. Shipping facilities either by water or rail, first-class. With slight change in machinery this can be made a money making investment. Particulars from "W.," 93 k. care "Clay-Worker."

**WANTED—**Position as superintendent or foreman of brick works. Twenty-five years experience in the manufacture of all kinds of brick by dry press, repress, soft and stiff mud process. and can do the burning of same with wood, coal or fuel oil. Can give best of reference or bonds. All correspondence solicited. "A GOOD MAN," 7 tf 2p care Clay-Worker.

**SECOND-HAND MACHINES MUST GO.**  
1 Acme Brick and Tile Machine.  
1 Wallace Brick and Tile Machine.  
1 Centennial Brick and Tile Machine.  
1 Penfield No. 7 Special Tile Mill.  
1 Ohio Brick and Tile Machine.  
1 New Departure Brick and Tile Machine.  
1 Hoosier Brick and Tile Machine.  
Write for particulars. H. J. VOTAW, Decatur, Ill. 8. tf. d.

ELEVATORS  
..FOR..

Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.



## JEFFREY CHAIN BELTING,

—ALSO—

Malleable, Steel, Cable and Special Chains,

DESIGNED FOR.....

Elevators, Conveyors, Drive Belts,

FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc,

Send for REDUCED PRICE LIST. Address

THE JEFFREY M'F'G CO.,

New York Branch: 163 Washington Street.

Columbus, Ohio.



## NEW DISCOVERY KILN.

It Heads the Procession!

Patented April 13, 1866.  
" Nov. 17, 1891.

The New Discovery is THE KILN you are looking for if you want the BEST KILN EXTANT for burning ALL KINDS of clay products.

ITS SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES and SYSTEM IN USE. Those who are using it, and they are many, THINK SO TOO.

If you will investigate and learn what the NEW DISCOVERY CAN DO you will be WITH US.

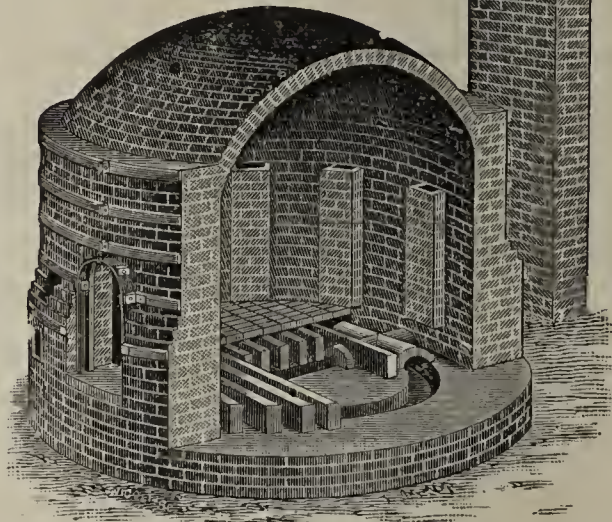
This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The New Discovery has PROGRESSED and is still at it.

I don't KNOW IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

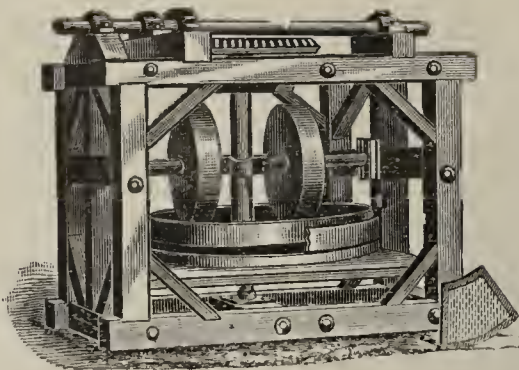
It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

For circulars, address.

E. M. PIKE, Chenoa, Ills.

EAGLE IRON WORKS,  
DES MOINES, IOWA.

FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

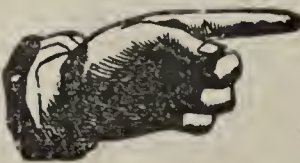
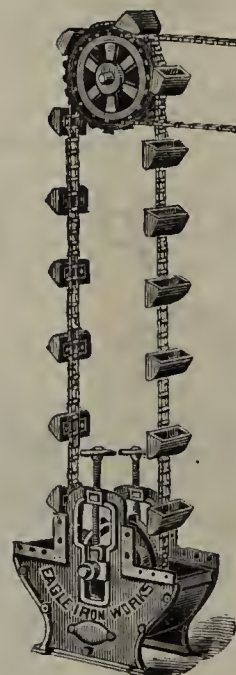


DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## IMPORTANT!

Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.



# ROOFING. VULCANIZED RUBBER ROOFING,



LIGHT, DURABLE  
and CHEAP.....

MUNCIE ROOFING WORKS,

Just the thing for—

MUNCIE, . . . INDIANA.

FACTORY BUILDINGS

F. W. SILKMAN, 231 Pearl Street,  
NEW YORK.

IMPORTER AND DEALER IN

## CHEMICALS, MINERALS, CLAYS AND COLORS,

For Potters, Terra Cotta and Enamelled Brick  
Manufacturers.

Correspondence invited. ....

### ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and  
Belleville, Ill.

ESTABLISHED 1859.

Red Pressed and Ornamental Brick of un-  
surpassed quality a specialty and can be  
furnished in any desired quantity.

Builders who desire the finest pressed brick  
at reasonable prices, are requested to write  
for illustrated catalogue and price list.

Rock-faced and Roman brick, red and  
brown, granite, mottled and other colors made  
on order.

Orders for special designs and ornamental  
patterns solicited.

ANTHONY ITTNER,

Telephone Building, ST. LOUIS, MO.

CLAY LANDS. For sale near New York City,  
fire brick clay lands, sewer pipe, paving  
brick, and red brick property. Water and rail.  
F. ROWLAND,  
8. 3. c. 171 Broadway, New York City.

TILE FACTORY FOR SALE. With two kilns.  
Shed room for eight kilns. Forty horse-power  
engine. Good Auger Mill. Machinery all in good  
condition. This property must and will be sold.  
If you want a bargain, address  
F. W. BEARDSLEY, Assignee,  
83 d. m. Gibson City, Ill.

WANTED—For cash, four mould dry clay  
brick press. State price and condition.  
Address McCAY & Co.,  
713 Oxford Pike, Frankford, Philadelphia, Pa.

FOR SALE—One Brewer Stone Extracting Clay  
Crusher, one Drake repress and a lot of wood-  
en pallets. Address  
CENTRAL CITY BRICK AND TILE CO.,  
7 tf d Peoria, Ill.

WANTED. Agents to handle a full line of dry  
press brick machinery. Address  
5 tf-1 Howe, Care Clay-Worker.

FOR SALE OR LEASE. The Norfolk Brick and  
Tile Company's plant. For particulars, en-  
quire of DR. F. VERGES,  
1. tf. 2p Norfolk, Neb.

FOR SALE—One Gregg Brick Machine, of latest  
pattern, that has had very little use. Six  
French Buhr Stones, almost as good as new. Ad-  
dress B. C. BENNER,  
73 d Thomson, Minn.

FOR RENT—One of the finest clay lots in Phila-  
delphia, clay 18 to 21 feet deep, or would like  
to correspond with any one desiring to enter the  
business. Address "A. R."  
73 c care Clay-Worker.

FOR SALE CHEAP. A "Chief" Soft Mud Brick  
Machine. Has been run one season and is in  
good running order. Address,  
3 tf 1 J. M. CRABILL,  
Clarinda, Ia.

FOR SALE CHEAP.—A Chief, soft mud brick  
machine. It is as good as new, having been  
used but little and is a good machine. Reasons  
for selling—going out of business. For full par-  
ticulars address, OLD MANN,  
6. tf. d. Care Clay-Worker.

I HAVE For Sale a Dunbar, Pa. One soft clay  
Brick Machine, manufactured by Nolan,  
Madden & Co., of Rushville, Ind. The machine  
has never run two days. Reasons for selling same  
will be given by addressing  
J. F. SCANLAN, Receiver,  
7 tf d Rushville, Ind.

I HAVE For Sale one soft clay Brick Machine,  
steam power with 18 molds, manufactured by  
Nolan, Madden & Co., Rushville, Ind. This ma-  
chine is at Deshler, Ohio, and has never been  
used. For particulars address  
7 tf d J. F. SCANLAN, Receiver, Rushville, Ind.

FOR SALE. One three-mold Andrews dry press  
Latest, heaviest pattern. In good order.  
Apply to MISSOULA BRICK AND SEWER PIPE Wks.,  
5 tf-d Missoula, Mont.

WANTED. To meet or correspond with a good  
party interested in silica brick and the  
manufacture of same. B. F. F.  
6. tf. t. Care Clay-Worker.

FOR SALE—Controlling interest in tile factory  
at Melvin, Ill. Entire interest in tile factory  
now operated by us at Bloomington, Ill. Also,  
one 40 horse-power engine, good as new. One  
Brewer & Co. tile machine, good as new.  
EDGAR M. HEAFER,  
7 tf. d. Bloomington, Ill.

WANTED. A situation as superintendent or  
head burner. Have had several years  
experience in both stiff clay and dry press pro-  
cesses and understand the work thoroughly. Good  
reference as to habits, etc., etc., address, D. C.,  
4. tf. T. Care Clay-Worker.

WANTED. A gentleman with \$10,000 to \$15,000  
capital, and the ability to take the business  
management of an enameled brick manufactory  
which is now in successful operation, but owing to  
lack of capital cannot supply the demand for its  
product, which is a genuine enamel and not a  
glaze. A splendid opportunity for a good man.  
For particulars, address LAKESIDE,  
4 tf. t. Care Clay-Worker.



**FOR SALE.** A brickyard containing 17 acres of land. Dry by the pallet system, 200,000. A Henry Martin Brick Machine, patent Elevator, and the best Continuous Brick Kiln in the world. Good clay for brick and tiling. Sold 3,000,000 brick the past year. There is always a good demand for brick, there being no stone quarry within 150 miles. Reason for selling, too much other business, my patent kiln taking a great deal of my attention. Address, **CARL F. KAUL,** Madison, Neb. 4. 12. c.

**PACIFIC COAST** Offers an exceedingly good chance for a first-class brickmaker who will invest a moderate amount of working capital. Have a new and complete machine plant, patent kilns, good clay, good market. No rains for six months. Hard brick \$8 to \$9. Annual consumption 125 million. First-class connections. Good credit. A better chance never offered. Will meet first-class party in the East, or here. **SAN FRANCISCO BRICK CO.,** 2 tf. d. Chronicle Bldg., San Francisco, Cal.

**FOR SALE.** Odd size moulds; not used. Eighteen  $8\frac{3}{4} \times 4 \times 2\frac{3}{8}$ . Fourteen  $8\frac{3}{4} \text{ in.} \times 4\frac{1}{2} \text{ in.} \times 2\frac{1}{2} \text{ in.}$  Used a few days, but perfectly good: Eleven  $8\frac{3}{4} \text{ in.} \times 4$  and 1-16-in.  $\times 2$  and 7-16-in. All six brick to the mold and 9-16-in partitions. These will be sold cheap. Address **WELLINGTON MACHINE CO.,** 7 tf. d. Wellington Ohio

**A BARGAIN**—A valuable pressed brick plant in the city of Chicago, well equipped with improved machinery, kilns, etc., which has been turning out a very high grade of front and ornamental brick for several years past, is offered for sale, owing to present owners having other interests which demand their entire attention. The plant is also well adapted for the manufacture of terra cotta. Address **"CHICAGO,"** 2 tf. d m Care "Clay-Worker."

**FOR SALE.** One La Tourette Brick and Tile Plunger Mill for Horse or Steam Power attachment, complete. Two brick dies. Eight tile dies from 2 to 8 inches. Two cut-off tables for either brick or tile. Machine is now in use and is in first-class working order. Only sold to make room for a larger one. Capacity 10,000 bricks per day from 2,000 to 8,000 tile, according to size. Price \$200. **JOHN S. HORLBECK,** 7 2 175 p Charleston, S. C.

**FOR SALE.** The whole or part interest in a machine made brickyard. Brick that are made are first quality and beautiful color. Plenty of clay. Latest improved machinery and immense sale for brick at home. New court house and other public buildings going up next year. Good price for brick. Investigate this at once. Parties owning plant are all interested in other business and none understand brick business well enough to superintend same. Good man with knowledge of business can make lots of money. To the right party we would rather sell one-half interest than whole. Address, **"MON,"** 9 2 d. care "Clay-Worker."

#### Recipes for Enameling Bricks.

W. Clayton is now prepared to sell a full line of enamel recipes for bricks, suitable for all kinds of clays, including bricks made from shale rock and slate refuse. The above embrace about 12 colors and shades, including white, lilac, turquoise, yellow, buff, chocolate, and others.

The enamels are prepared for, and put on the "green" brick, so that the whole is done with one burning.

The "white" is especially adapted for sinks, and bath tubs, for which there is such demand just now. Correspondence solicited. **CLAYTON,** 6. tf. d. Hamilton Ave., Trenton, N. J.

#### COLORIFIC.

For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market, are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of **WESTBROOK & WELLS,** Ogdensburg, N. Y.

Mention the CLAY-WORKER

When writing to Advertisers

Mention the CLAYWORKER.

## Victor Testimony.

Every agent admits that with the exception of the bicycle he sells

## Victor Bicycles are Best.

Such straws show conclusively the way the wind blows.

**OVERMAN WHEEL CO.,**

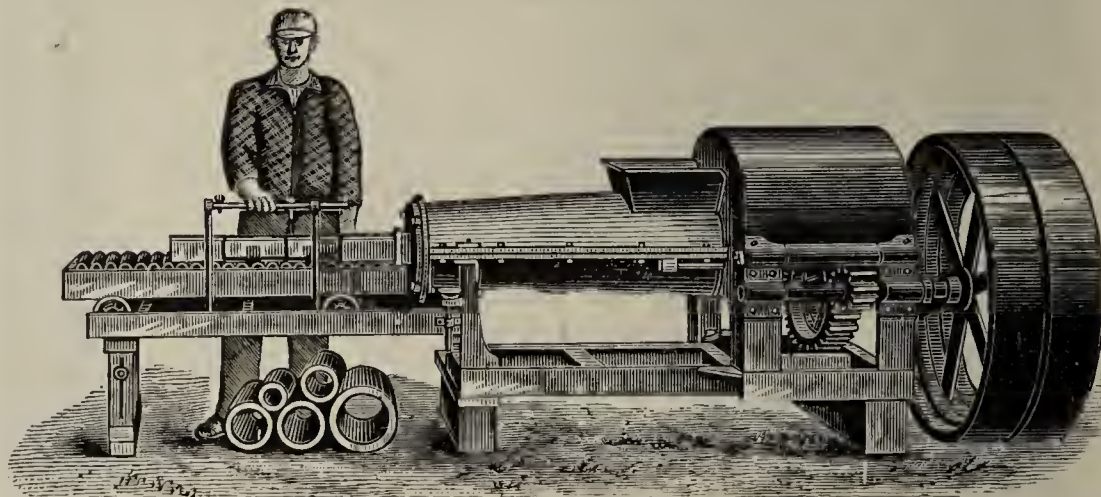
BOSTON,  
WASHINGTON,

DENVER,  
SAN FRANCISCO.

**KELLS & SON'S IMPROVED**

## Brick and Tile Machines.

"Old, Reliable, Time-Tried and True."



### P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

**We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.**

*We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.*

For Illustrated Circulars, Prices, Etc., address

**Kells & Sons,**

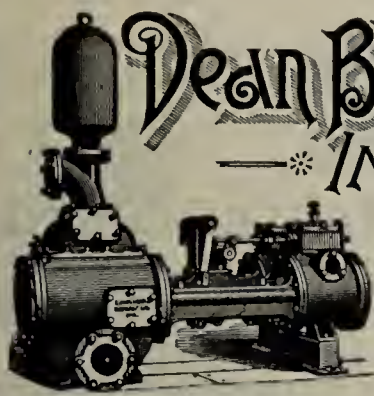
Shop near New Court House.

**ADRIAN, MICH.**

**H. C. BAIRD & SON,**  
PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.

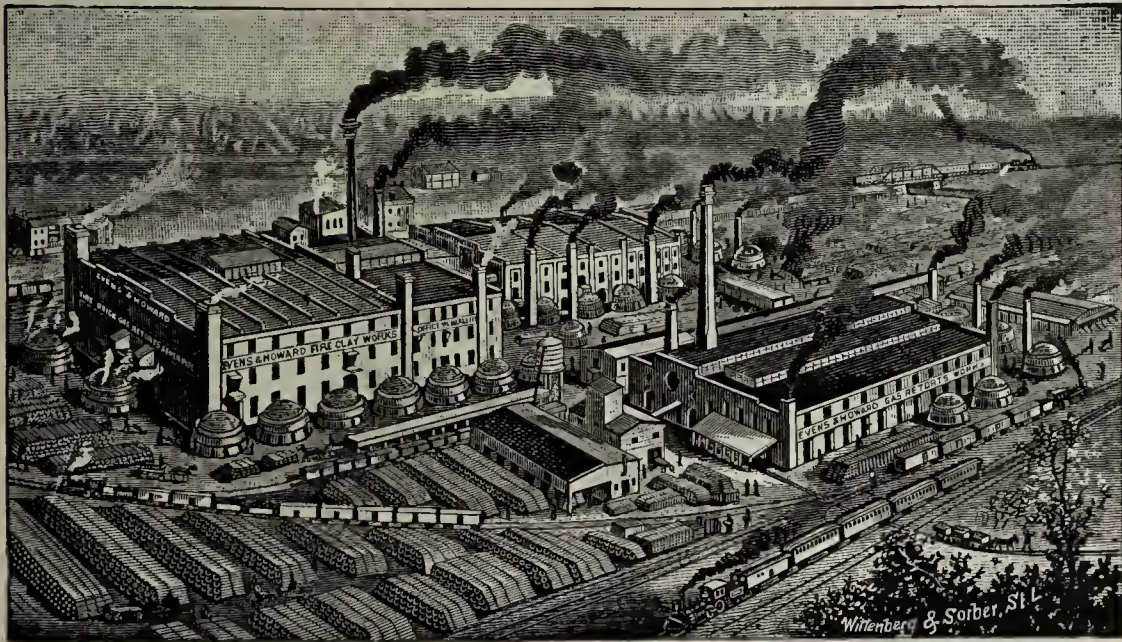




**Dean Bros. Steam Pump Works,**  
—\* INDIANAPOLIS, IND. \*—  
SINGLE & DUPLEX PUMPS.  
HORIZONTAL AND VERTICAL PUMPS.  
Best Design & Workmanship.  
PRICES REDUCED Send for CATALOGUE.

## EVEN'S & HOWARD'S FIRE BRICK, CLAY RETORT AND SEWER PIPE WORKS

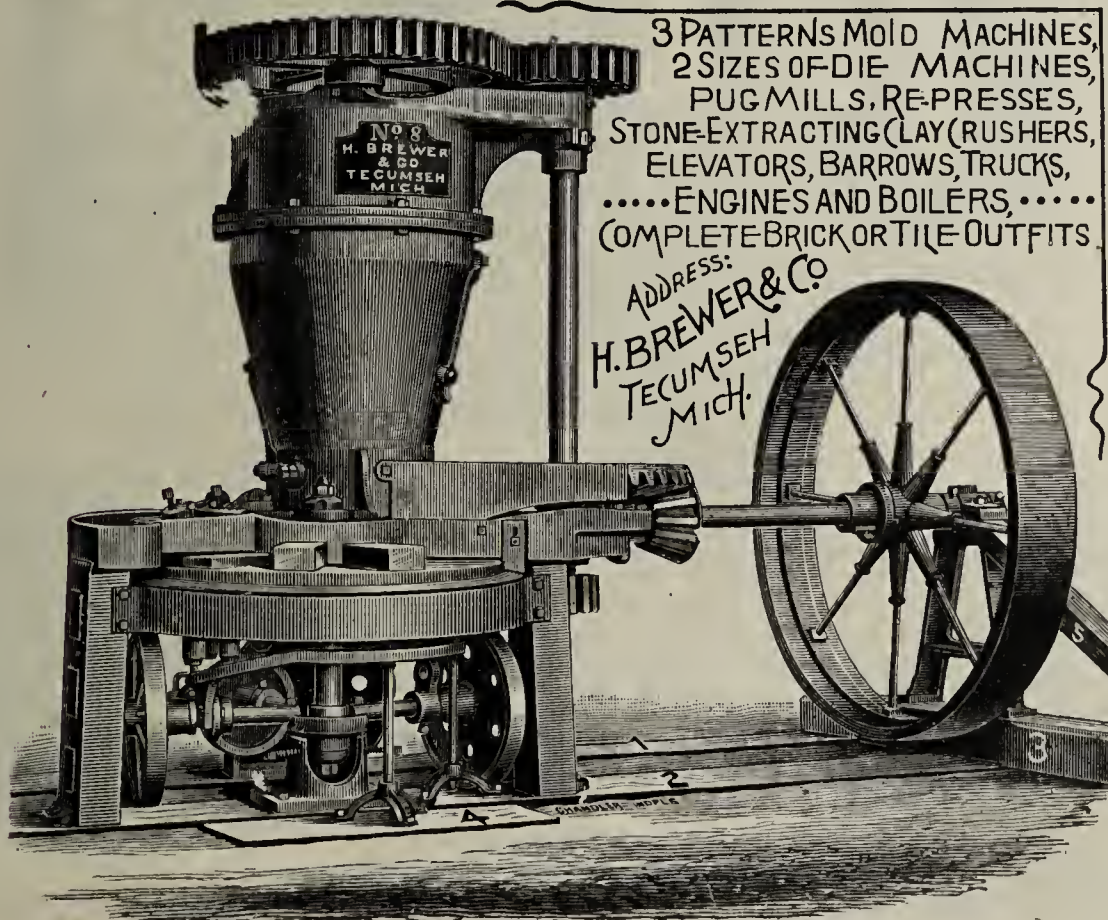
Our products have for more than thirty years been standard in all markets.



Estimates of the cost of our wares delivered throughout the U. S. and in foreign countries, furnished on application.

Daily Output, 200 Tons.

Office: 916 Market St.      Factories: { Howard & Station, Mo. Pac.  
ST. LOUIS, MO.                      and Frisco Railroads.



3 PATTERNS MOLD MACHINES,  
2 SIZES OF DIE MACHINES,  
PUG MILLS, RE-PRESSES,  
STONE-EXTRACTING (LAY) RUSHERS,  
ELEVATORS, BARROWS, TRUCKS,  
..... ENGINES AND BOILERS, .....  
COMPLETE BRICK OR TILE OUTFITS.  
ADDRESS:  
H. BREWER & CO.  
TECUMSEH  
MICH.

## Analytical and Consulting Chemist

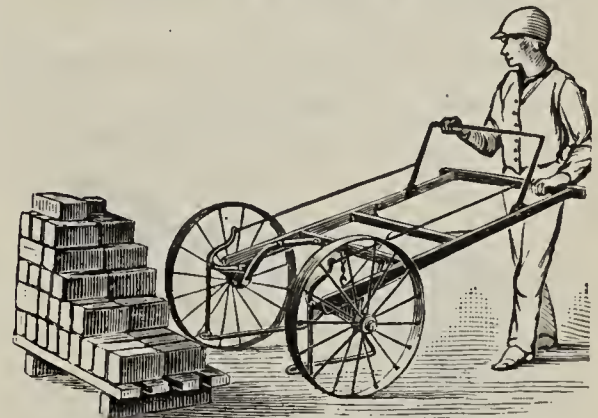
CHARLES FERRY, B. S.,

TROY, N. Y.

Analyses of all grades of clays, fire sands, kaolins and refractory materials furnished, with desired information based upon practical experience, at a reasonable figure. Only the best work, which is afforded by careful manipulation and a well equipped laboratory, may be expected.



## STEELE'S IMPROVED Brick Truck & Portable Hack



The principle of handling and drying bricks by the Portable Hack System has been perfected in this Truck and VENTILATED HACK BOARD, being the most practical Truck and method ever yet introduced, saving labor in handling an time in drying bricks. Can be used in any yard not too steep.

### Extracts from Letters to J. C. Steele.

J. C. STEELE, ESQ.,                      May 6, 1892.  
STATESVILLE, N. C.

DEAR SIR—We have now been using your Hacking Trucks for the last month and we cannot speak too highly of them. They are perfect, and the greatest labor-saving machine ever put on a brickyard. With one man, and one of your Trucks, we take from the machine and put on the yard 25,000 bricks already hacked and ready to cover in case of rain. This is a saving of three men over the old style of using wheelbarrows. One man will also keep two setters and two tossers going with one truck. But the main thing is that the bricks do not have to be handled so much and they retain their shape so much better. We will gladly answer any enquiries concerning your Trucks who may refer to us. Respectfully Yours,

Florence S. C.                      COFFIN & PERRY.

MR. J. C. STEELE,  
STATESVILLE, N. C.

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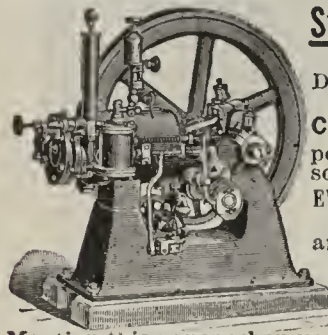


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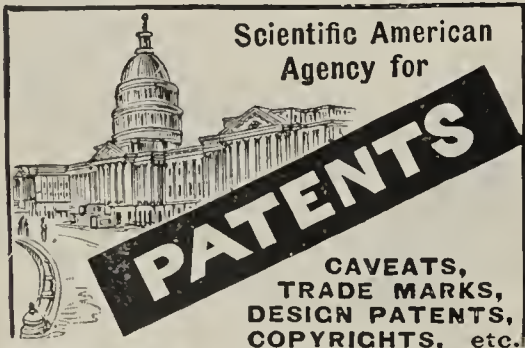


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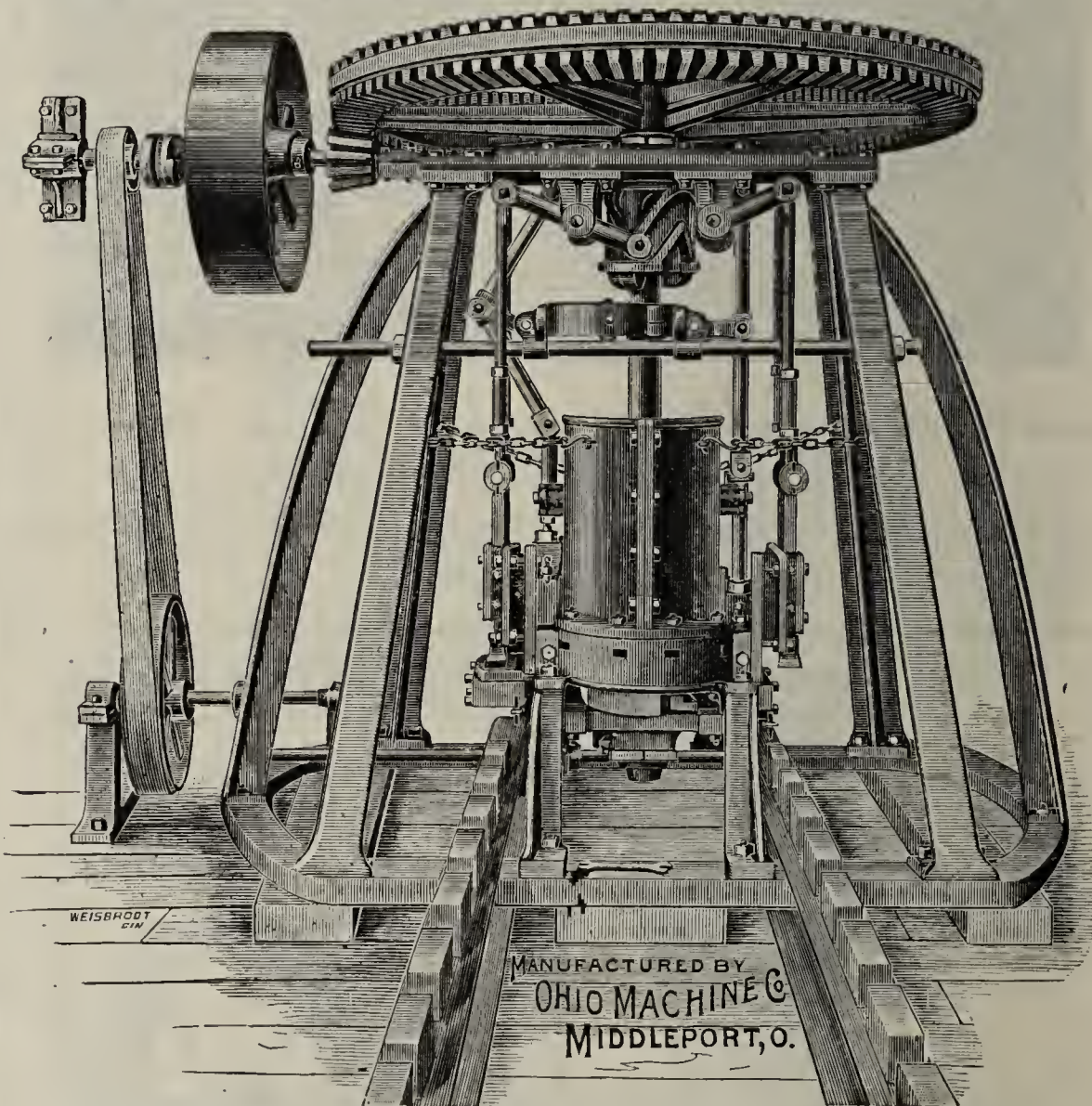
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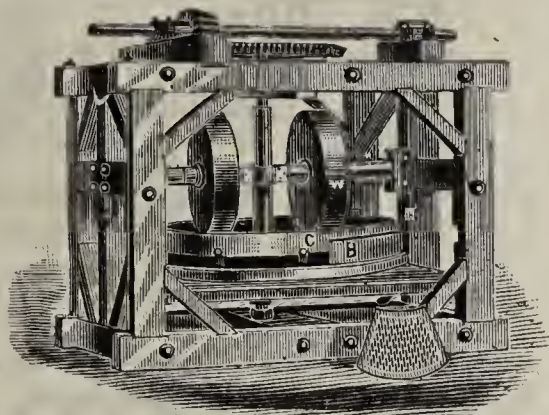
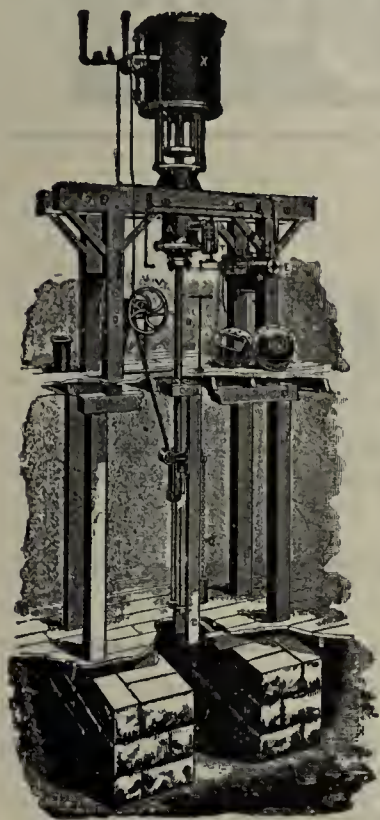


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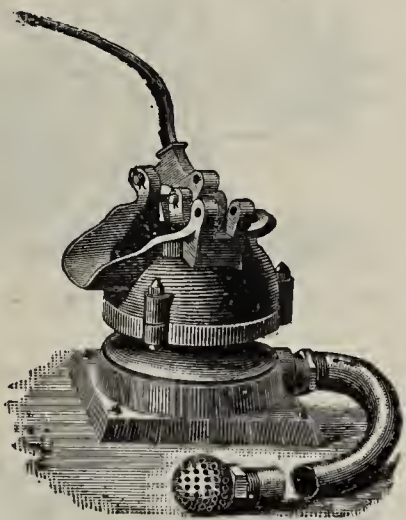
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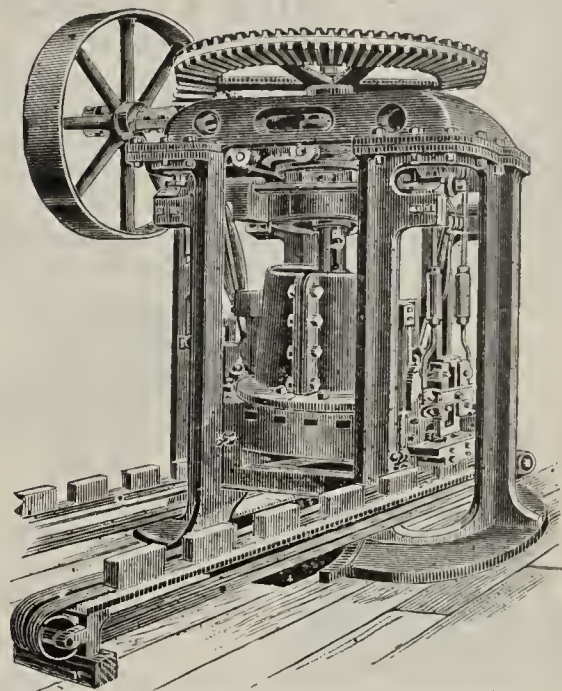
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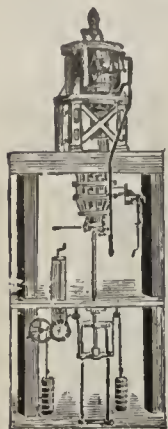
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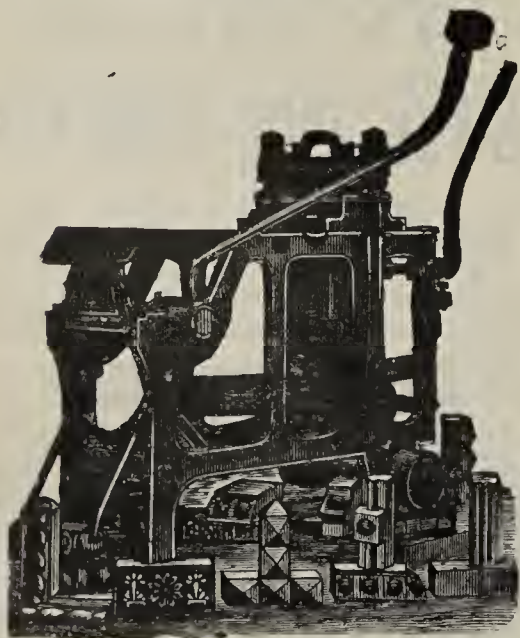
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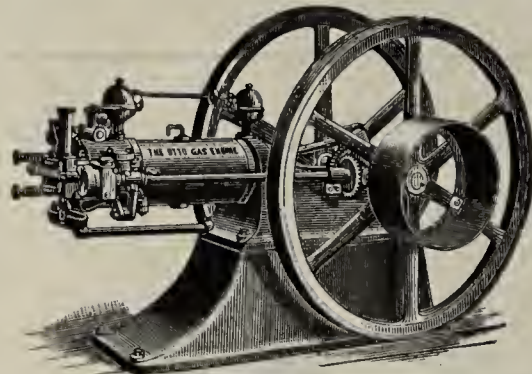
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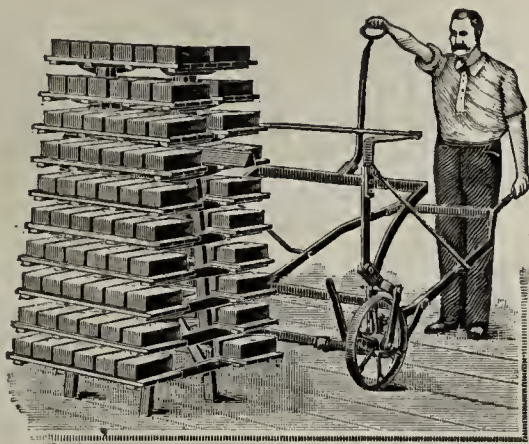
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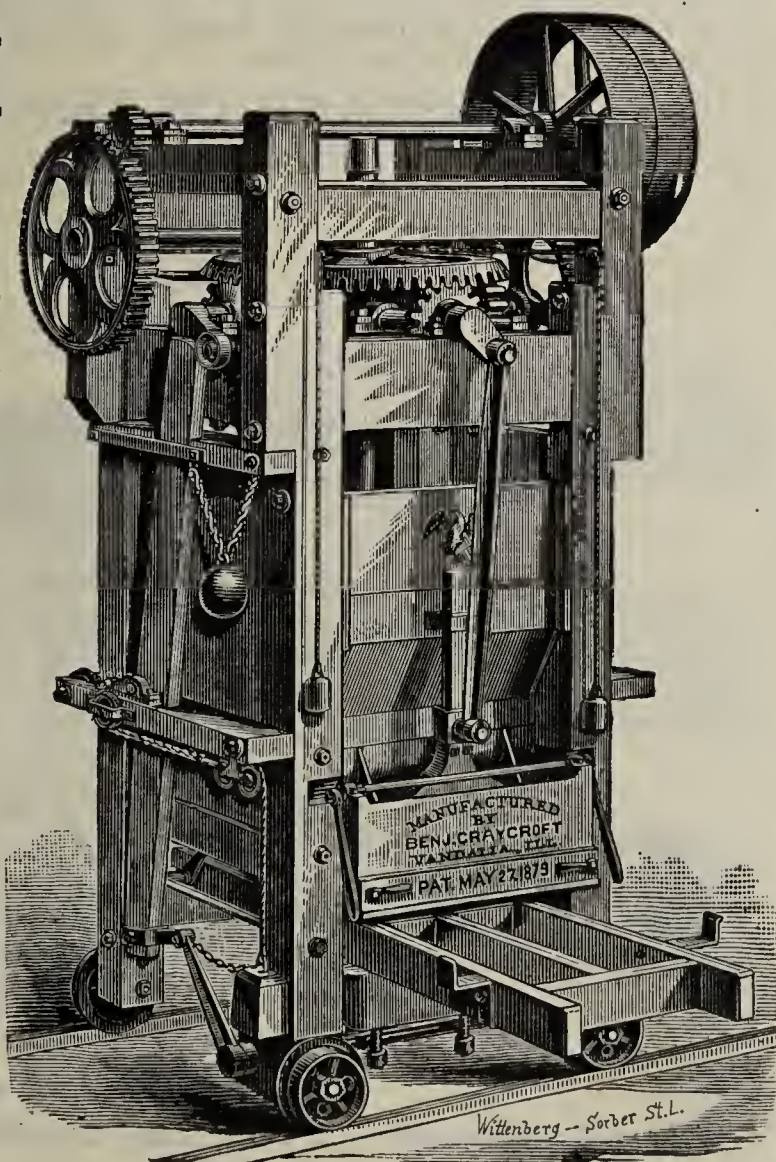
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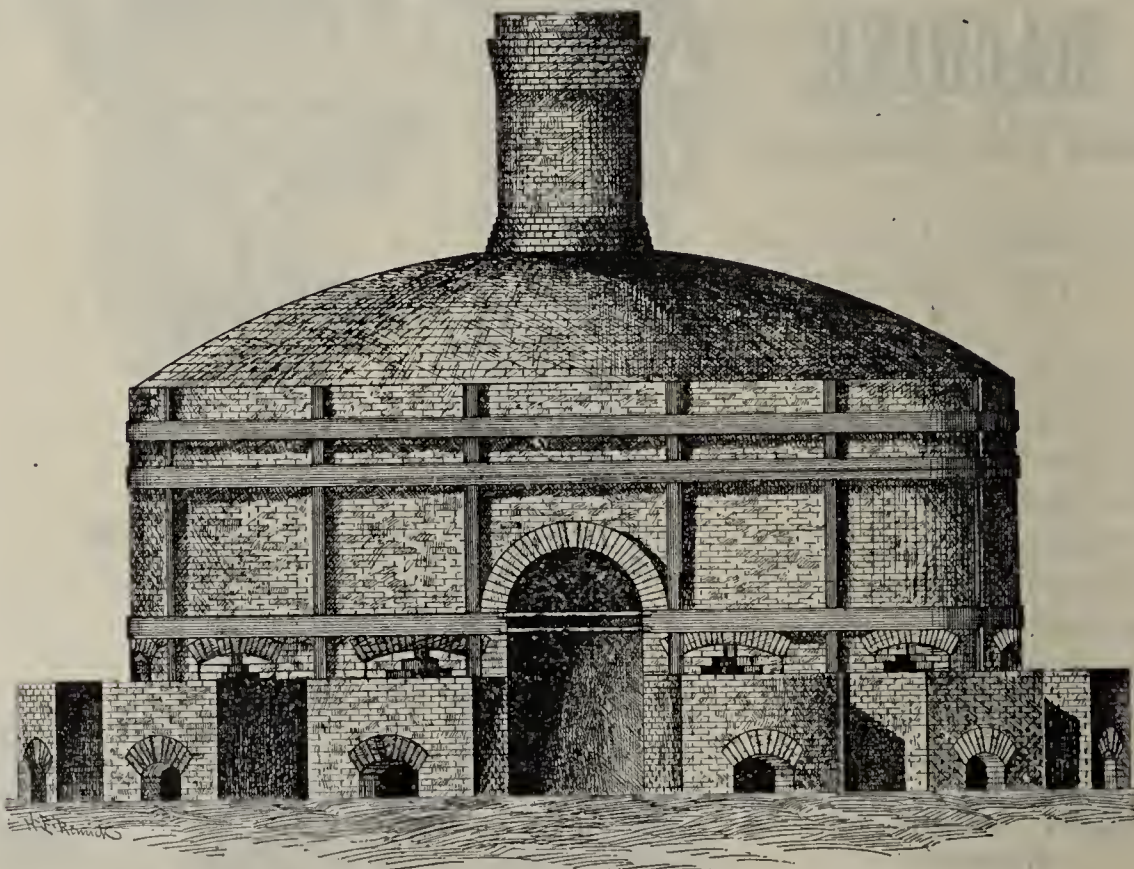


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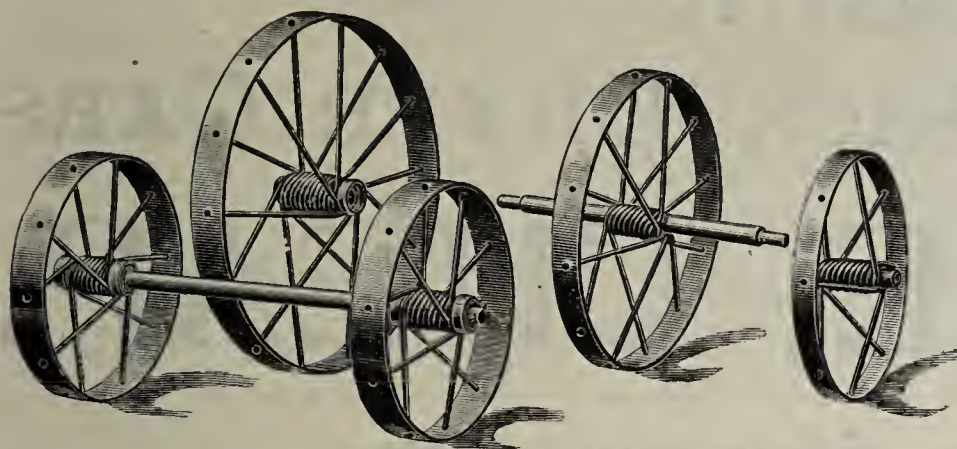
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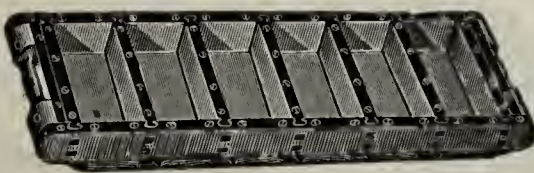
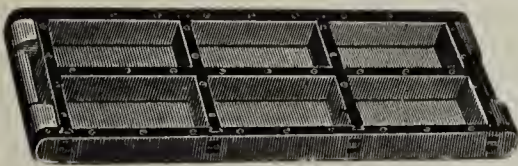
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**ARRIVE.**

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| No. 11 Passenger..... | 2:50 p. m.  |
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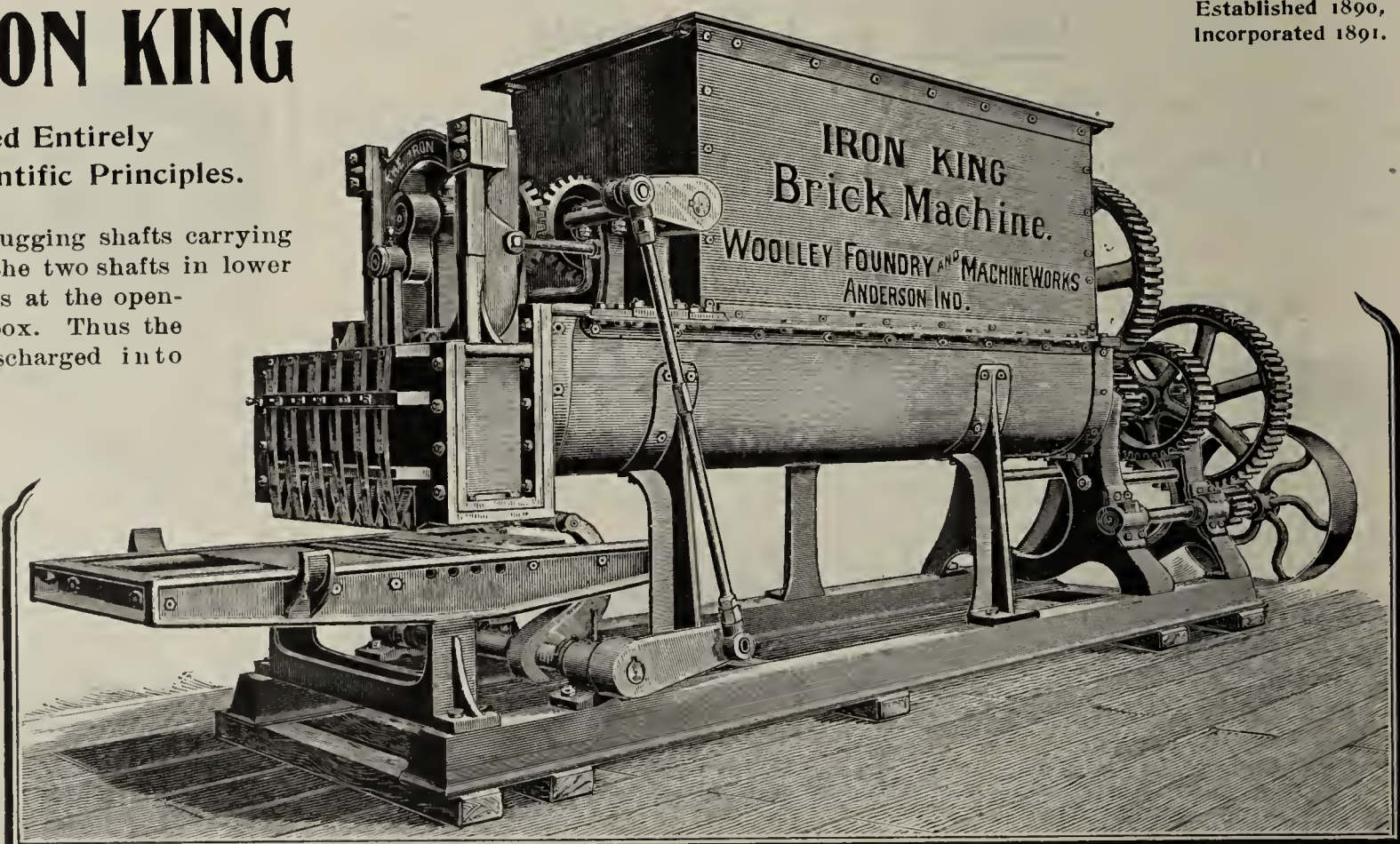
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It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and

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Less working parts than any other Re-press.

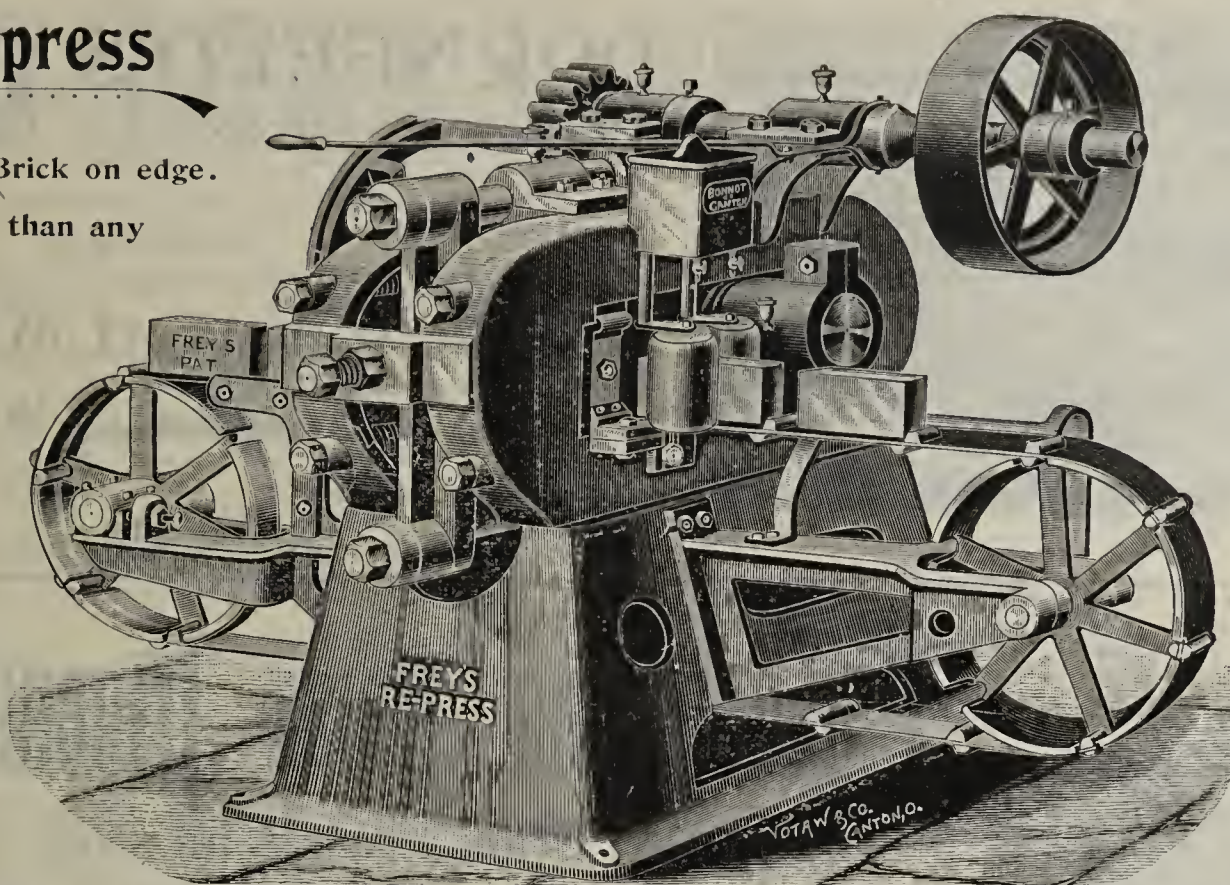
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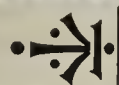
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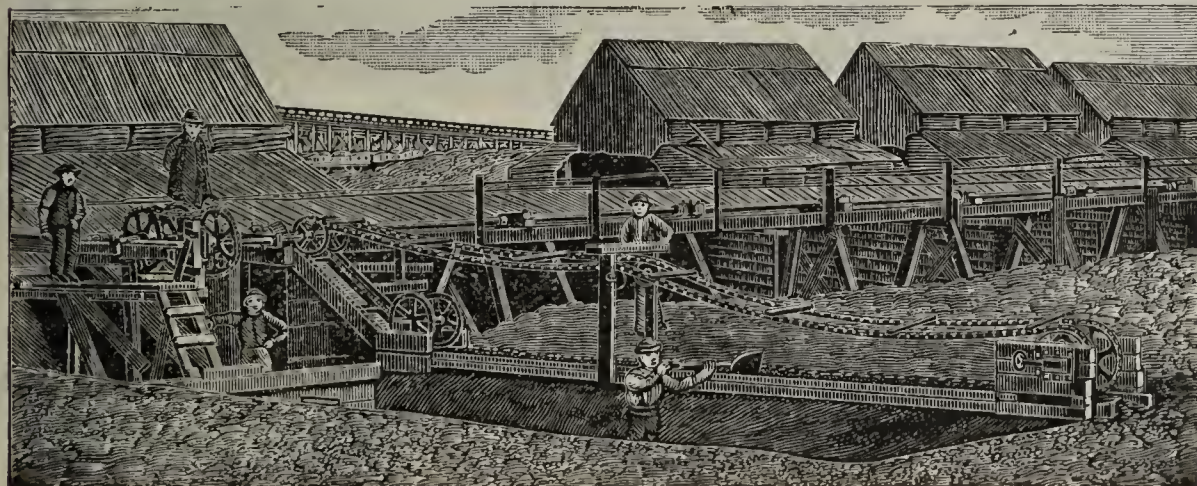
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64 to 68 Columbia St., BUFFALO, N. Y.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

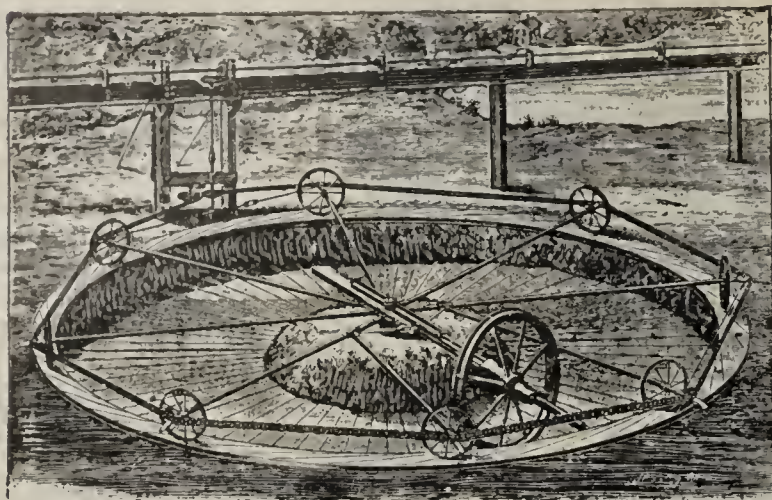
**Make Many More Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED PRICE LIST.







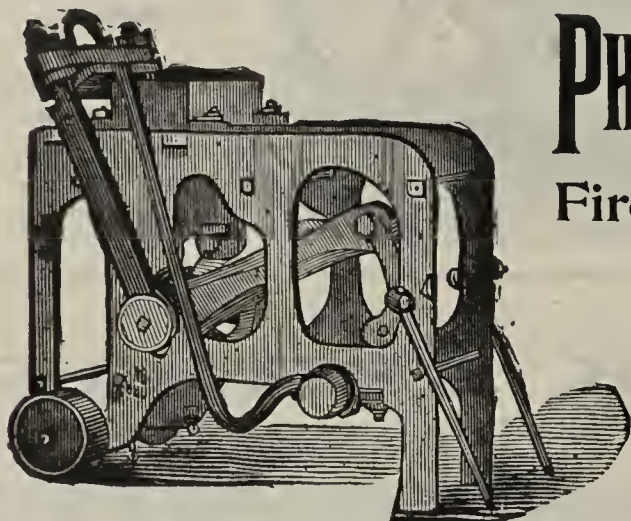
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

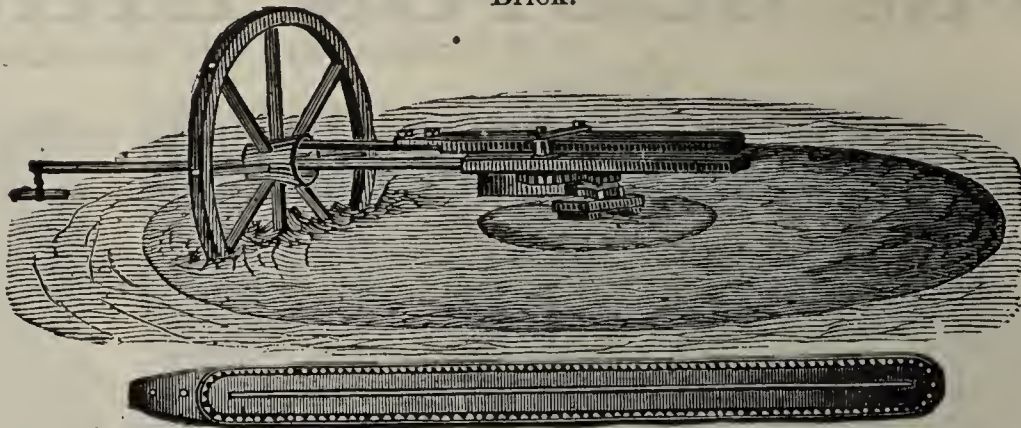
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

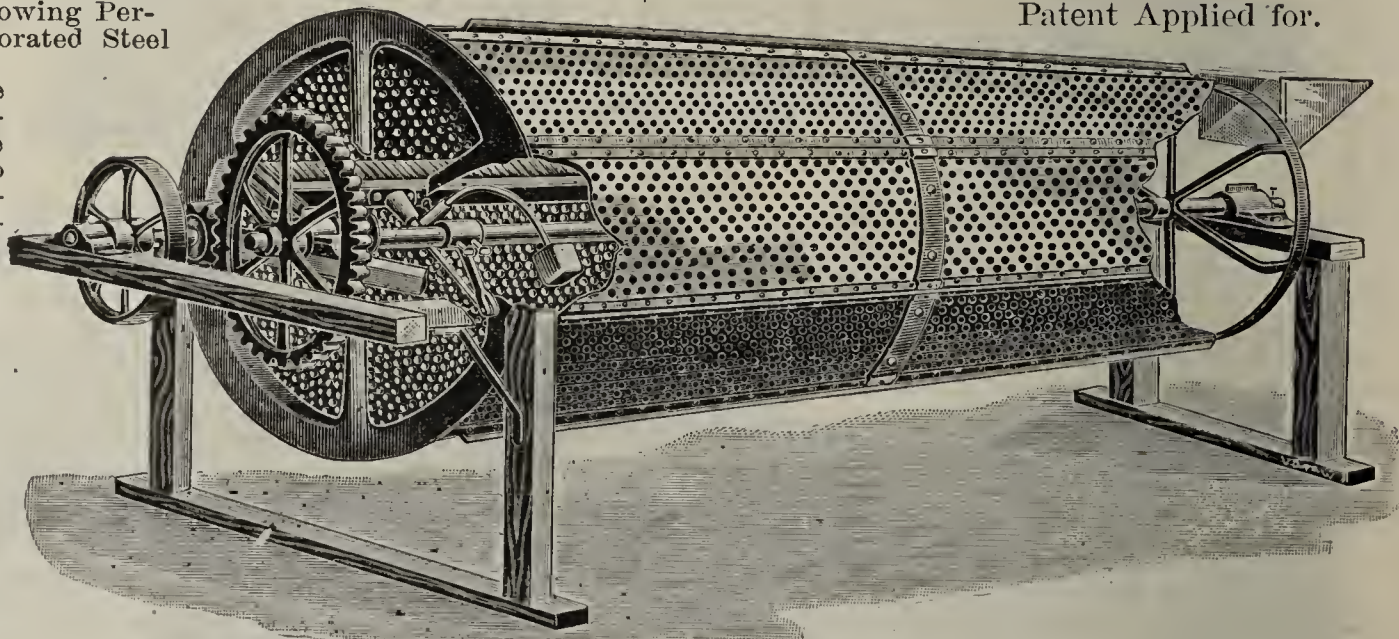
## REVOLVING SCREENS.

Interior View=== Showing Per-  
forated Steel

Sheets. The iron heads are turned perfectly true. The Sheets are supported on the outside by steel cross bars. The self-adjusting Brush requires no attention, being always in proper condition. A complete success.

MANY of the best plants are supplied with them. The Cleveland Brick Co., recently placed one of these Screens in their plant. They say: "We would not be without it for twice its cost."

Many others have the same opinion. They are sold on a broad guarantee. Have you seen illustration of Iron Frame Screen? Write for particulars.



Patent Applied for.

THE BONNOT CO., Canton, Ohio.



# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

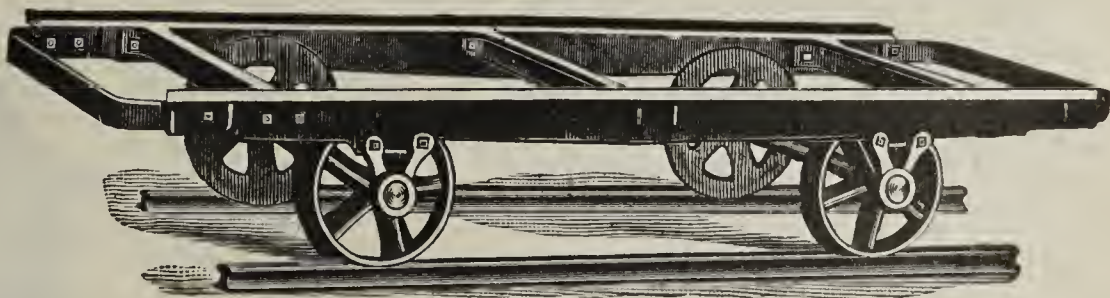
48 Styles.

Also  
Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



# MAKERS

Send For Price List.

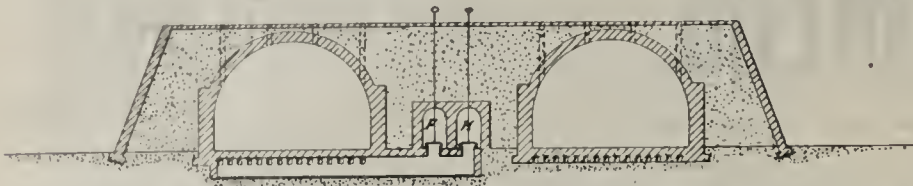


STYLE 128.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

PETERSEN BRICK COMPANY,

MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E— downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,

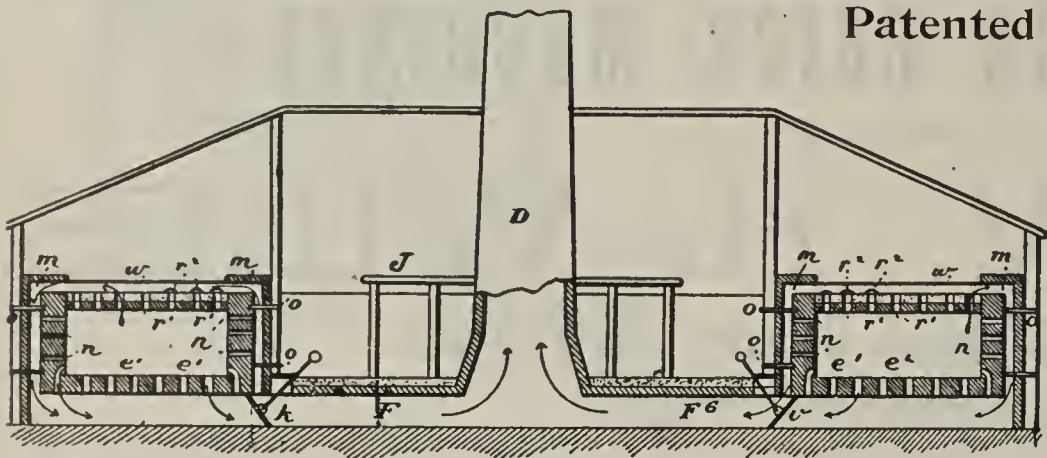
Per H. M. STAMMER, Superintendent.

For particulars address

P. L. YOUNGREN, Oakland, Cal.

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892;



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

Mention the Clay-Worker.]

CARL F. KAUL, Madison, Neb.

# A LONG FELT WANT SUPPLIED.

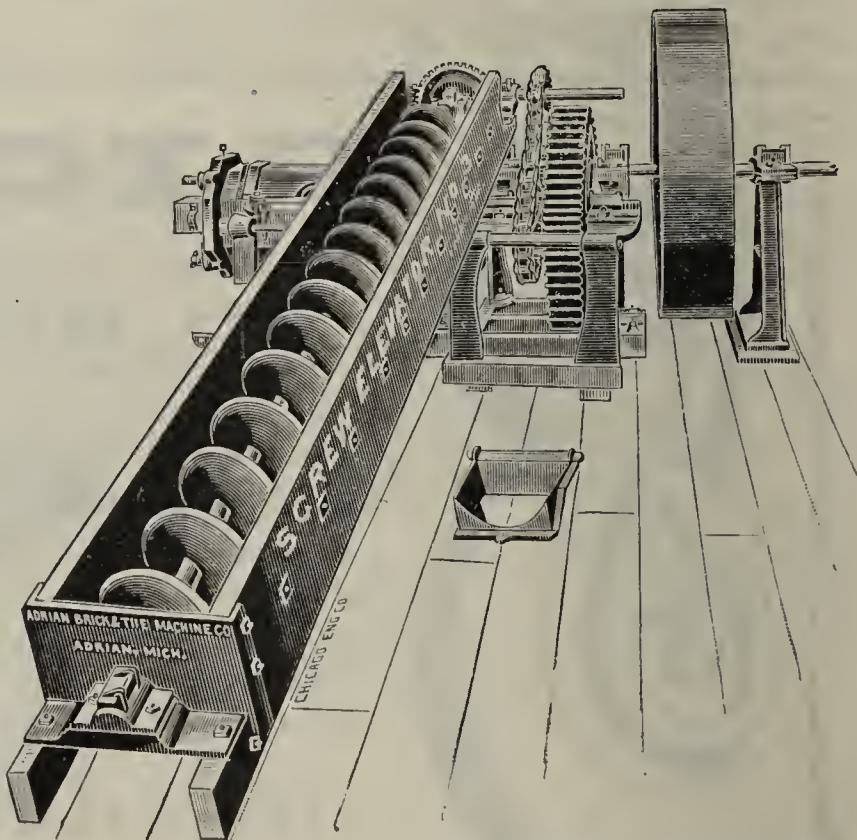
A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

Adrian Brick & Tile Machine Co.,

ADRIAN, - - MICHIGAN.





# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

St. Louis, Mo., Nov. 29th, 1892.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

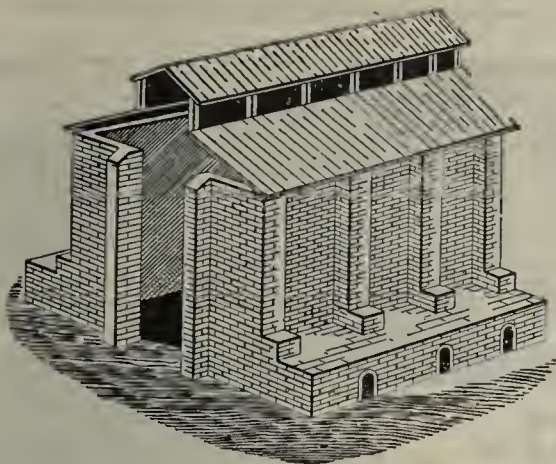
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.

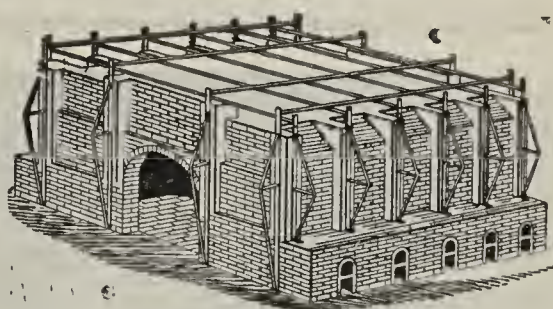


The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

**Jonathan Creager's Sons,**

127 W. SECOND STREET,

Cincinnati, Ohio.

P. S. If you do not ask we cannot tell you of several very important improvements.

**J.H. & D. LAKE, Co.**  
**MASSILLON, O.**  
**U.S.A.**  
 MFRS. OF  
 FRICION CLUTCH PULLEYS;  
 PLAIN OR SPLIT PULLEYS,  
 SHAFTING,  
 HANGERS, Etc.  
 ALSO  
 COUNTER SHAFTS  
 COMPLETE.

CUT-OFF COUPLINGS, PLAIN OR SPLIT;  
 FORMERLY OF HORNELLSVILLE, N.Y.

CANTON ENG CO



## S. G. PHILLIPS, Agent and Patentee, WOODBRIDGE, N. J.,

DEALER IN "Woodbridge" Fire Clays and Bricks, also Apparatus for Treating Clays, Drying Bricks, Lumber and Other Material.

This frame enclosed "Inside Fan Dryer" erected ON GUARANTEE, to dry in TWELVE (12) HOURS.  
"Live" steam used to test capacity, though exhaust steam may be quite as effective when favorably supplied.

CHARLES ANNESS, President.  
JAMES J. LIVINGOOD, Vice-President.

MR. S. G. PHILLIPS, Woodbridge, N. J.,

DEAR SIR:—We are much pleased with "The Inside Fan Dryer" system, which was erected at our works last winter.

The running of the "endless" rubber belts, in which the slack is so easily taken up by the screw adjustment, of the special iron floor stands with their metallic wick "self oilers," and plates at both ends of the fan shaft to take the end thrust, and insure continuous oiling as well as to close the end of the boxes and keep out the dust. Seems simply perfect for smooth, easy running; and have it and the entire outfit of machinery, come as near as fairly possible to taking care of itself.

It is remarkable how quick and yet safe and solid the drying may be effected in your use of more air distributed throughout the entire length of the dryer.

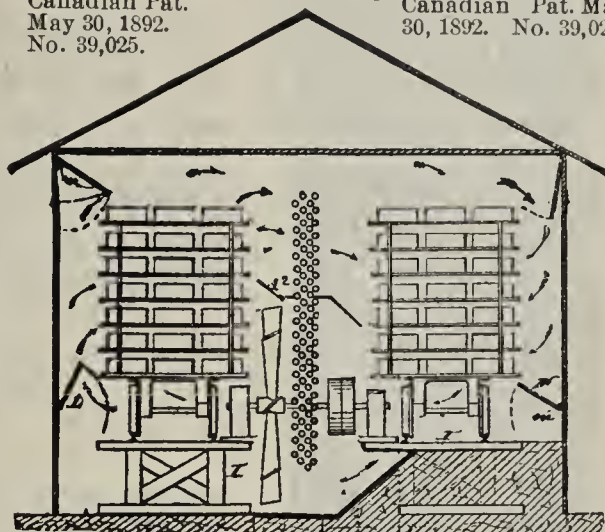
Though we now merely dry on racks, they are so arranged as to anticipate car use in the space they now occupy, and we can then fairly expect even more satisfactory results.

It does not seem to be at all extravagant to easily dry twice in 24 hours with the heat only from the engine exhaust steam—to claim to dry in half, of the time—cost but half of the fuel, and not half as much to erect, for the same quality and quantity of dried product, as compared with other artificial dryers. In other words we would not, nor do we believe any other practical brickmaker would, if he would look into the matter, have any other than the Phillips dryer. Very truly yours,

THE AIKEN FIRE & ORNAMENTAL BRICK CO.,  
JOHN E. ANNESS, Secretary.

Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.



U. S. Patent August 16, 1881. No. 245,742.  
U. S. Patent March 31, 1891. No. 449,170.  
U. S. Patent March 31, 1891. No. 449,231.  
British Patent March 31, 1891. No. 5,520.

### "Better Than Drying in the Sun."—"Exhaust Steam."

S. G. PHILLIPS, Woodbridge, N. J.

OTTUMWA, IOWA, April 6, 1893.

DEAR SIR:—I have had your Dryer in operation during the last season and it continues to give me great satisfaction. I believe it to be better than drying in the sun, and to do its work in half the time of any other Dryer I know of. With stiff mud brick piled on edge, it would appear to dry even better and quicker than my soft mud brick flat on board pallets. The gradual feeding from the moist cooler end toward the heating pipes at the end where the cars of brick come out appears to insure safe and quick drying. It takes but little power to run the fans, and no other heat than the engine exhaust steam is used.

Yours truly,

HERMAN B. OSTDICK.

### THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.

### "And Met the Requirements in Every Case."

PHILADELPHIA, December 14, 1892.

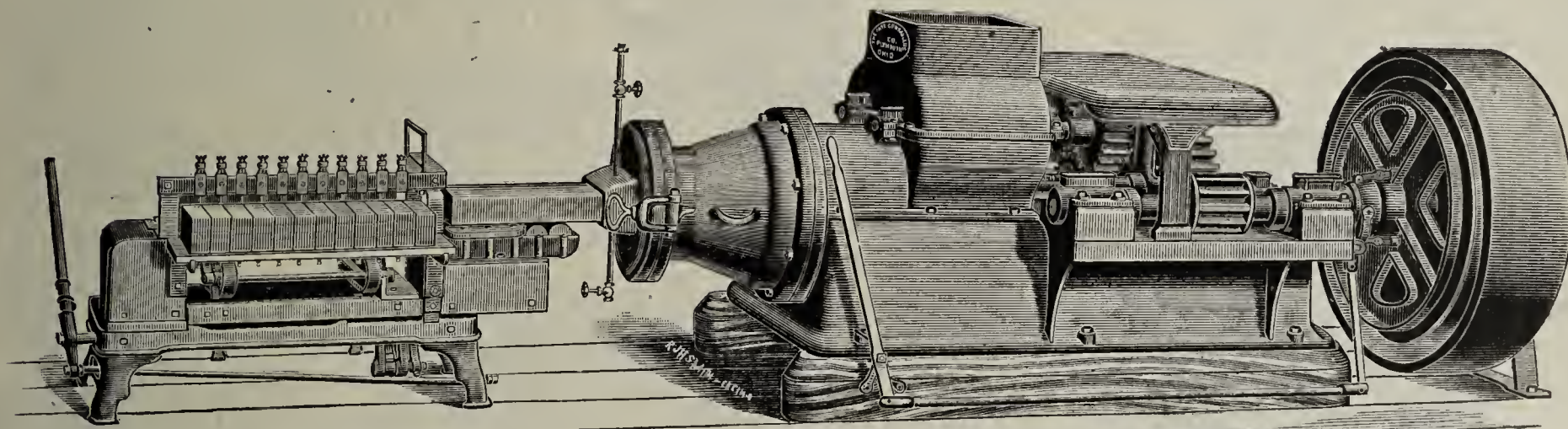
MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction, and met the requirements in every case. The bricks have been dried uniformly without cracks.

Yours respectfully,  
CHAMBERS BROTHERS CO., J. H. Chambers, Gen'l Mngr.

"I think you have the Dryer the brick people are looking for."—JNO. C. GIBSON, Superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required by applying six of the fans; and the manager writes, also recently: "Not over 12 hours to make them VERY DRY—the best by great odds of any in the market—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance."

# The "Plymouth." DURABLE, ....STRONG.



Brick Machines, Pug Mills, and all brick and tile yard supplies.  
Write for catalogue and prices.

**THE FATE-GUNSAULLUS CO.,**  
RICHLAND COUNTY. PLYMOUTH, OHIO.





# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 23, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for**  
**Leather, Rubber and Canvas Belting.**

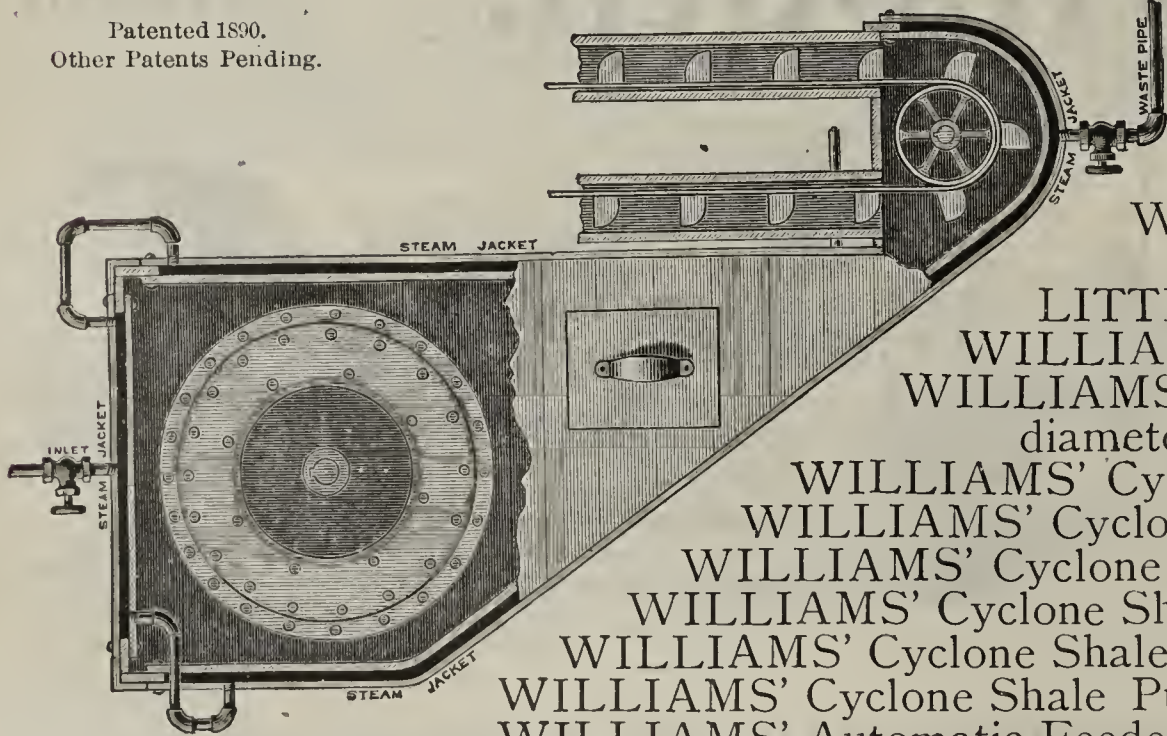
**No user of Belting can afford to be without it.**



the End.

# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers  
WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

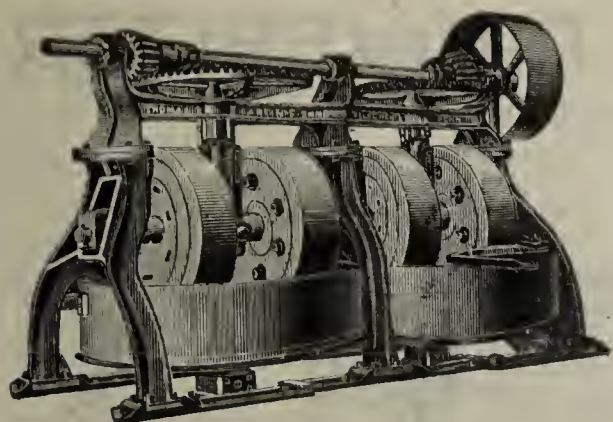
WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**





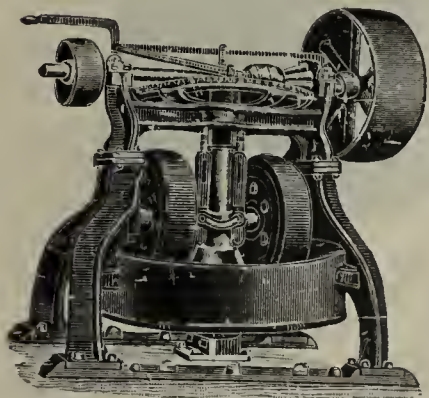
OUR SPECIALTY.

# GRINDING AND MIXING PANS

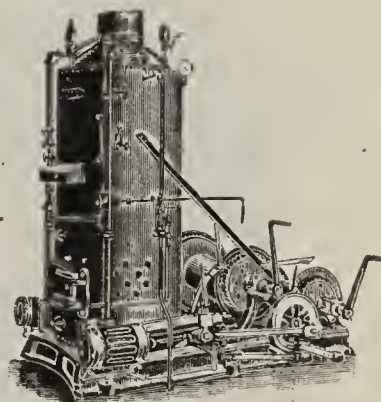
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
ENGINES AND BOILERS, HOISTING ENGINES,  
DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
ALLEGHENY, PA.



One 9 foot Dry Pan.  
One 6 foot Dry Pan.

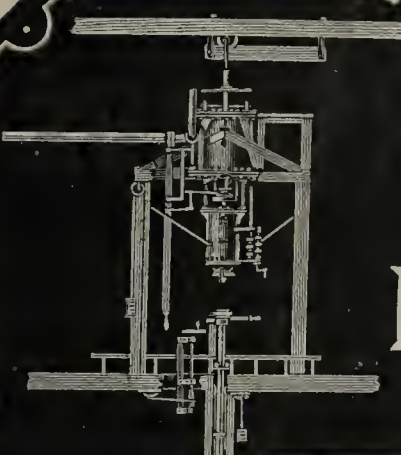
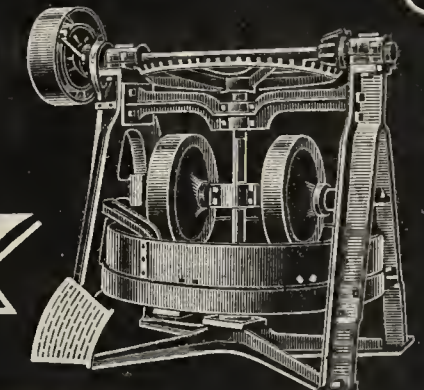
IN STOCK:

One 8 foot Wet Pan.  
Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF  
IMPROVED

## CLAY WORKING MACHINERY

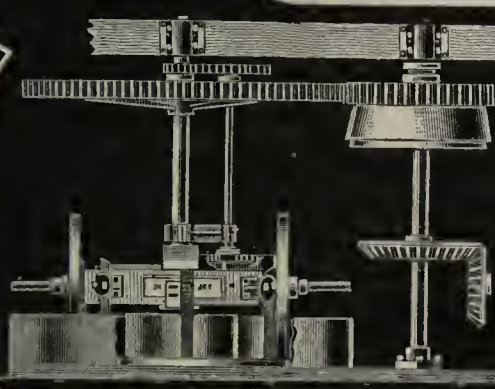
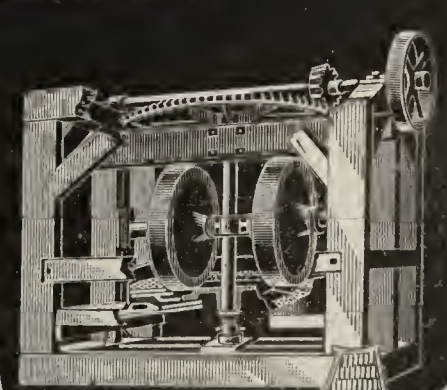
OF EVERY DESCRIPTION

## TAPLIN RICE & CO.

(CLAY MILLS,  
STEAM SEWER PIPE PRESS,  
DRY & WET PANS, DIES, CLAY BLOCKERS,  
POTTERS' WHEELS AND  
MACHINERY OF ALL KINDS.)

## AKRON, OHIO, U.S.A.

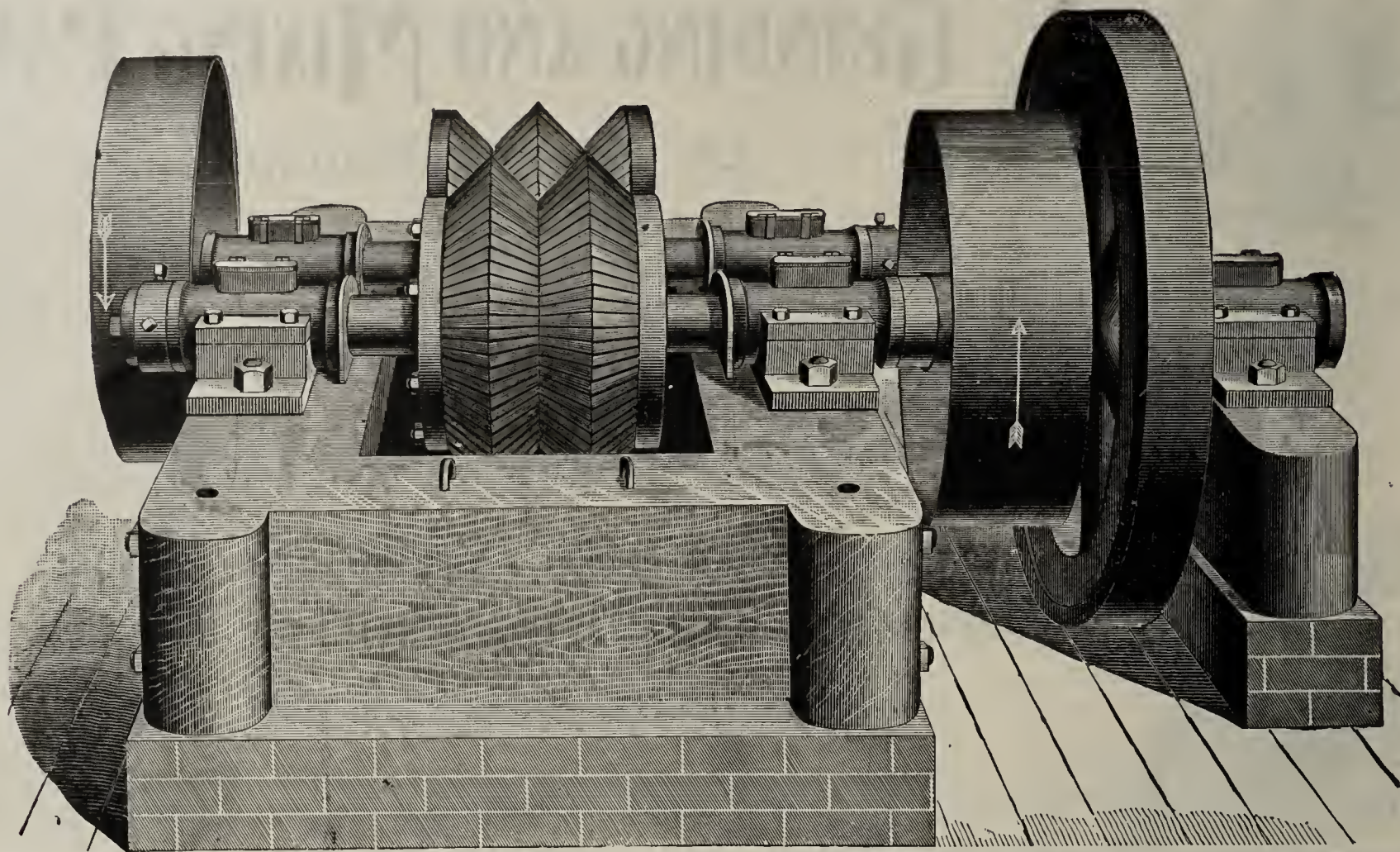
PROMPT ATTENTION  
& DISPATCH GIVEN  
TO ORDERS

SEND FOR  
CATALOGUE  
A



# NEWELL IMPROVED CLAY PULVERIZER

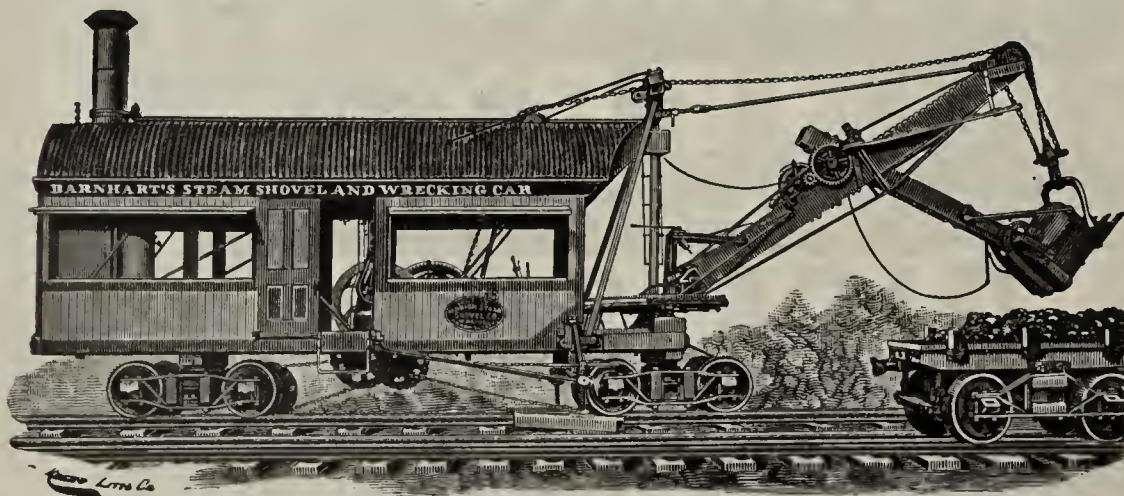
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

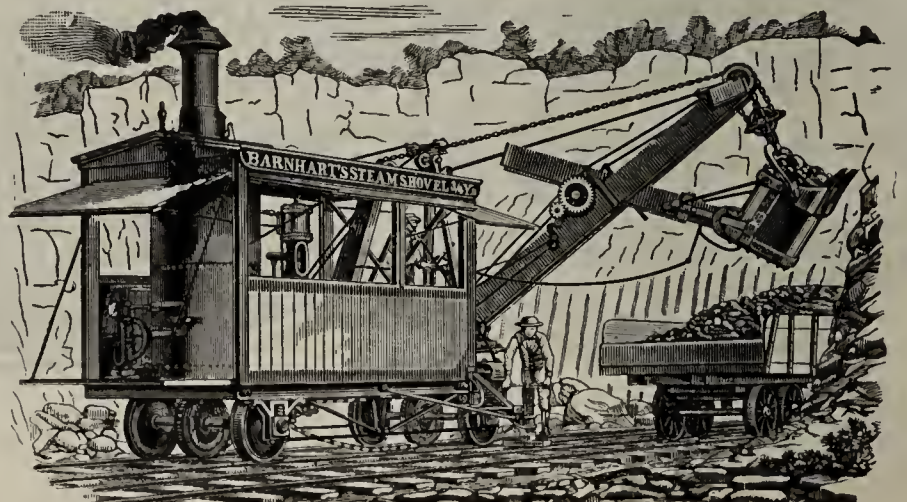
## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have many elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
MARION, OHIO.



STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



## A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

SAFETY HINGED NOSE PIECE,

STEEL SHAFTS,

EXTRA LONG BEARINGS,

SOLID MAIN FRAME AND TUB

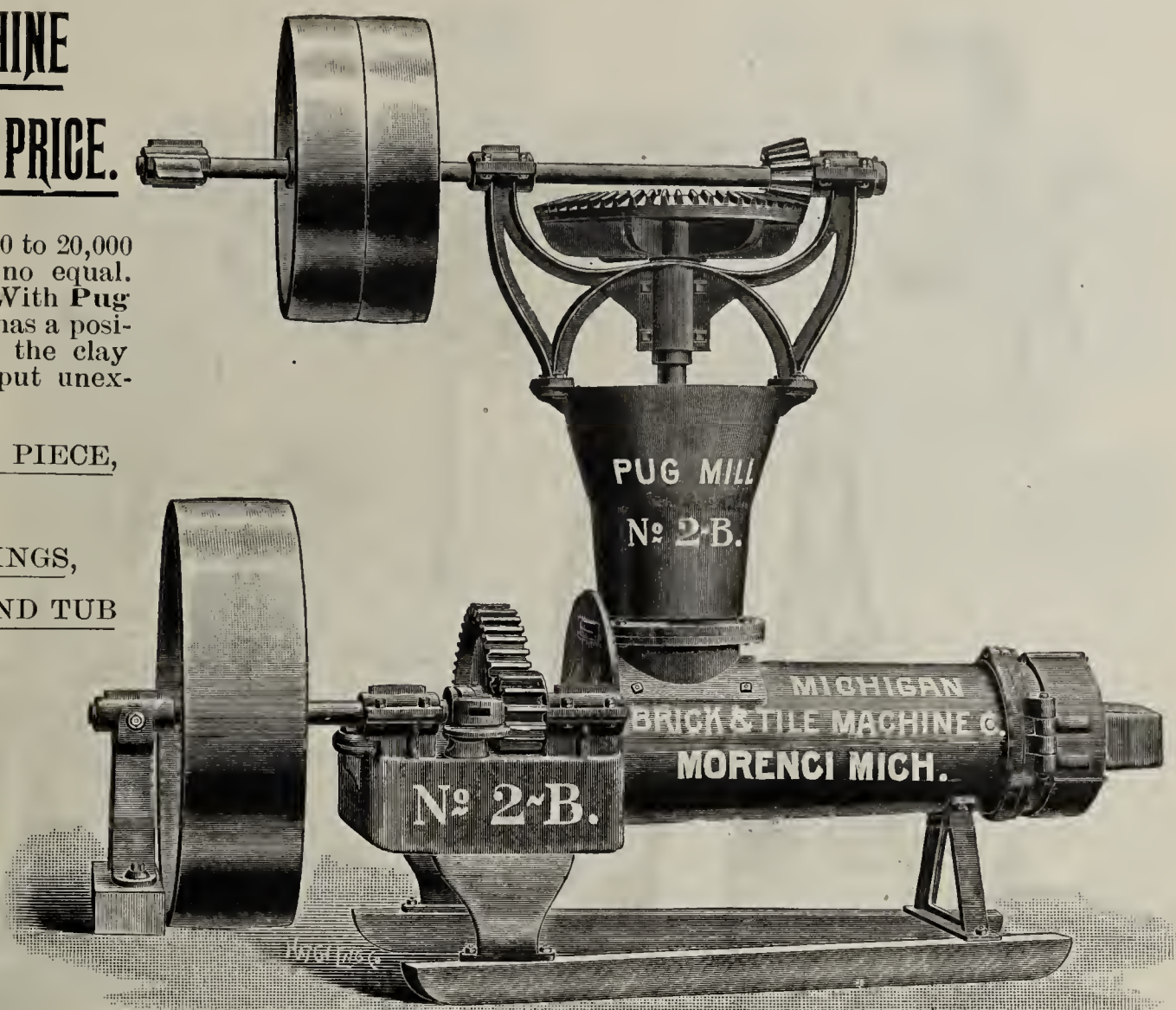
And many other important improvements it is a very desirable machine to have.

Circulars and VERY LOW PRICES quoted intending purchasers.

Address the Manufacturers

**MICHIGAN BRICK AND  
TILE MACHINE CO.,**

Morenci, Mich.

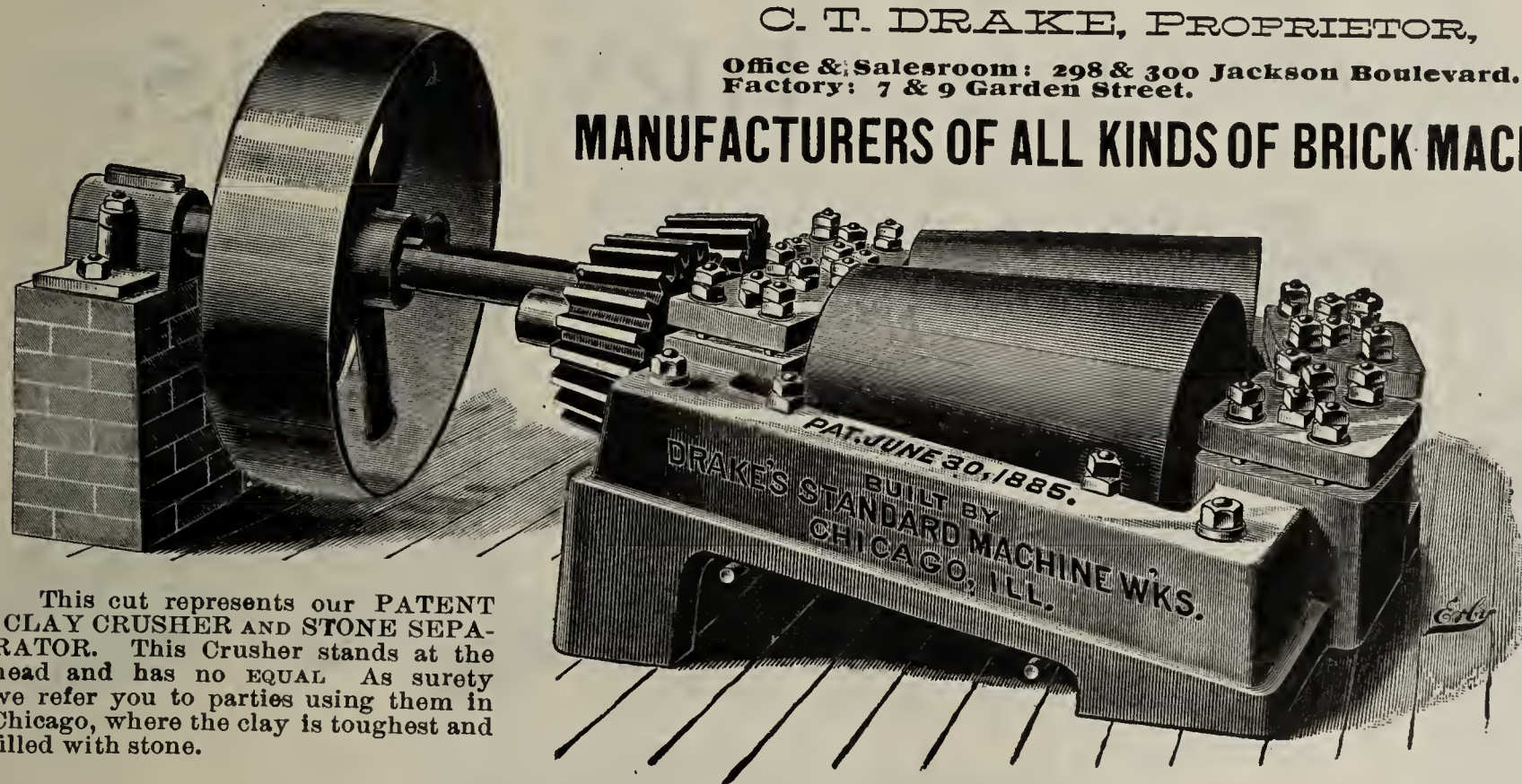


# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

**MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY**

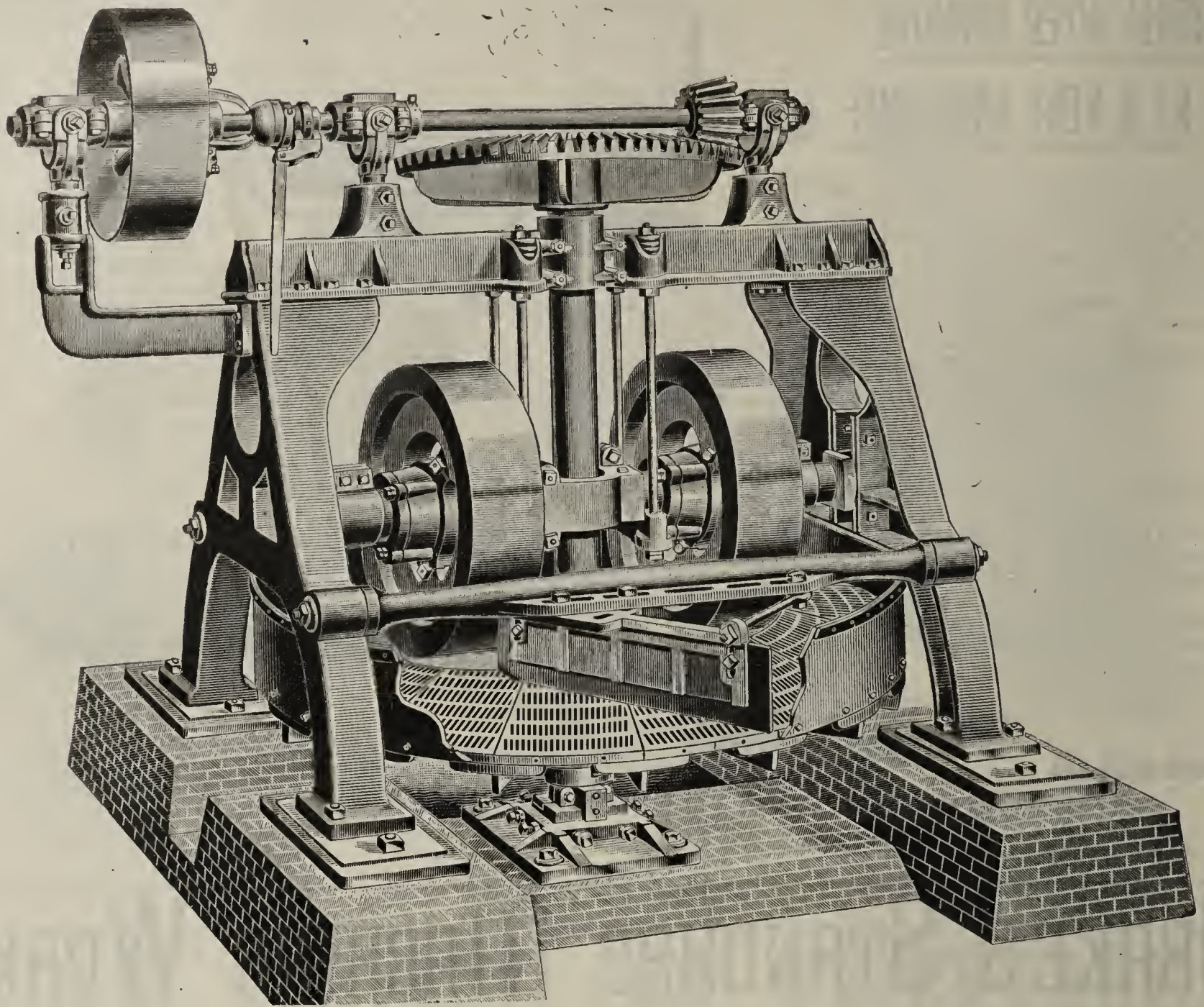


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 11 crushers; Hayt & Alsip Co. is running 6 crushers; Purington-Kimbell Brick Co. is running 8 crushers; May, Purington & Bonner B. Co. is running 4 crushers; J. B. Legnard is running 2 crushers; Weckler Brick Co. is running 1 crusher; Adam J. Weckler is running 1 crusher; Weckler Prussing Brick Co. is running 1 crusher; Chicago Brick Co. is running 2 crushers; Union Brick Co. is running 2 crushers; M. Myers is running 2 crushers; Wahl Bros. are running 4 crushers; Pullman Brick Co. is running 2 crushers; Fred Zapel is running 1 crusher; Myers & Toll are running 2 crushers; Harms & Schlake Brick Co. is running 1 crusher; L. Wehrheim & Son are running 1 crusher; Alexander Burke is running 1 crusher; John Sexton is running 1 crusher; John Busse, Jr., & Co. is running 1 crusher; John Busse is running 1 crusher; George Lill is running 2 crushers; Legnard & Madden are running 2 crushers; Turner Brick Co. is running 1 crusher; Mayer & Toll are running 2 crushers; Purington Brick Co. is running 2 crushers; Kuester & Thunow are running 1 crusher; Reimer, Labahn & Kuester are running 1 crusher; Dumesniel Bros. Co., Louisville, Ky., are running 1 crusher; Mason City Brick & Tile Co., Mason City, Ia., is running 1 crusher; Eagle Clay Works, Streator, Ill., is running 1 crusher.

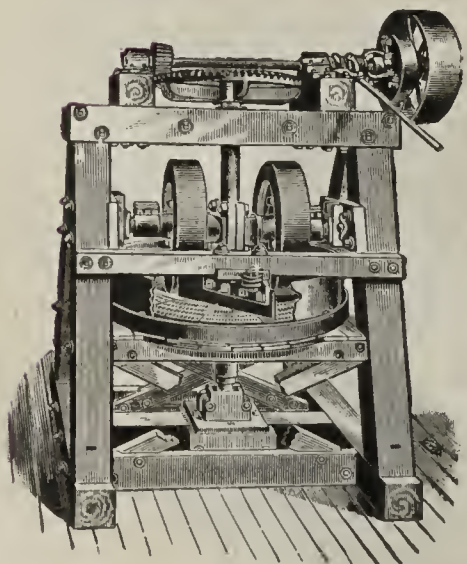
**NOTICE:**—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing our copyright and will be prosecuted.





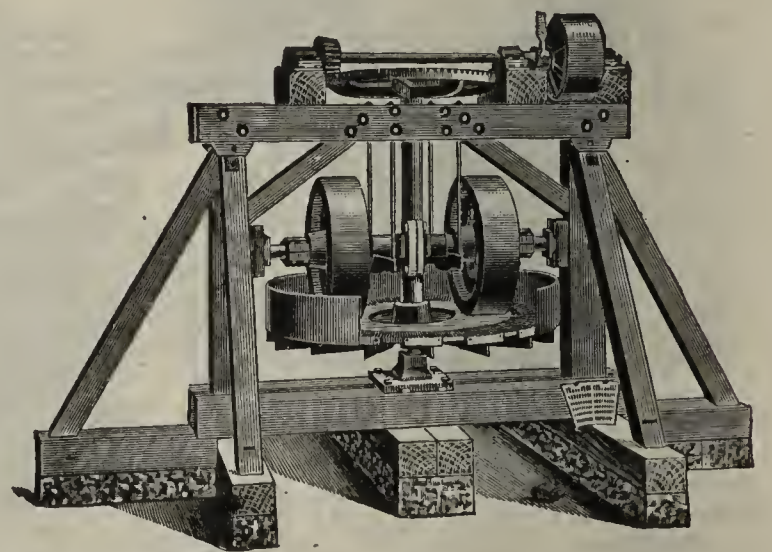
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,  
WOOD FRAMES.

All Sizes and Price  
to suit  
Any Size Plant.



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.



# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

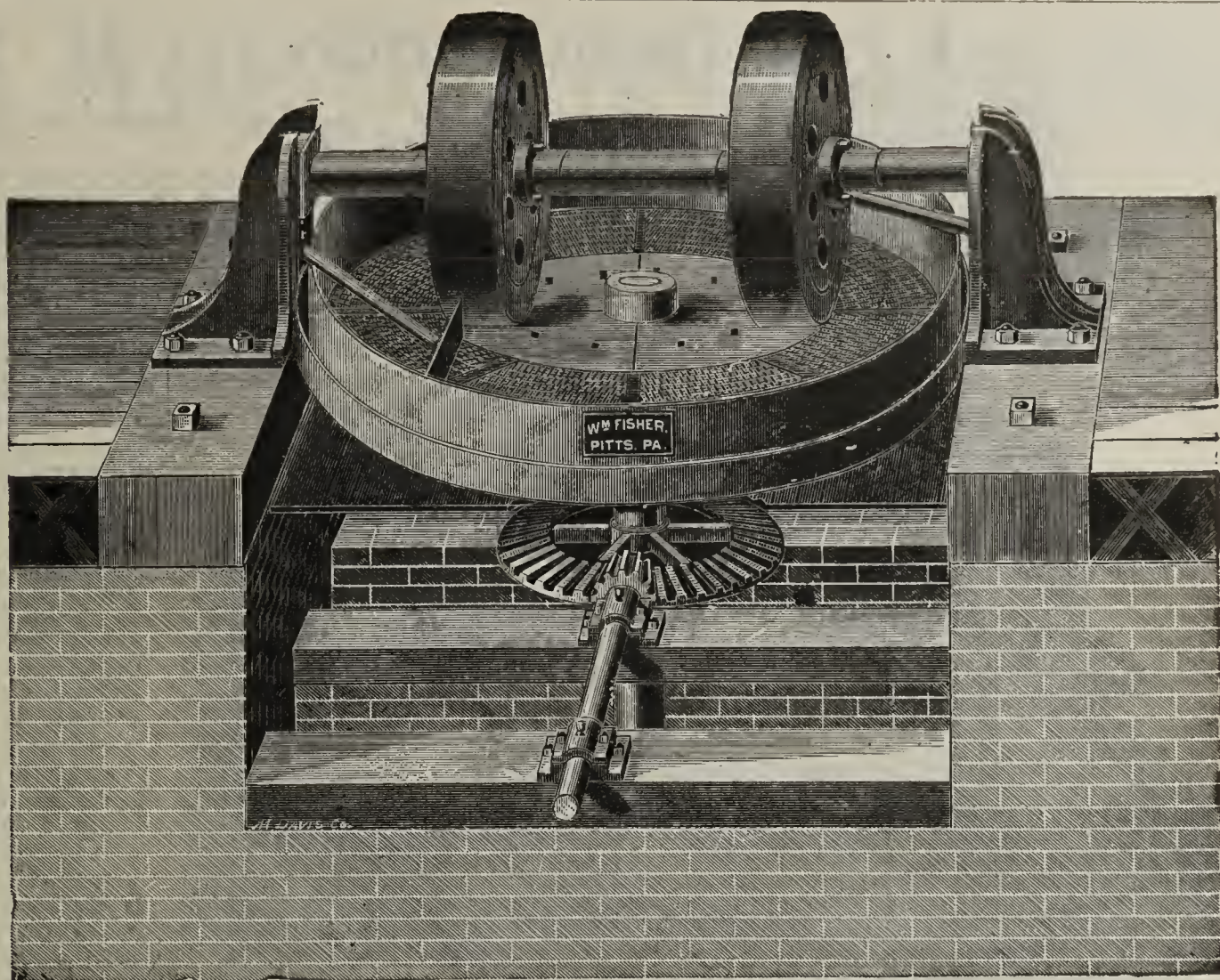
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.

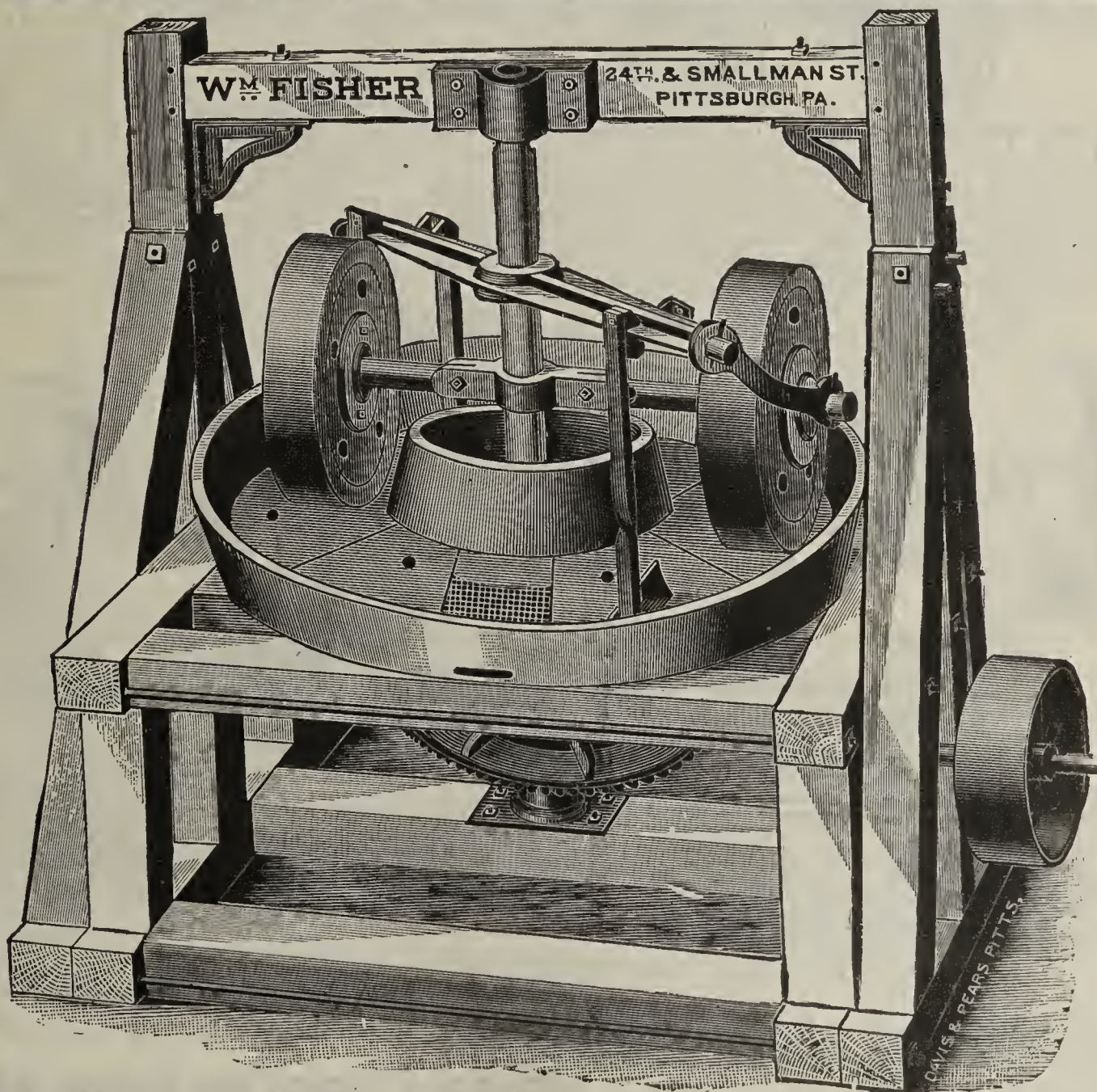


## Wet Pans,

STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,

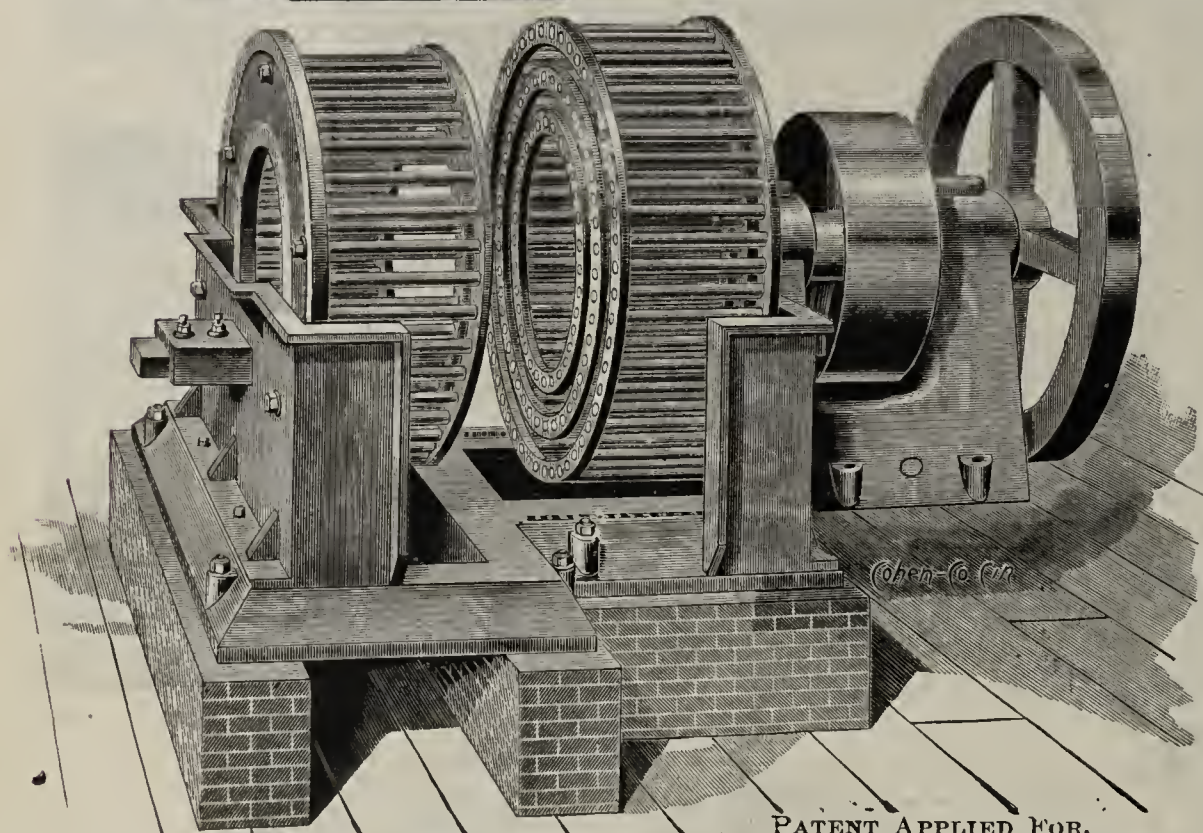
BLAKE CRUSHERS,

BRICK PRESSES.

When writing for prices, state kind of material and capacity required.



## Description.



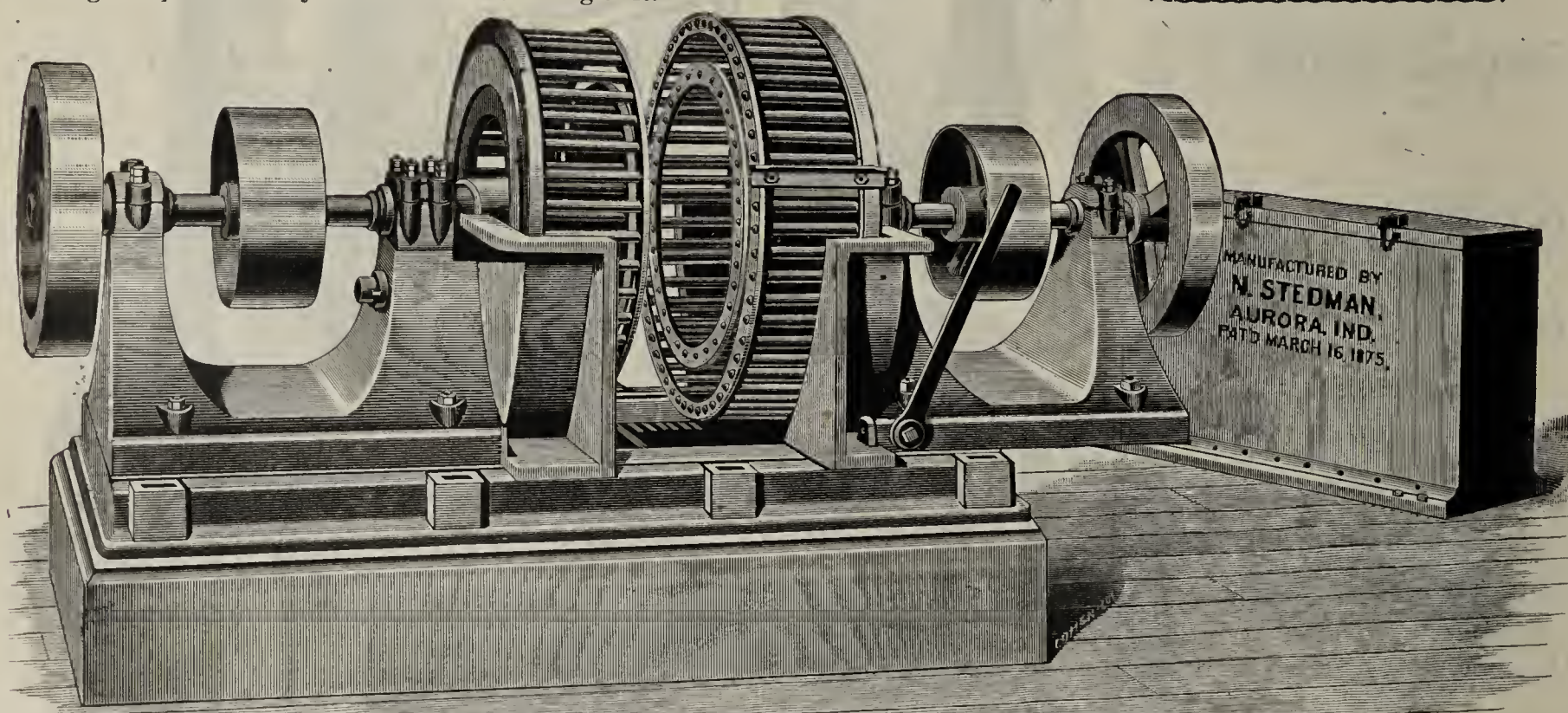
PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.

This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**



# THIS IS WORTH CONSIDERING.

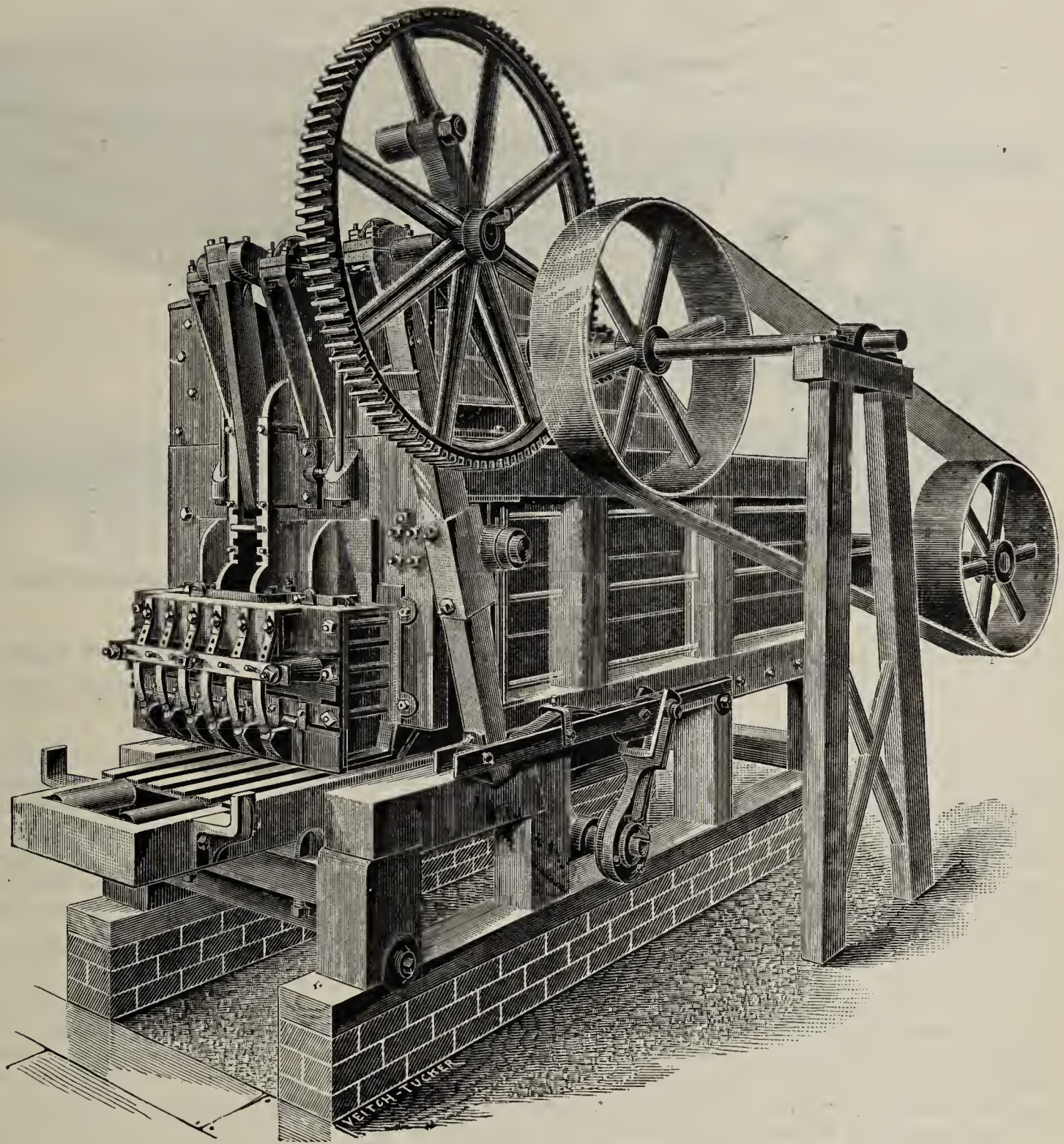
A REPUTATION WORTH HAVING.



WEIGHT  
NEARLY EIGHT  
TONS.



HAS BEEN  
IMPROVED EACH  
YEAR.



## Reputation of the Brick.

STATE FARM, BRIDGEWATER, Mass., Nov. 22, 1892.

THE McLAGON FOUNDRY CO.:

DEAR SIRs—Your letter of recent date at hand. In reply would say that I bought the "New Haven" Horizontal Brick Machine because I considered it the cheapest and best brick machine made.

Cheapest because the machine is so strong that there is no danger of breakages, and the best because the brick made on this machine have the reputation of selling for the highest price wherever it is located.

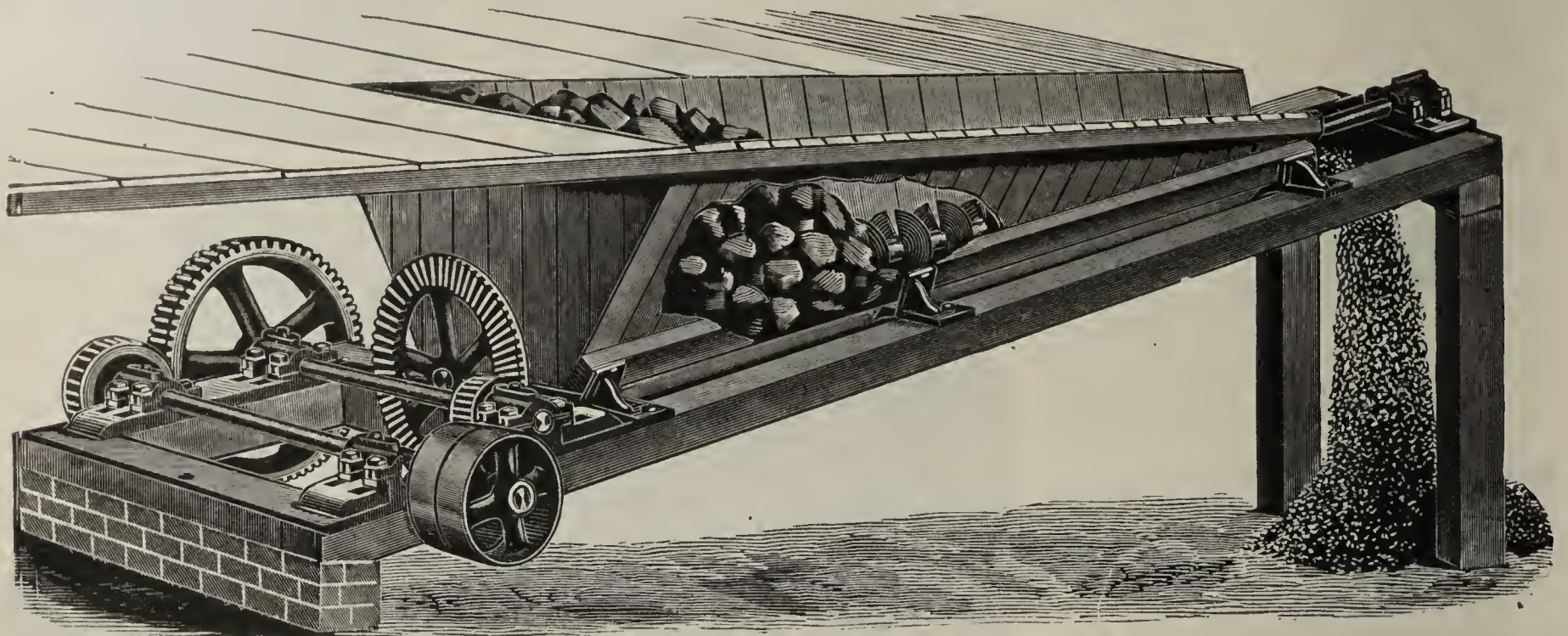
Yours respectfully,

E. L. COOK.

•→• The McLAGON FOUNDRY CO., New Haven, Conn.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.



J.W. PENFIELD & SON  
CLAY-WORKING  
MACHINERY  
WILLOUGHBY, O.

## The Fall Campaign

Finds us better prepared than ever before to meet the requirements of progressive brickmakers. In addition to our well-known line of Brickmaking and Clayworking Machinery, we are now prepared to furnish the

## PENFIELD DRY PRESS BRICK MACHINE

A cut of which will appear in the next CLAY-WORKER. Those who can do so are cordially invited to visit our works, where one of these machines can now be seen.

No expense has been spared to make this machine the strongest and best of the kind upon the market; if you can see the machine and view its operation and products, you will have no reason to doubt that we have been entirely successful in our endeavors.

If you wish High Grade Machinery for High Grade Work, it will pay you to investigate the PENFIELD. Details upon application.

**J. W. Penfield & Son,**

Manufacturers of

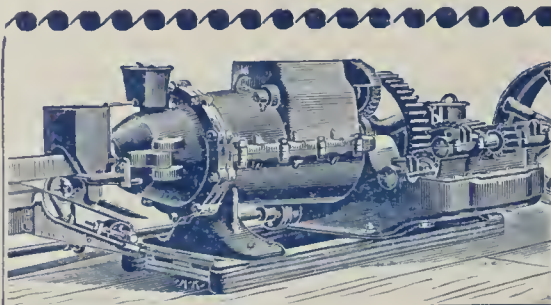


Auger Brick Machinery,  
Plunger Brick Machinery,  
Stock Brick Machinery, (sand-moulding),  
Dry Press Brick Machinery,  
Sewer Pipe Machinery,  
Clayworking Machinery of All Kinds.

WILLOUGHBY, OHIO, U. S. A.

J.W. PENFIELD & SON  
CLAY-WORKING  
MACHINERY  
WILLOUGHBY, O.



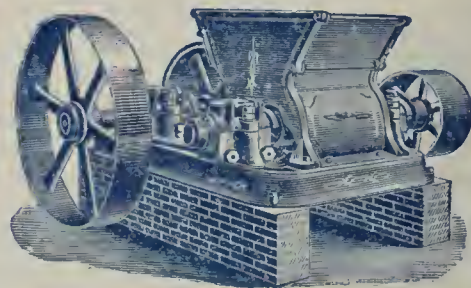


### The Penfield Auger Brick Machines

are the heaviest of the good machines and the best of the heavy machines. They are strong, durable, speedy, automatic. They make good brick. What more could you ask?

CATALOGUES FREE.

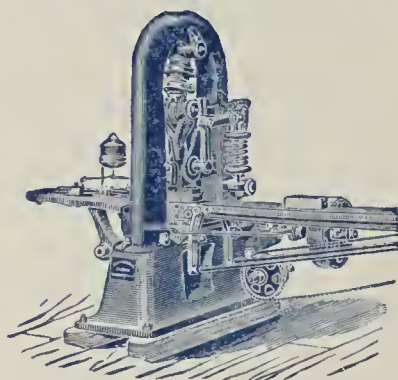
J. W. PENFIELD & SON,  
Willoughby, Ohio, U. S. A.



### Penfield Disintegrators and Crushers

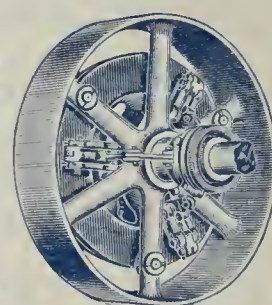
will aid you to prepare your clay better and you will make better brick. Better brick mean quicker sales, larger demand, better prices; advantages worth securing. Send for our catalogues.

J. W. PENFIELD & SON,  
Brick Machinery Makers,  
Willoughby, Ohio.



Every time you press a brick by hand, you lose money. A Power Press will do everything a hand press can and do it easier, quicker and cheaper. PENFIELD'S POWER PRESS is simplest and strongest; lasts longest; costs least for repairs; is guaranteed. Circulars free.

J. W. PENFIELD & SON,  
BRICK MACHINE MAKERS,  
Willoughby, Ohio.



Equip  
your  
Line-  
Shafting  
with  
the

### Imperial Clutch Pulleys.

Friction regulated without stopping shaft. Clutch mechanism perfectly balanced. Runs at any speed. Takes small space on shaft. Strictly first-class. Send for details.

J. W. PENFIELD & SON,  
No. 12 Mentor Ave.,  
Willoughby, Ohio.



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

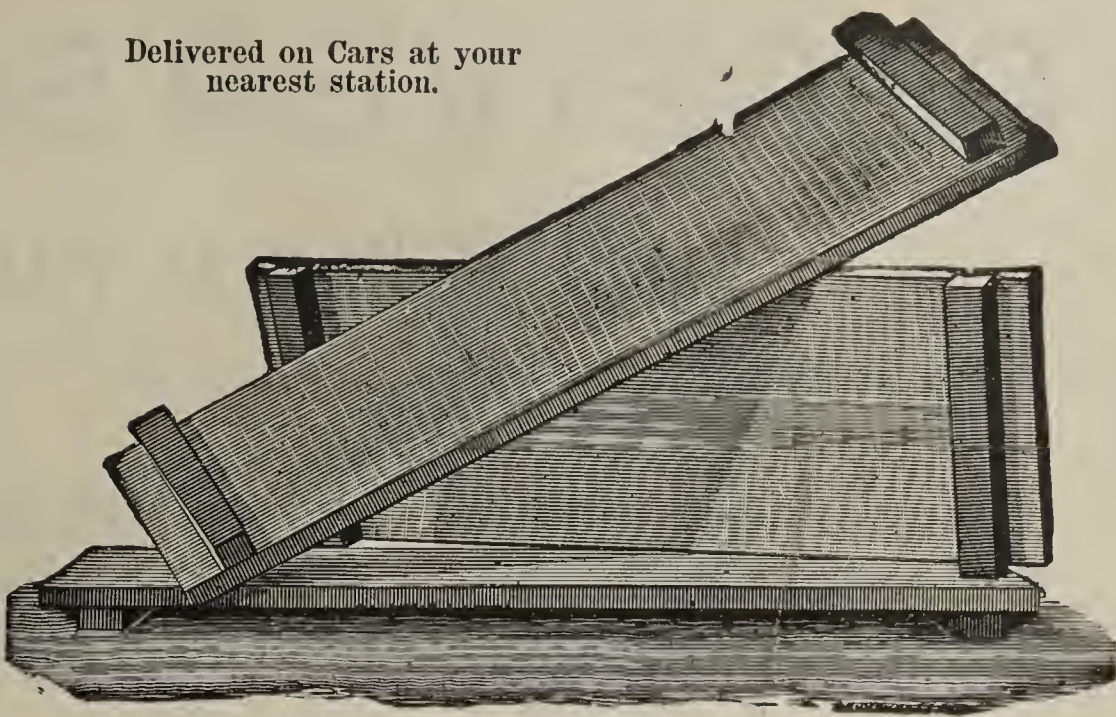
W. B. MERSHON & CO.,

East Saginaw, Mich.

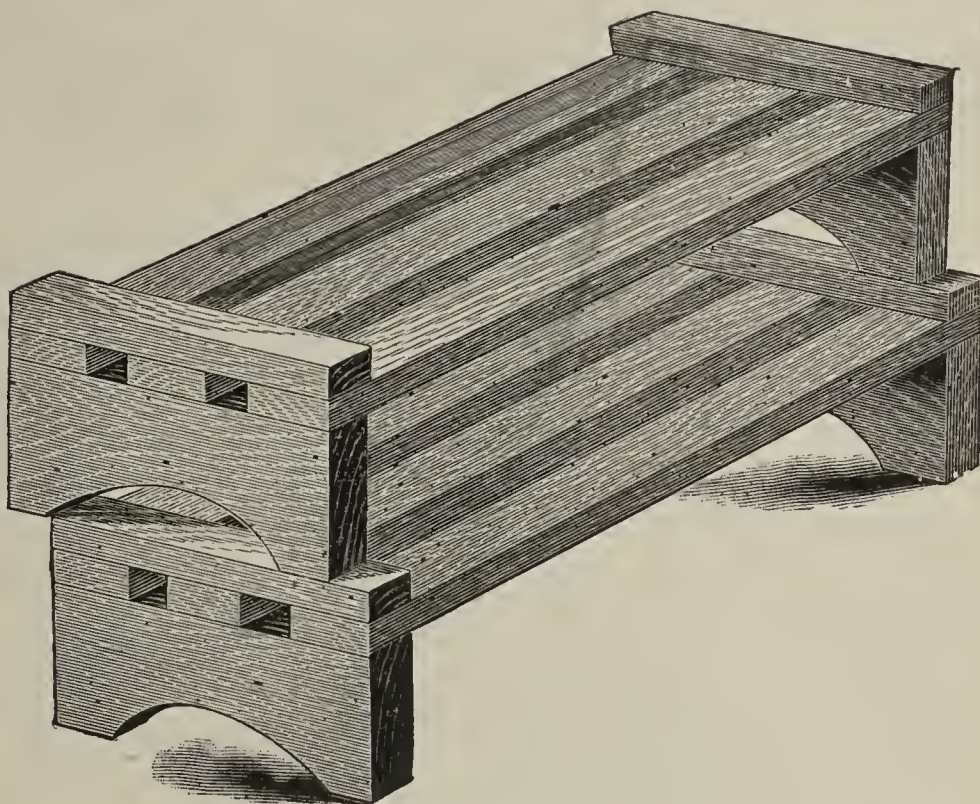
THE CLAY-WORKER.

297

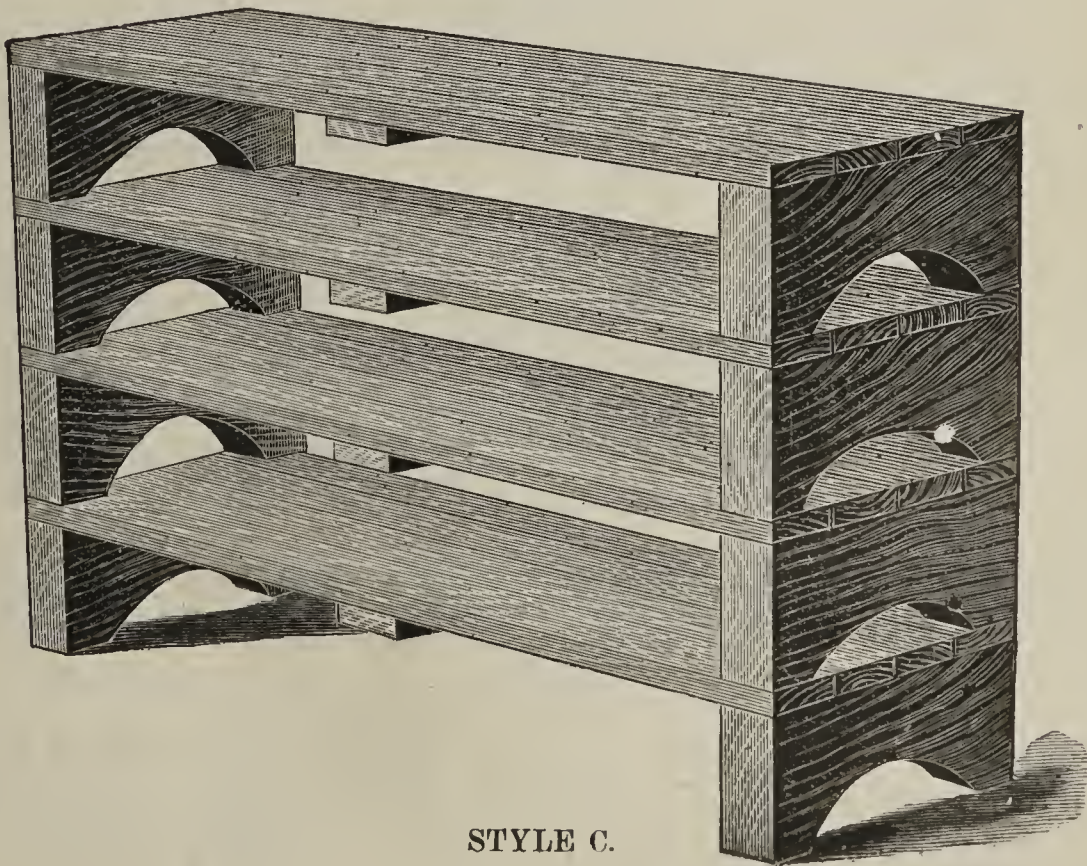
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.



STYLE C.



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

REFERENCE: Rush County National Bank.

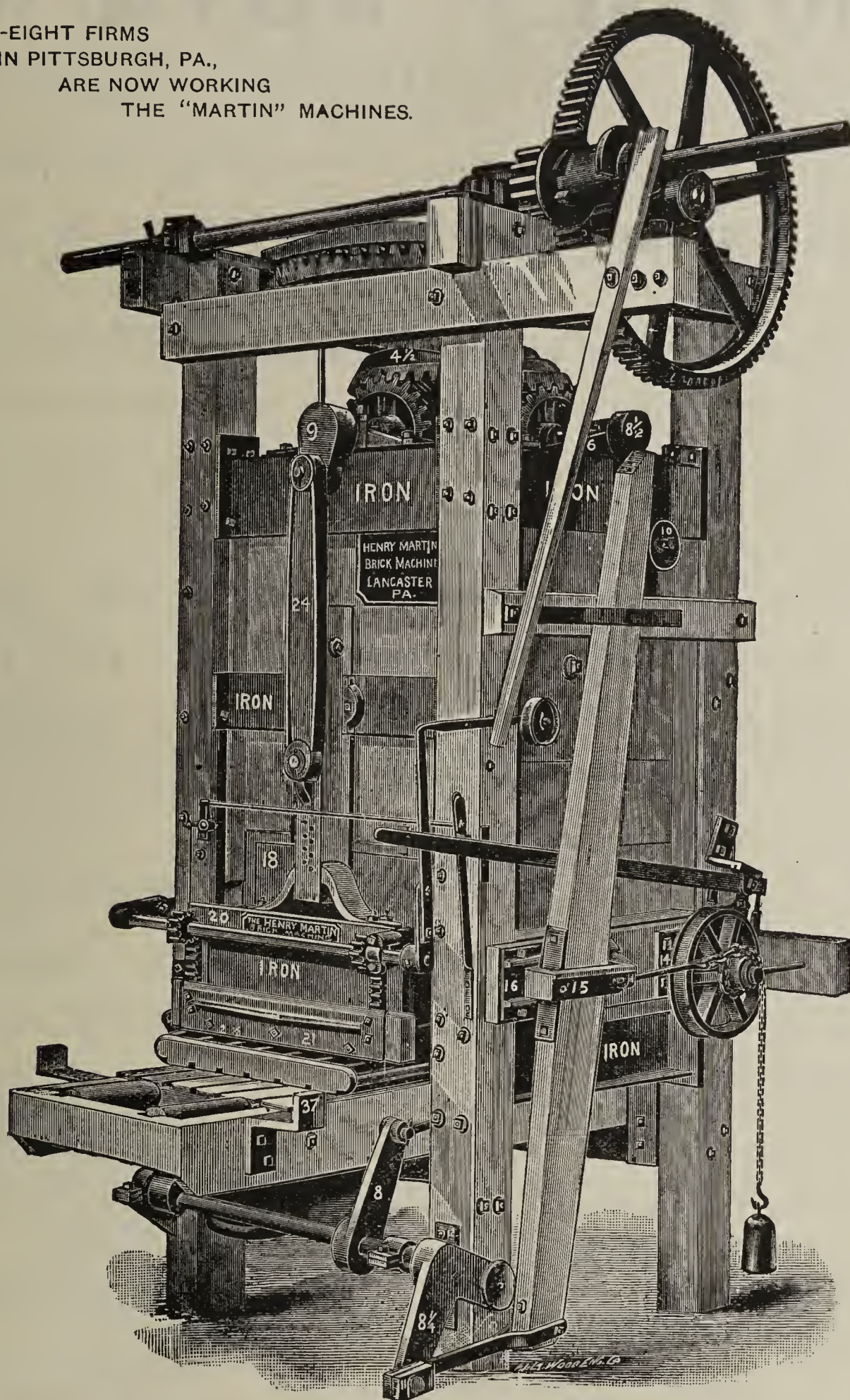
**RUSHVILLE, IND.**



THE  
OLD.....  
RELIABLE

# Martin Brick Machines.

SEVENTY-EIGHT FIRMS  
IN PITTSBURGH, PA.,  
ARE NOW WORKING  
THE "MARTIN" MACHINES.



Each  
and  
Every  
Machine  
is  
Built  
Under  
the  
Personal  
Supervision  
of  
its  
Inventor.

We  
Manufacture  
all  
the  
Latest  
and  
Best  
Improved  
Brick  
Machinery  
and  
Supplies.

## ...The Henry Martin Brick Machine Mfg. Co...

ESTABLISHED  
1857.

LANCASTER, PA., U. S. A.

INCORPORATED  
1887.

WRITE US  
FOR ANY INFORMATION DESIRED.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER**," Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.

[Mention the Clay-Worker.]



Fresh Evidence Monthly, of the Highest Quality.

## Another Valuable Opinion.

Last month we gave a letter embodying the experience of Mr. C. H. Carpenter, (a recognized expert) with our "Monarch" Brick Machine, who made nearly 2,000,000 brick in three months, without a break.

We give herewith a letter from another expert, Mr. John T. Chambers; being a brother of the members of the firm of Chambers Bros., & Co., of Philadelphia, and having been many years in the business and familiar with all the "points" since boyhood, few men's opinion are of more value than his.

BLAIR STA., Allegheny Co., Pa., July 17, 1893.

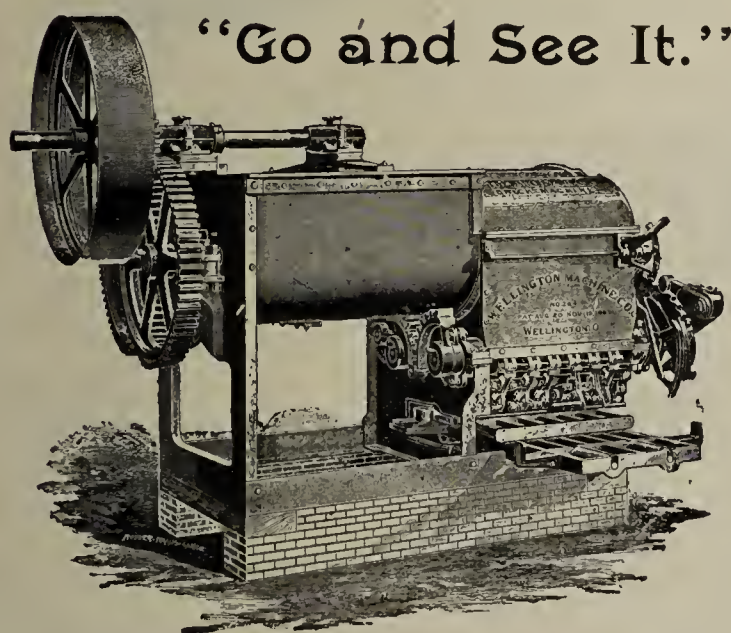
THE WELLINGTON MACHINE CO., Wellington, Ohio,

DEAR SIR:—The "Monarch" Brick machine you shipped us on May 13th, has been running and has given perfect satisfaction up to date. There has not been a moment's delay on the part of the machine—not even a hot box, which we consider remarkable in new machinery.

The safety devices to prevent breakage by carelessness are perfect. The power required is very much less than we anticipated. In fact there is nothing so far that we would criticise unfavorably. The capacity is only limited by the ability to take care of the bricks.

Truly yours,

JOHN T. CHAMBERS & CO.



"Go and See It."

### WE DON'T WANT YOU TO FORGET THESE FACTS.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double).

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple: (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it is the machine that will last a lifetime, and is

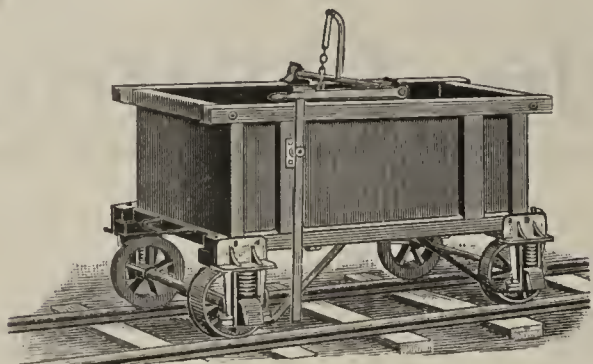
the "perfect machine" you have longed for so long. Only investigate is all we ask. Don't believe a word we say, only GO AND SEE for yourself.

## The Wellington Machine Co.,

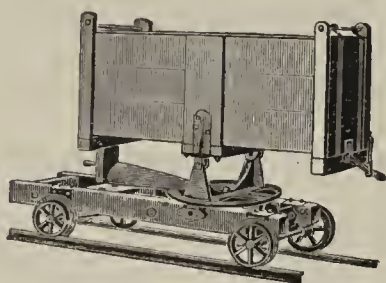
Wellington, Ohio.



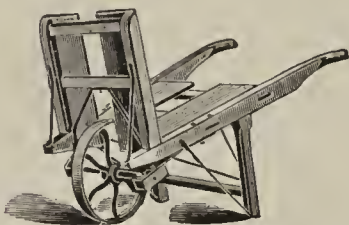
# BRICK YARD SUPPLIES.



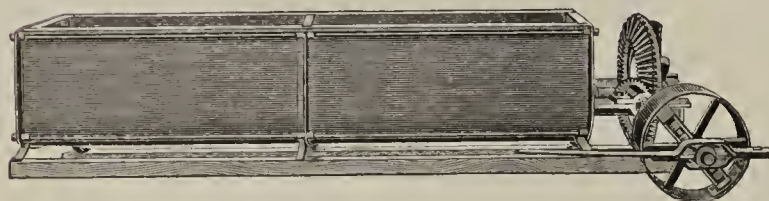
BOTTOM DUMP---Chilled Wheels.



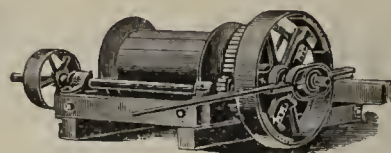
REVOLVING DUMP---Chilled Wheels.



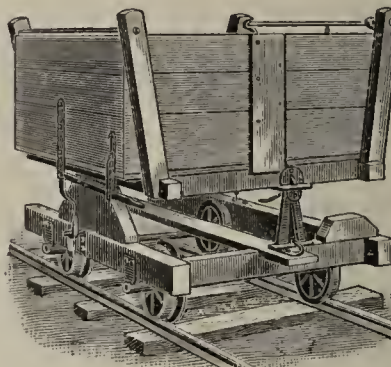
BARROWS.



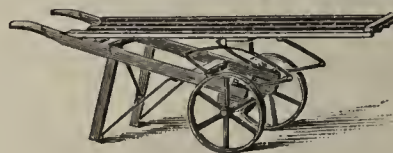
PUG MILLS.



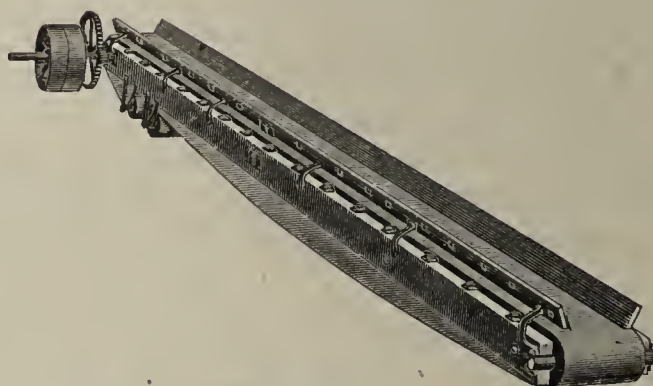
WINDING DRUM.



SIDE DUMP---Chilled Wheels.



TRUCKS.



ELEVATORS.



BRICK MOULDS.

We make the only clay car having chilled wheels.

If in need of supplies of any kind we can save you *money*.

We manufacture everything used on a Brickyard.

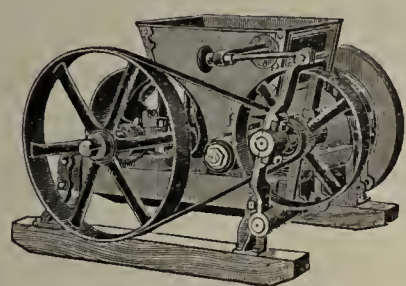
When you purchase from us you buy from manufacturers and save all commissions.

**C. & A. POTTS & CO.,**  
**INDIANAPOLIS, . . INDIANA.**

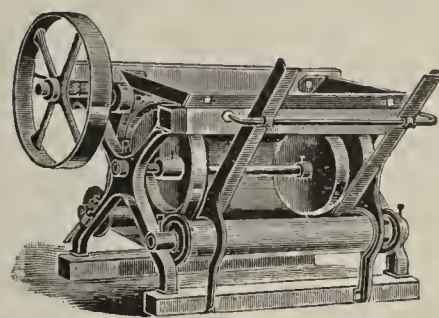
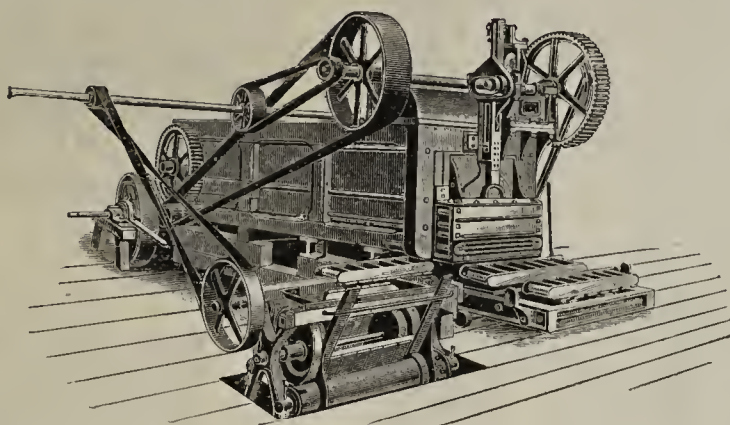


# THE BIG 3

## THE POTTS HORIZONTAL STOCK BRICK MACHINE, DISINTEGRATOR AND MOULD SANDER.



Having Chilled Rolls



Simple in Construction.  
Strong and Durable.

### A Disintegrator

Having **Chilled Rolls**. A machine that will grind hard, lumpy, or wet, sticky clays, and not choke or clog, that will separate or grind the stone. A machine that is simple, strong and durable.

### A Horizontal Stock Brick Machine

Which will work the clay direct from the bank without an extra Pug Mill. It will work the clay so stiff that the brick will not pitch in trucking or spread in drying. It will fill a six brick perfectly. The brick made will have *clean, sharp corners* and *smooth surfaces*. A machine which is *simple in construction, strong and durable*.

### A Mould Sander

Which will sand the Moulds better than can be done by hand, and will make a saving in labor and sand. It does not waste or spill the sand. It will make a saving of 75 cents to \$1.50 per day.

### With the Big 3

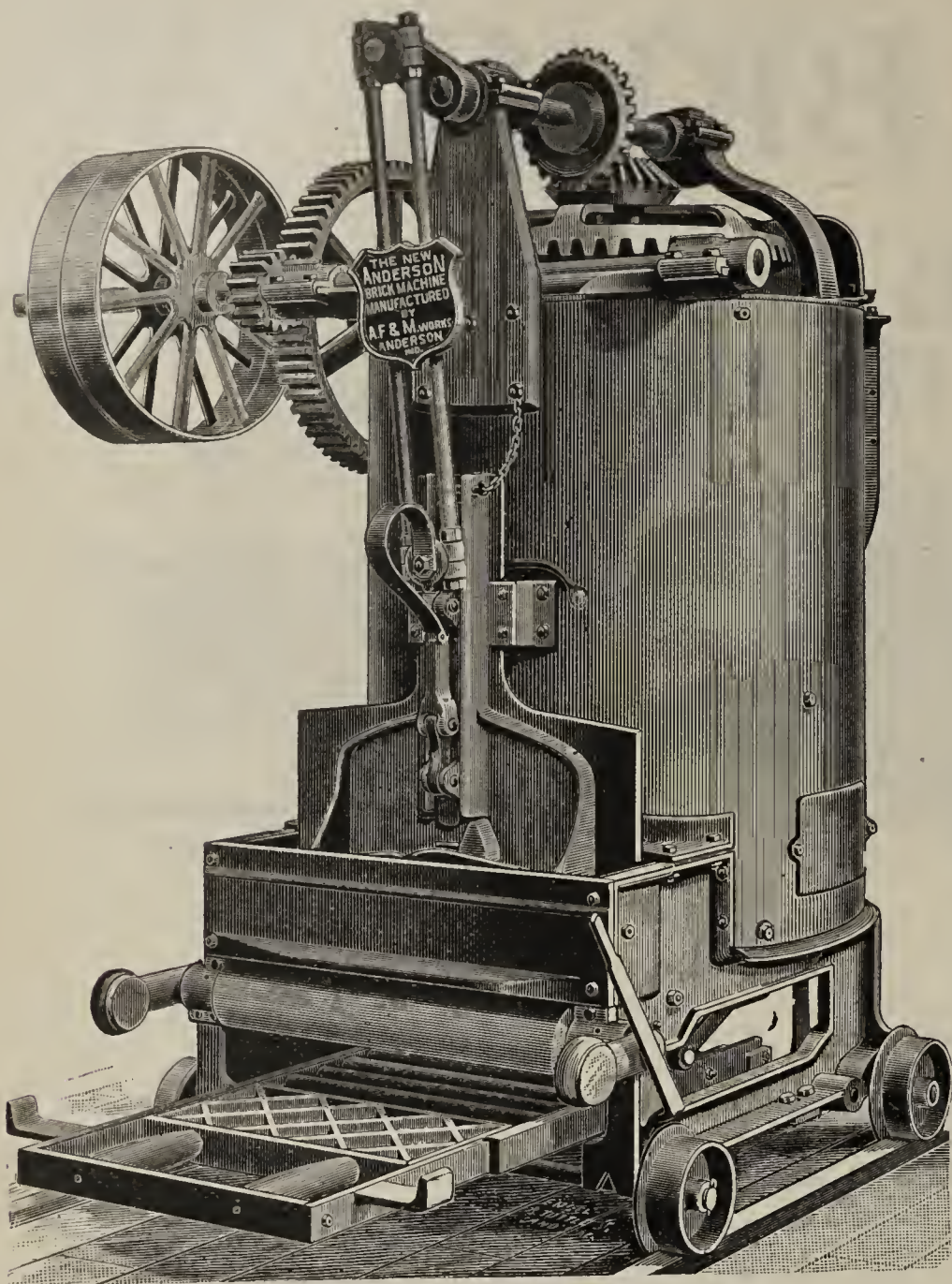
You can make brick which will always bring the highest market price. A brick which will always be in demand.

The above machinery is guaranteed to do the work and will be shipped on trial.  
For further information, address

## C. & A. POTTS & CO.,

INDIANAPOLIS IND.





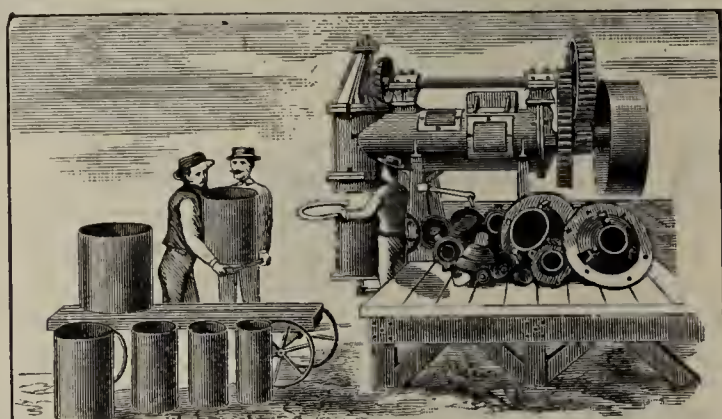
## THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.

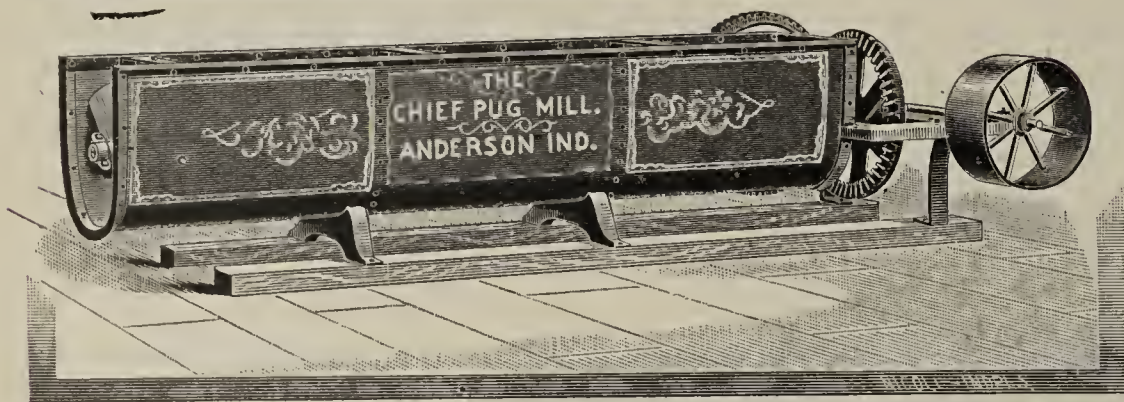


## The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.

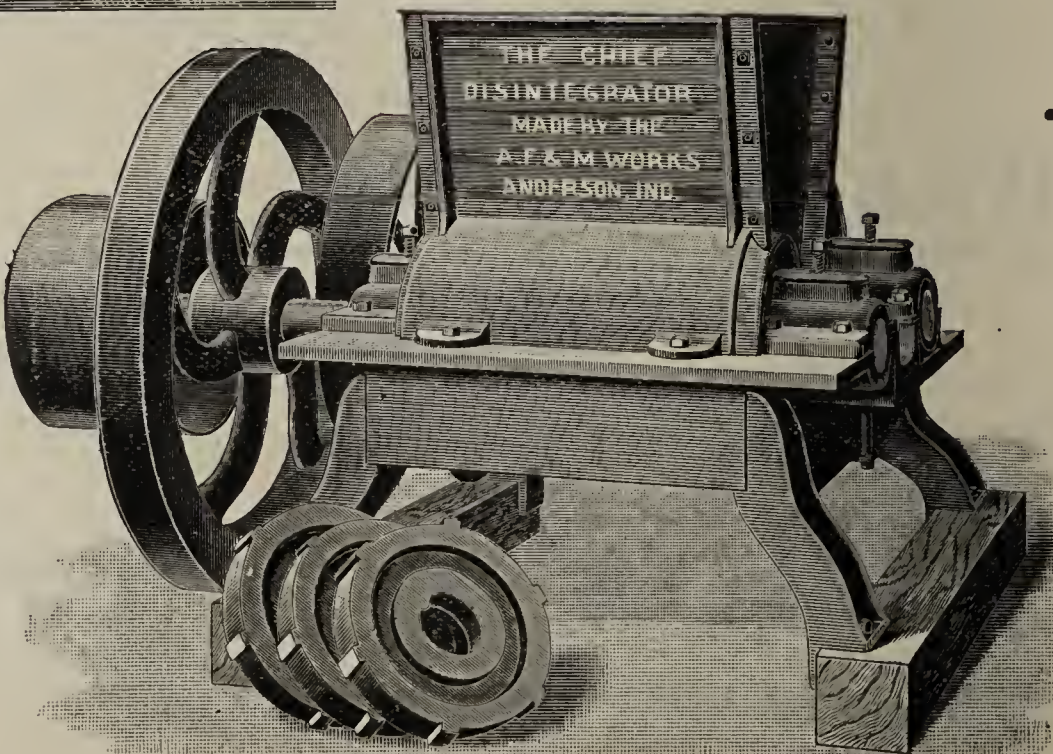


## The Chief Disintegrator and Stone

### SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 3/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.



[Mention the Clay-Worker.]

Correspondence Solicited.



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

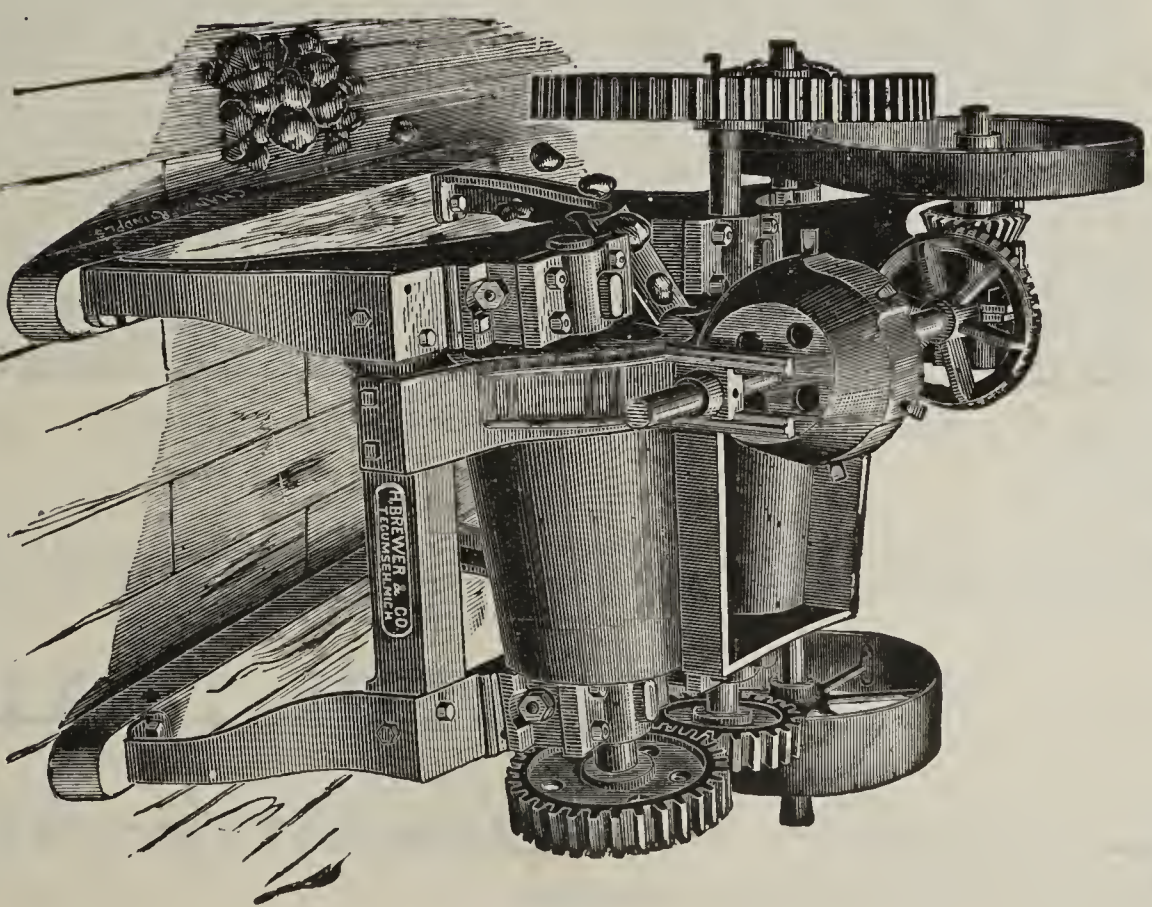
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

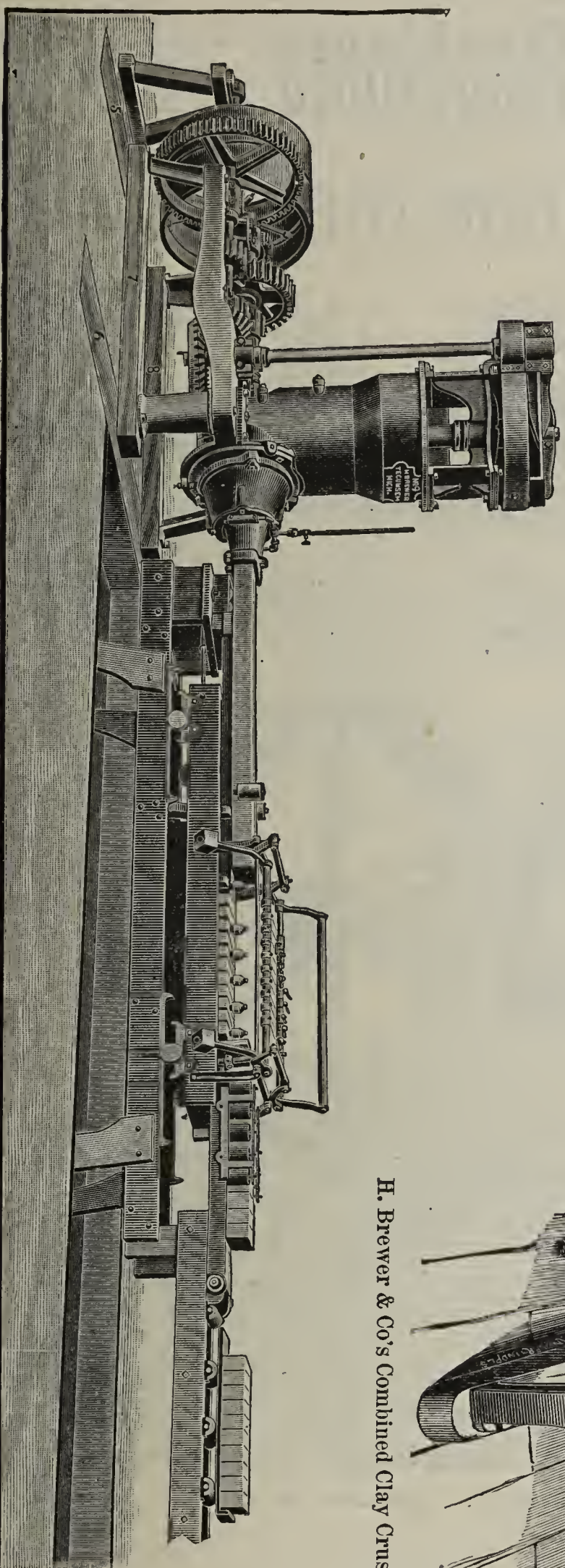
### H. BREWER & CO.,

[Mention the Clay-Worker.]

Tecumseh, Mich.



H. Brewer & Co's Combined Clay Crusher and Stone Separator.



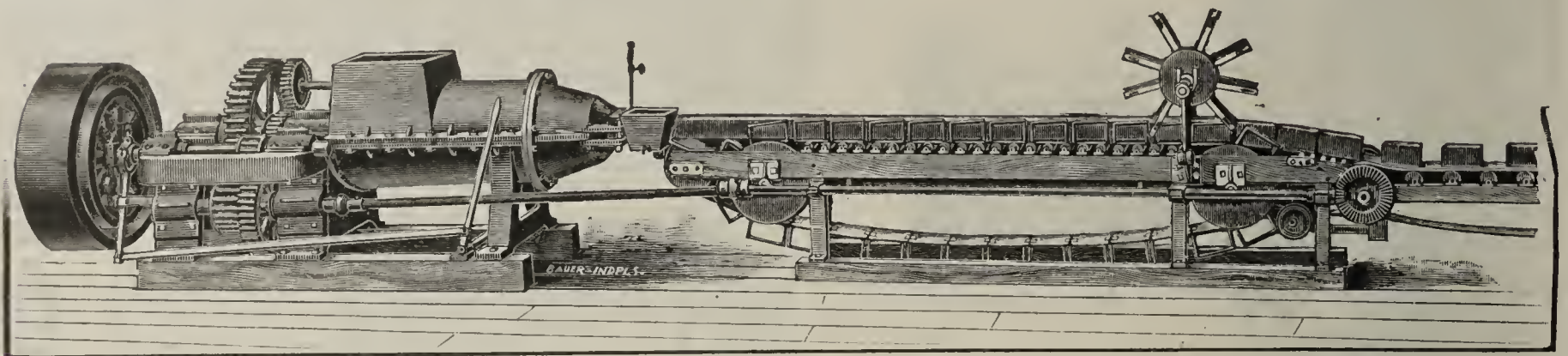
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



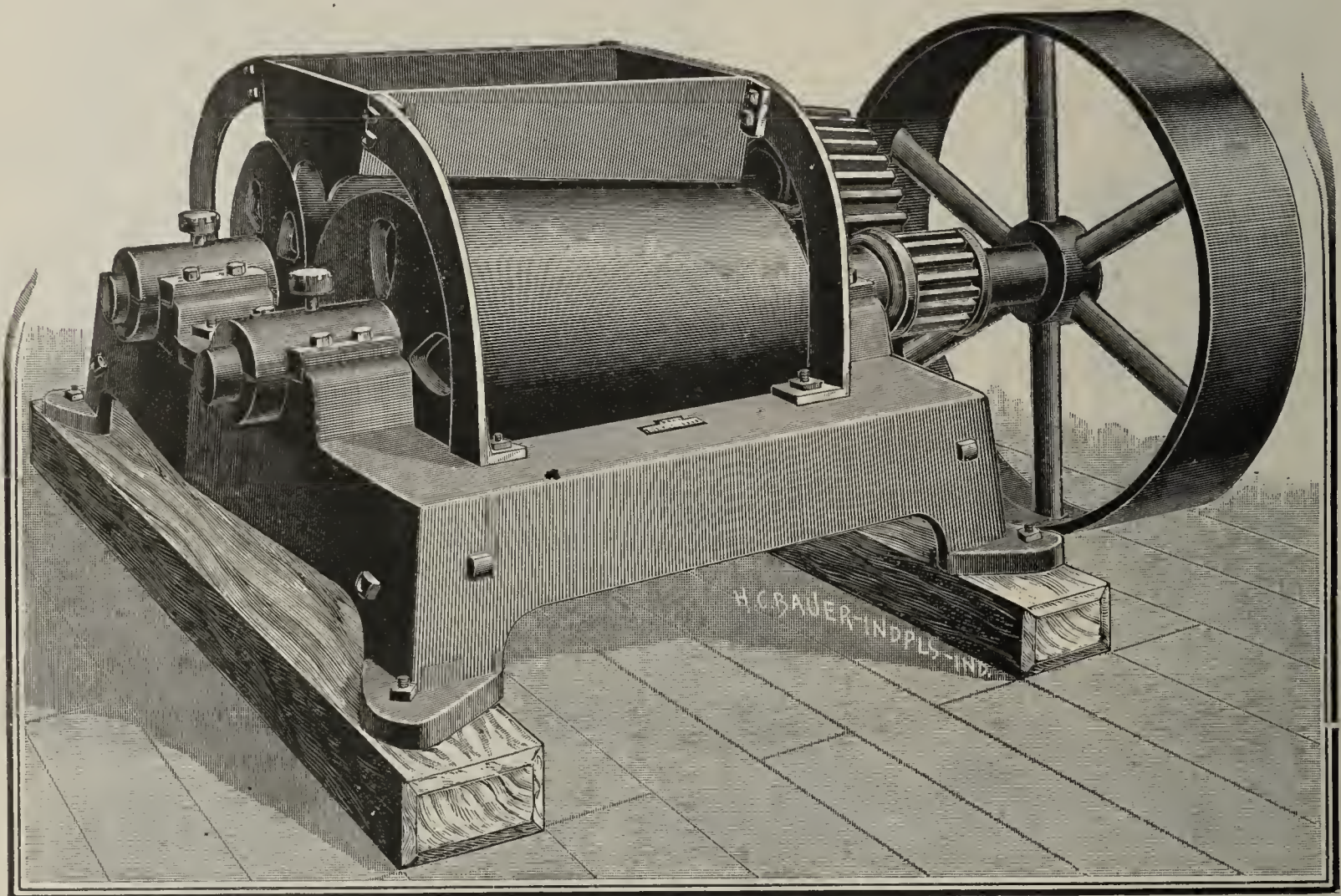
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

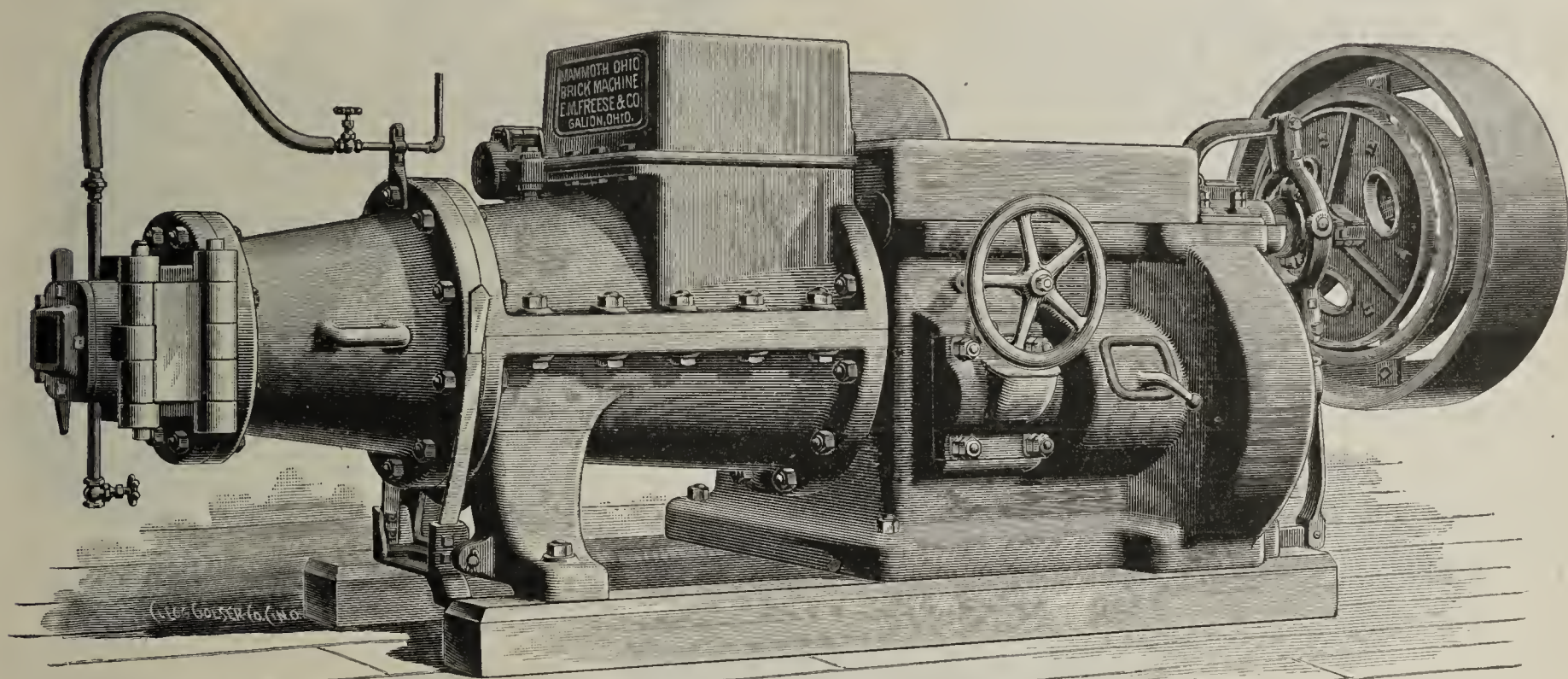
Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# SUPERIOR BRICK MACHINERY.

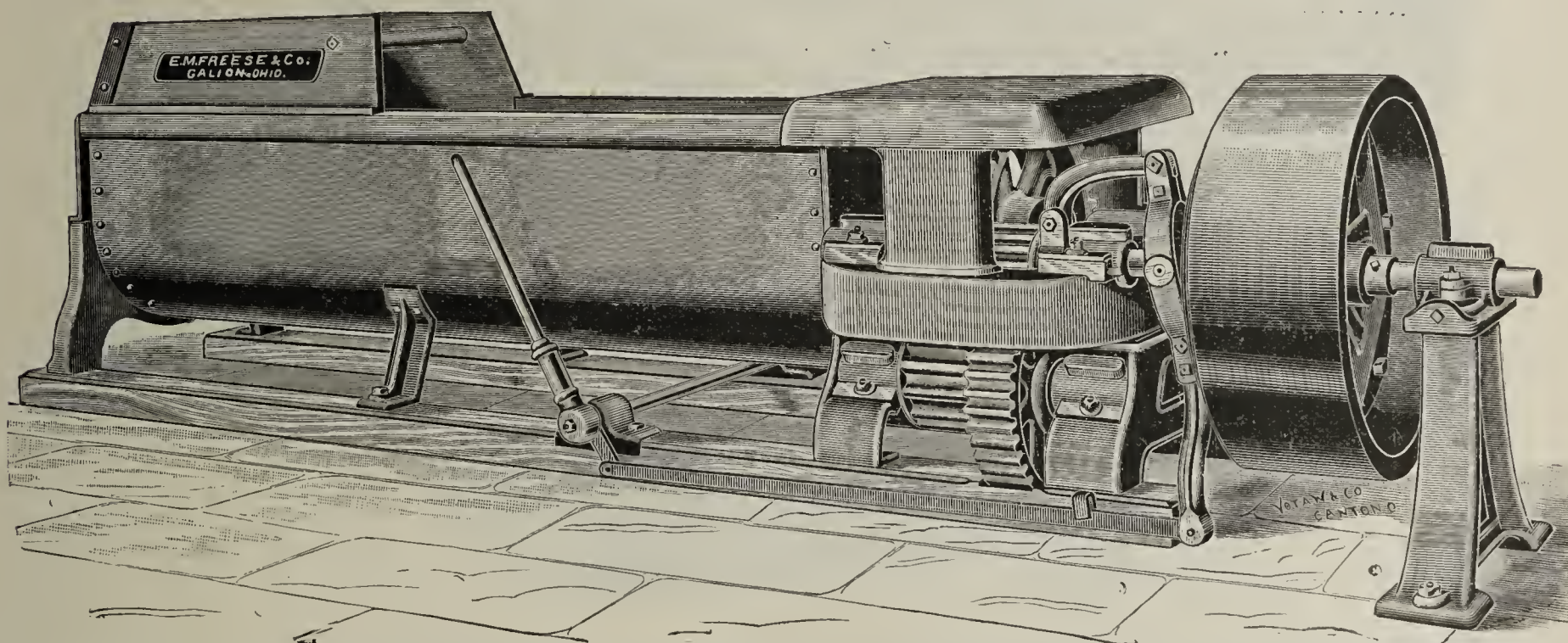
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.]

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

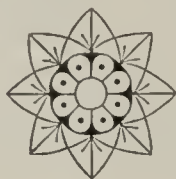
IT WILL PAY~~~~~

ADDRESS E. M. FREESE & CO.,

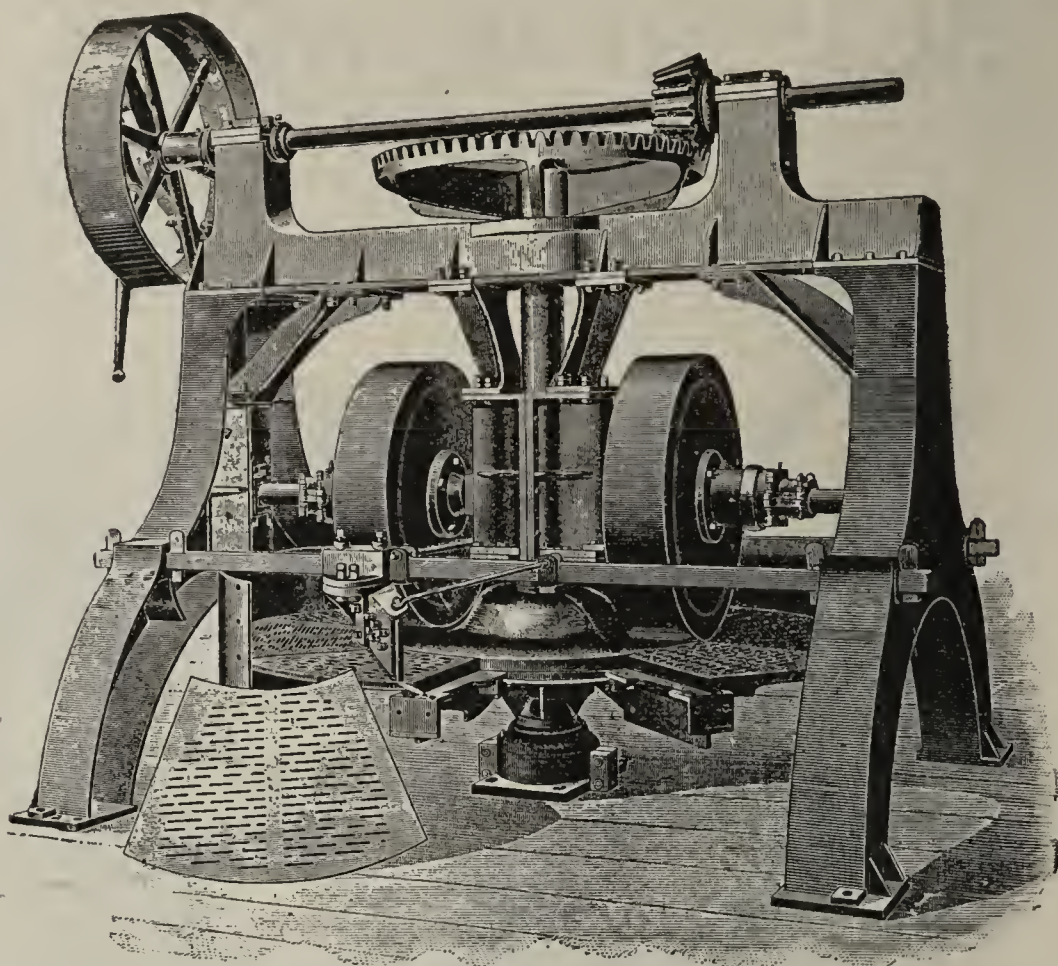
GALION, OHIO.



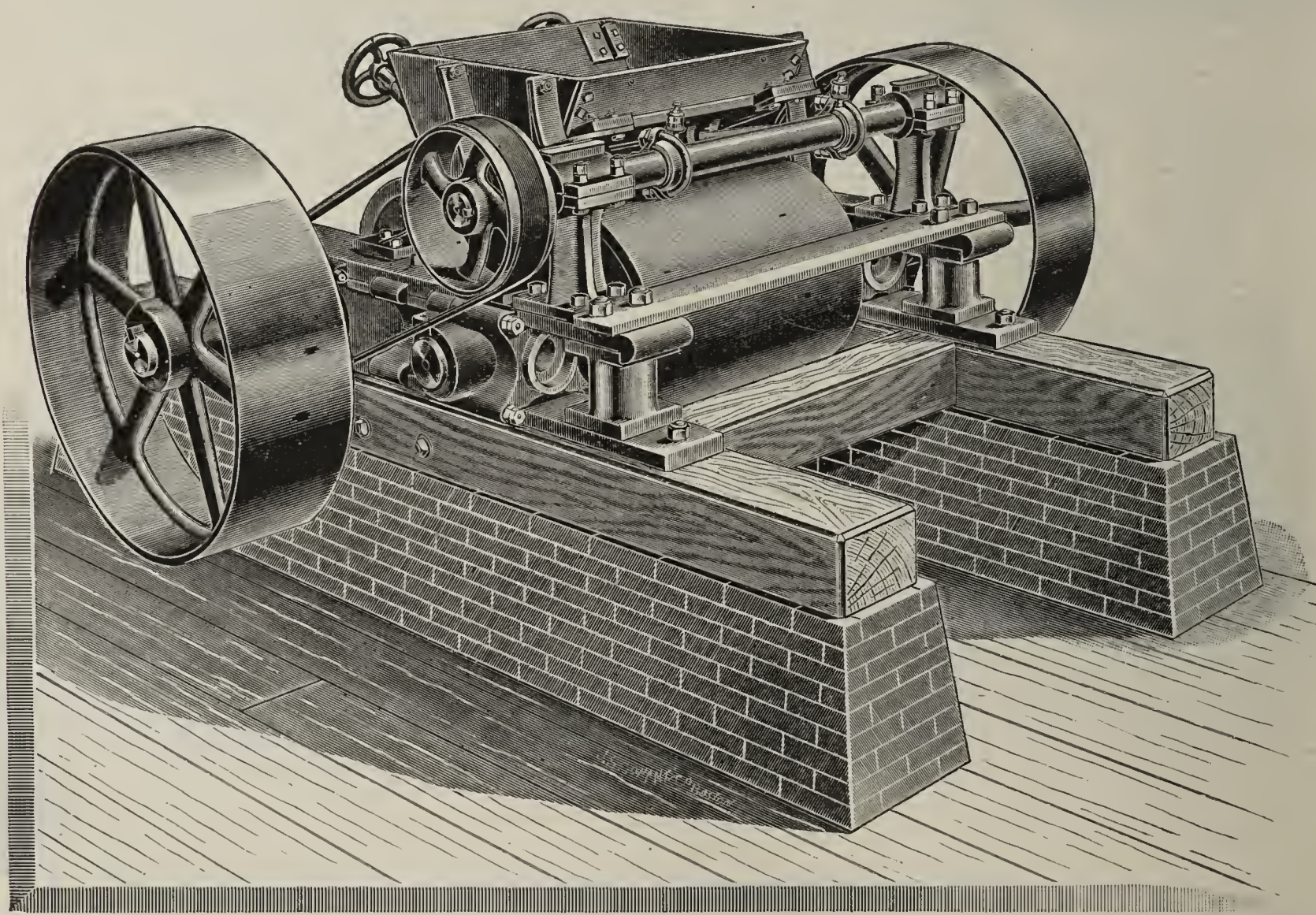
# The Frey= Sheckler Company Clayworking Machinery



Brick, Tile and Terra Cotta Machinery,  
Cutting Tables, Dry-Pans, Wet Pans, Crushers,  
Reduction Mills, Pug Mills, Winding Drums,  
Dump Cars, Clay Conveyors, Clay Screens,  
Brick and Tile Trucks, Engines and Boilers,  
Line Shafting, Pulleys, Belting, Etc.



Nine Foot Diameter All Iron and Steel Dry-Pan.



Tailings Crusher. Size of Rolls 20x26 in.

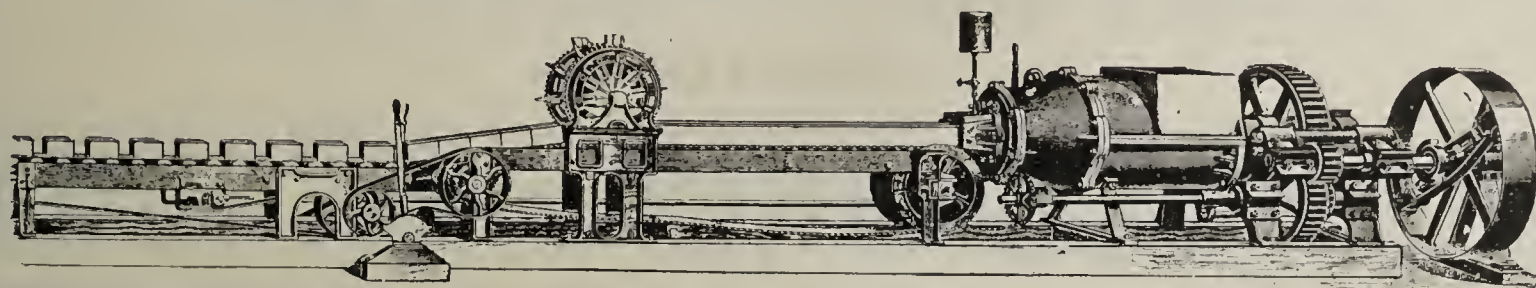
## The Frey=Sheckler Co.,

[Mention the Clay-Worker.]

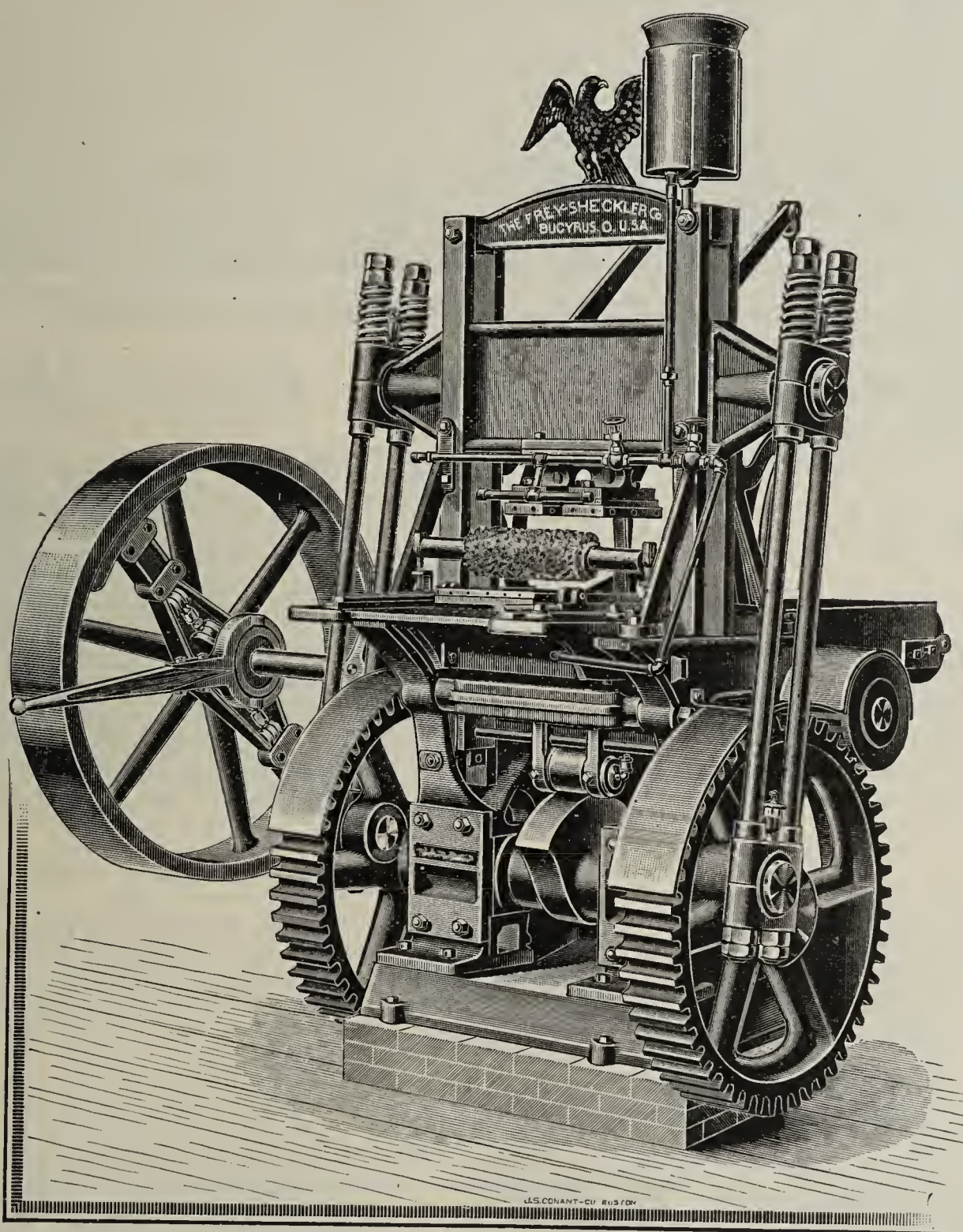
*Bucyrus, Ohio, U. S. A.*



# The Frey-Sheckler Company Clayworking Machinery.



No. 1 Giant Machine with Automatic Cutting Table.



Eagle Steam Power Double Die Repress.

## The Frey-Sheckler Co.,

Manufacturers,

BUCYRUS, OHIO, U. S. A.

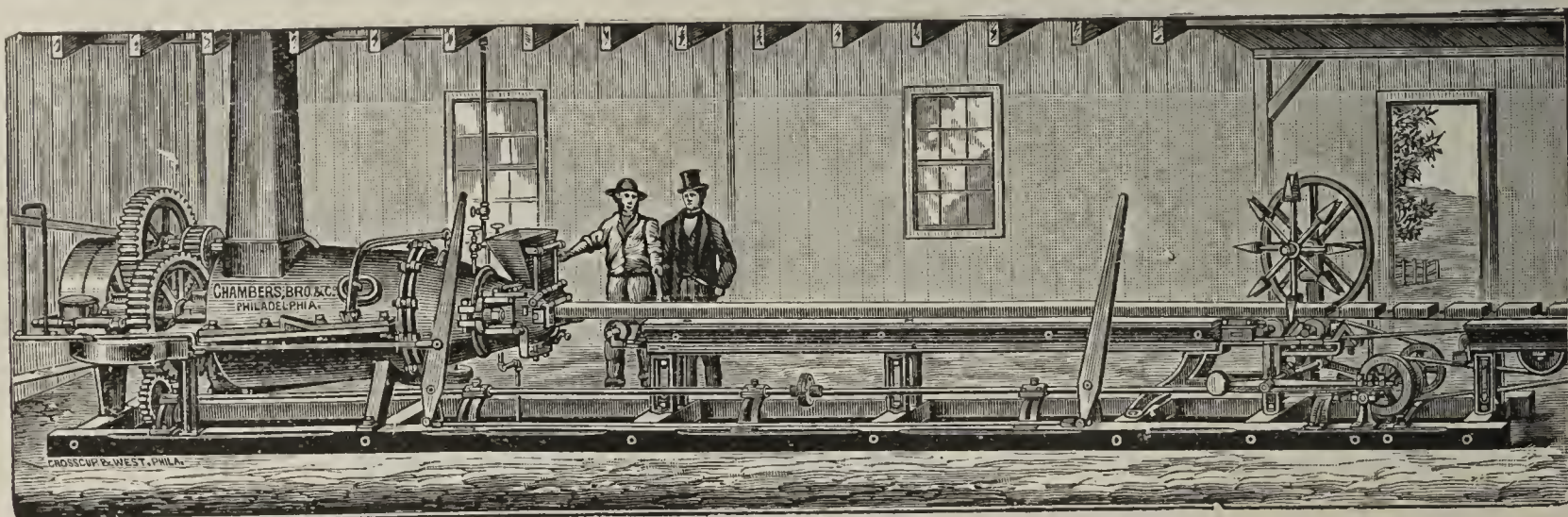


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



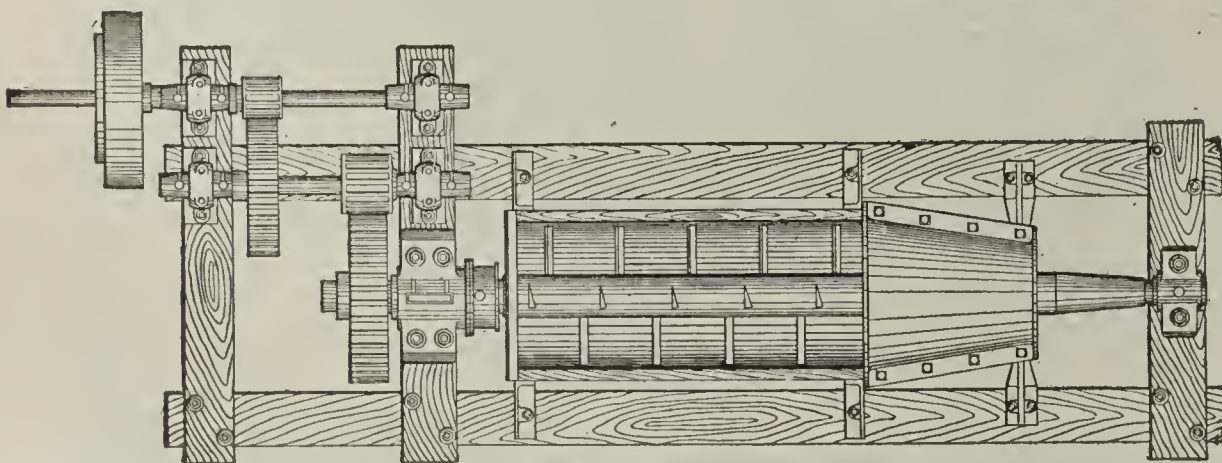
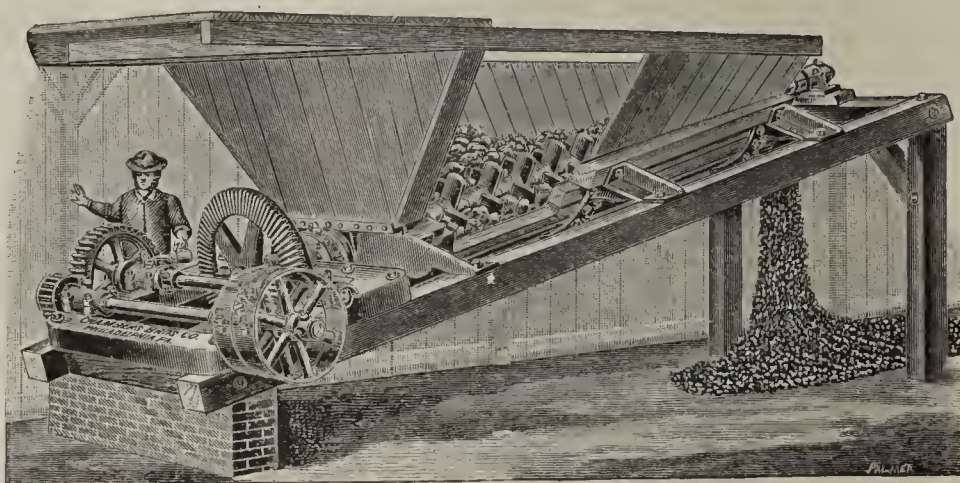
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

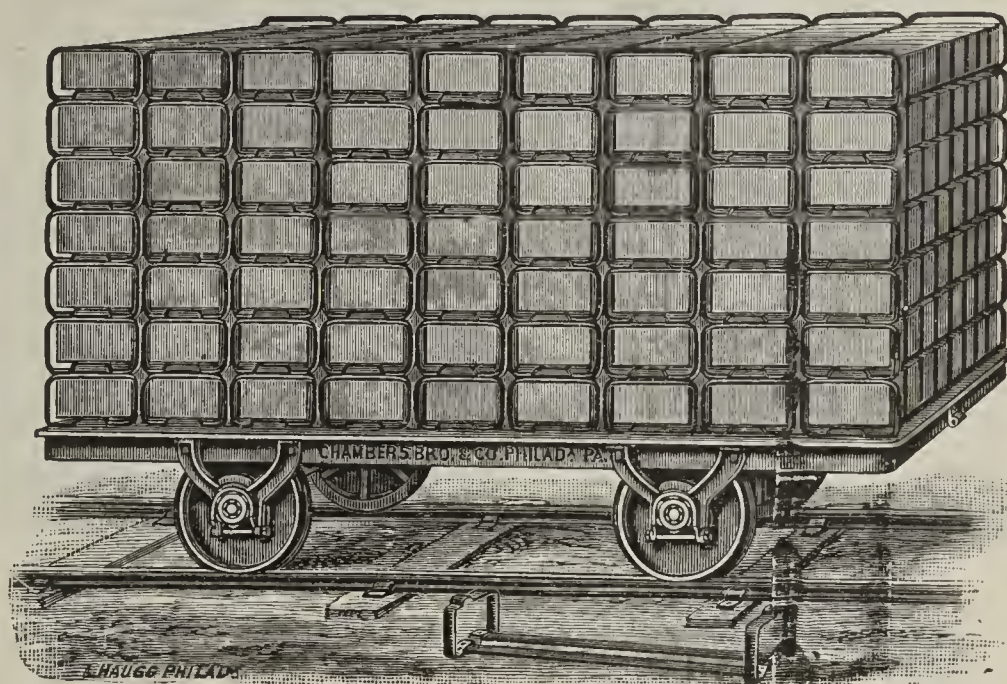
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

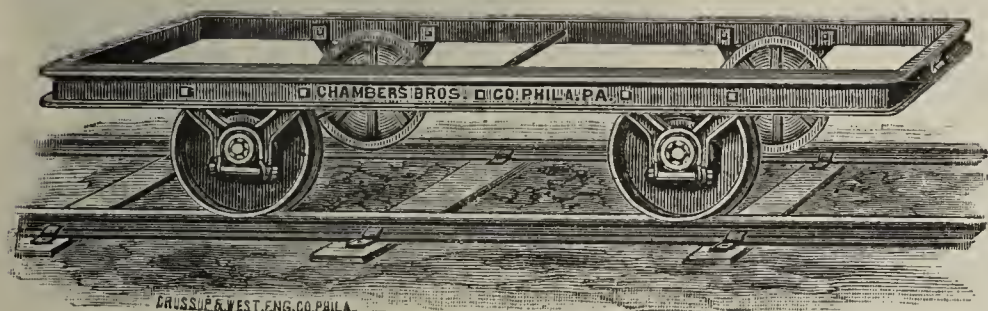
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

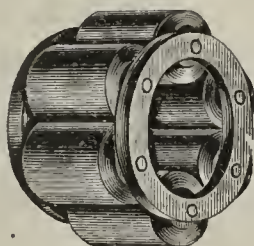


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

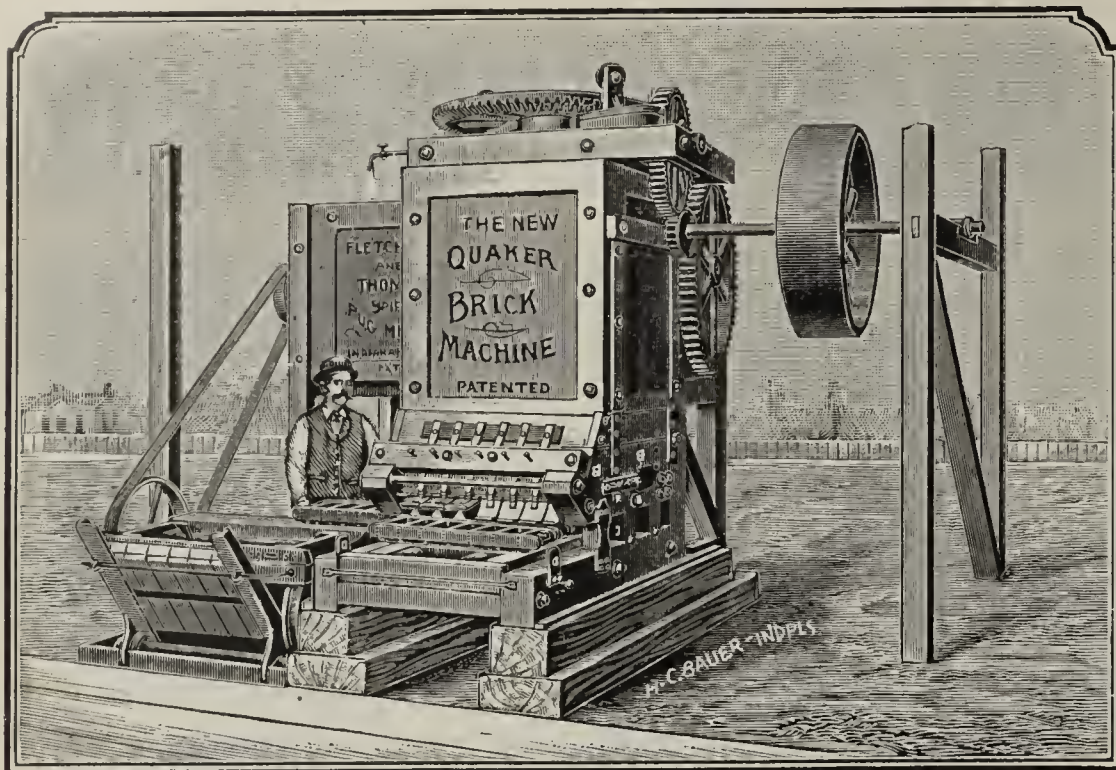
[Mention the Clay Worker



## FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

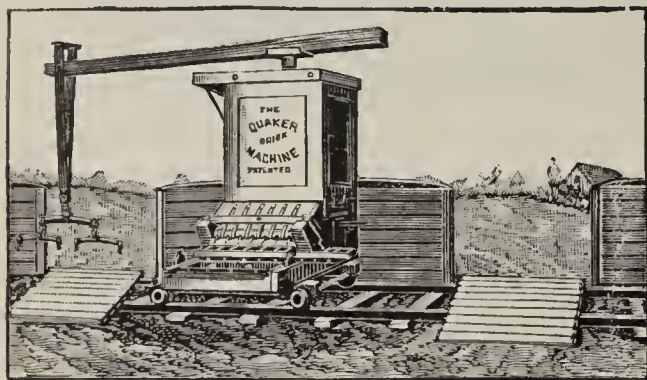


Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

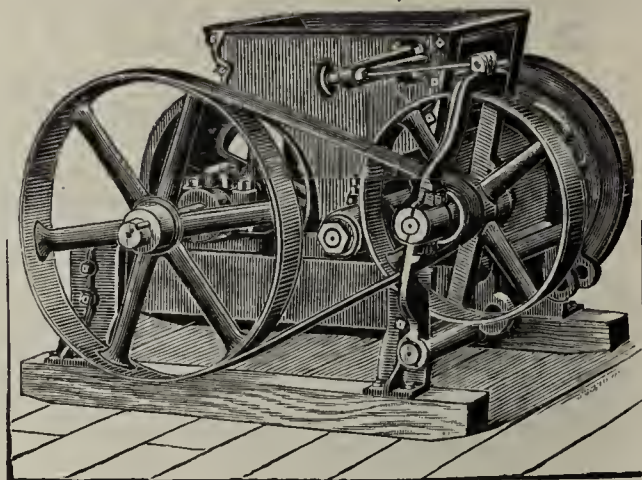
This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



THE NEW QUAKER

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



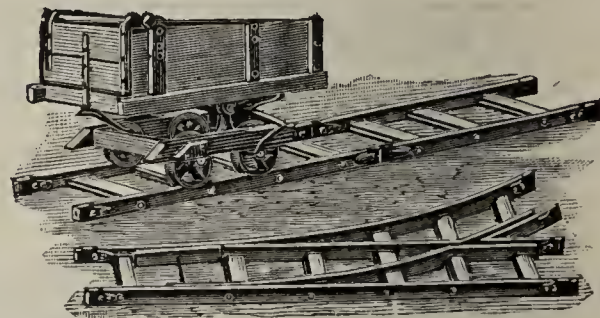
DISINTEGRATORS.

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

FLETCHER &amp; THOMAS, Indianapolis, Ind.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

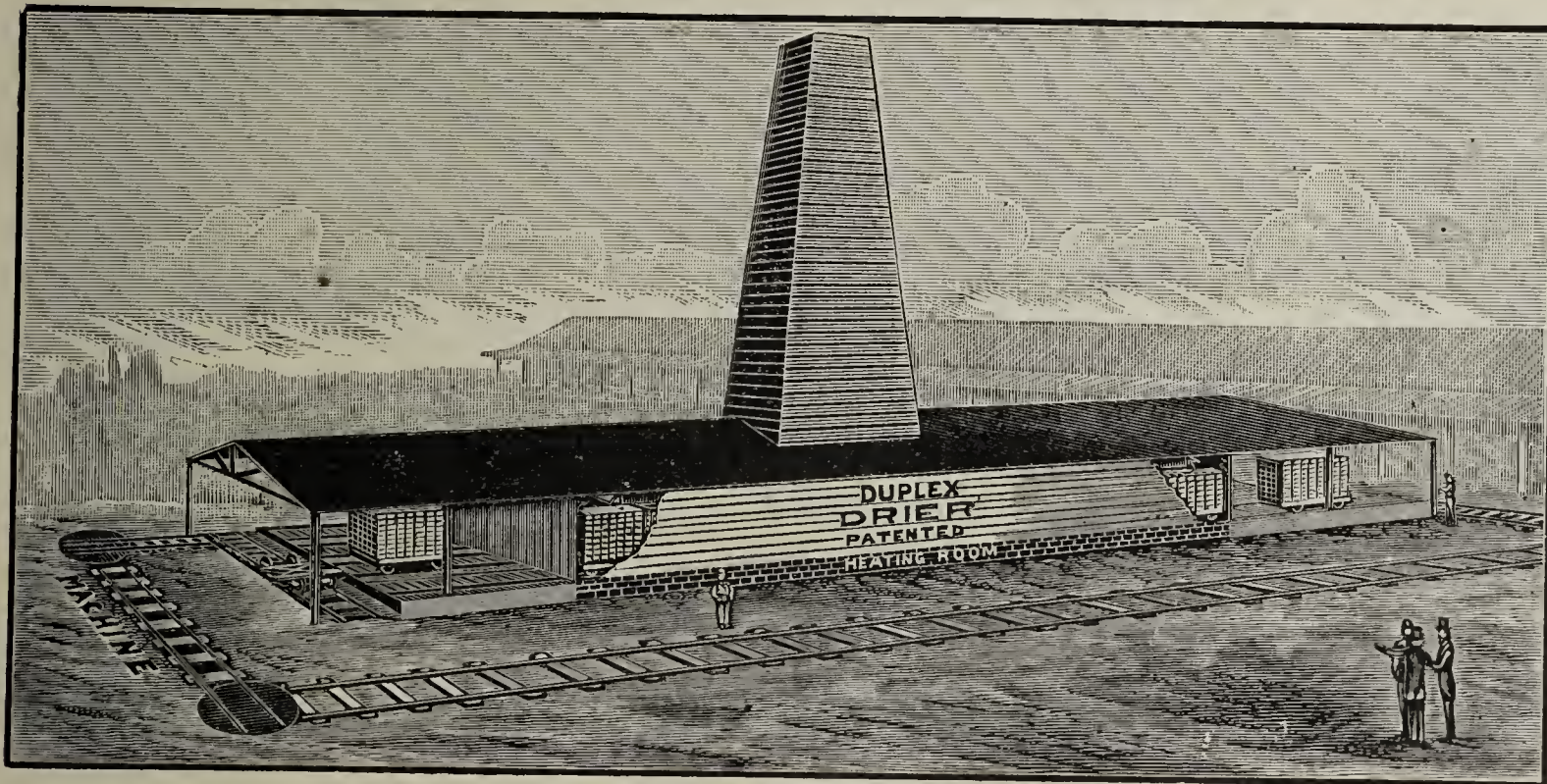
## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## ATTENTION BRICKMAKERS!

Do not be alarmed by the  
screeching of Wild Cats  
or the howling of WOLVES.



.....  
The  
Duplex  
Steam  
Drier

IS NO.,...

INFRINGEMENT.

.....

Harland Brick Co. have been using it at Bernice, Ill., for eighteen months, 75,000 daily capacity. Harland Brick Co., Shermerville, Ill., twelve months, 75,000 daily capacity. Galesburg Paving Brick Co., Galesburg, Ill., six months, 150,000 capacity. J. B. Legnard, Chicago, Ill., four months, 160,000 capacity, and others.

Now is the time to buy. Address,

W. C. BYRNE,

Room 67, 162 La Salle Street,

Chicago, Ill.



# THE SIMPSON BRICK PRESS.

NO SEAM AROUND THE BRICK.

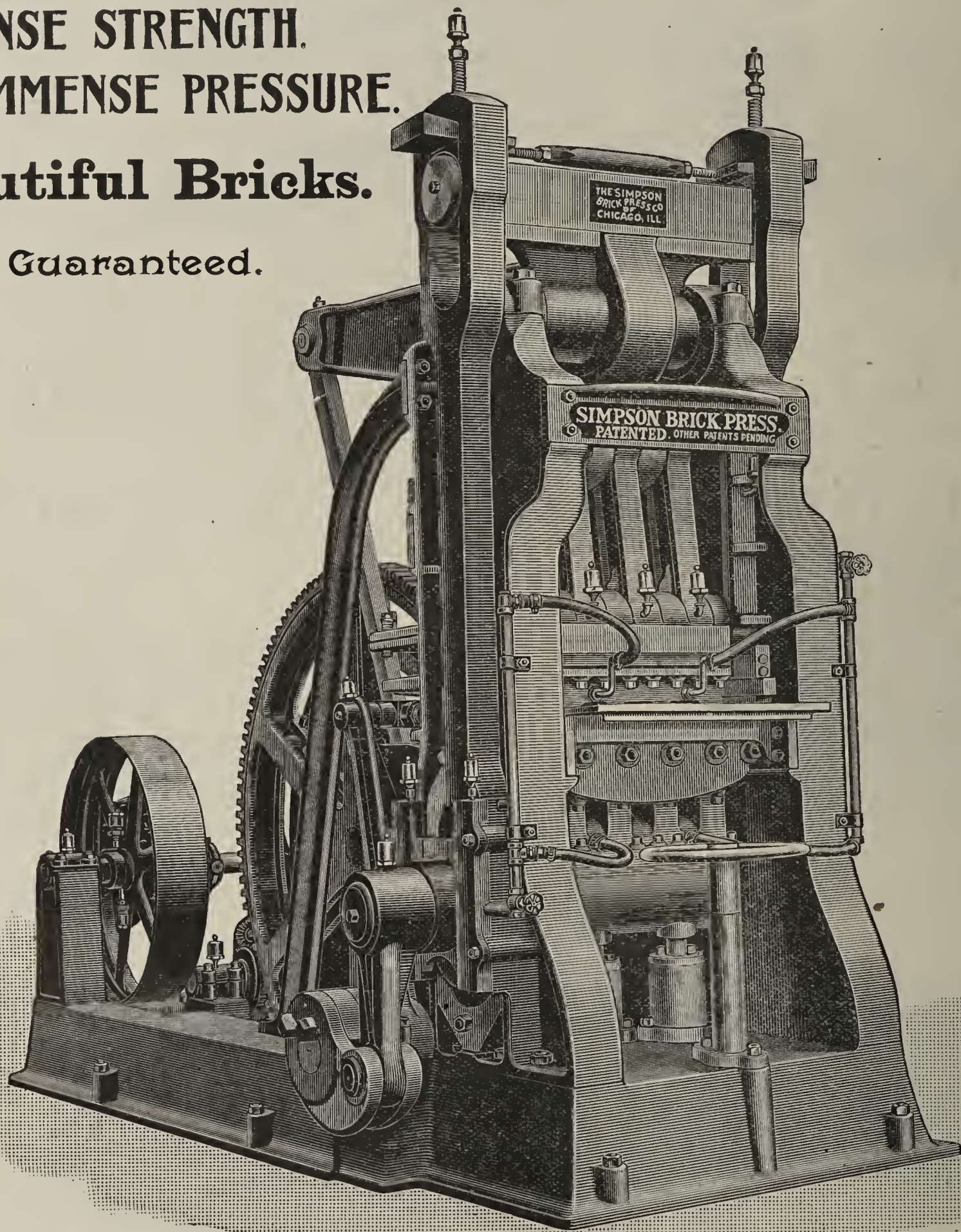
CAN CHANGE THICKNESS OF BRICKS IN A FEW MOMENTS!

IMMENSE STRENGTH.

IMMENSE PRESSURE.

Beautiful Bricks.

Fully Guaranteed.



## THE SIMPSON BRICK PRESS CO.,

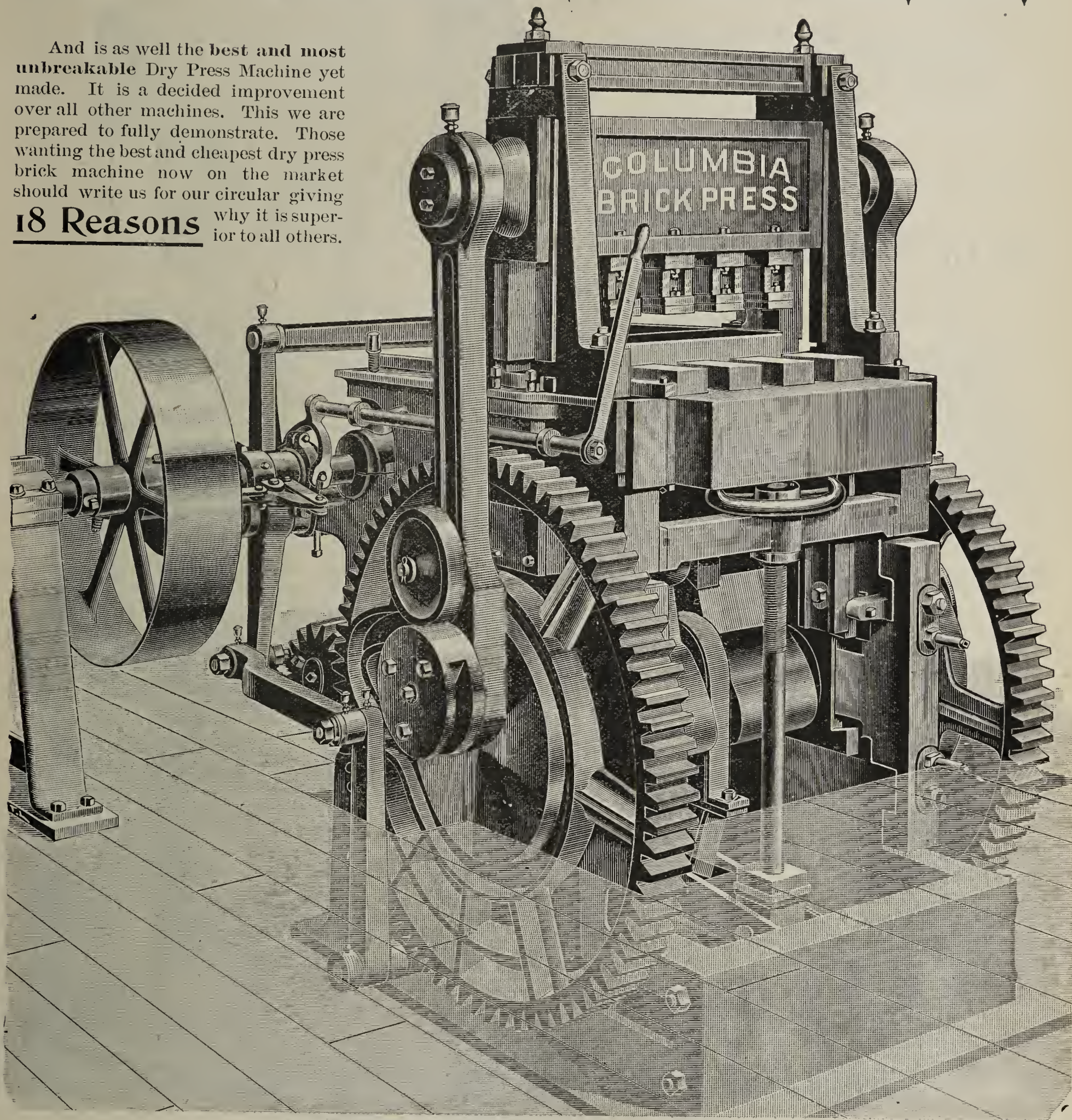
Agents for Canada:  
WATEROUS ENGINE WORKS CO., Brantford, Can.

Room 412, 87 and 89 Wash. St., CHICAGO, ILL.



❖ THIS ❖ PRESS ❖  
 IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF  
 FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

**COLUMBIA MANUFACTURING CO.,**

Send your clay and we will test it and send you the results....

**2119 N. Ninth St., ST. LOUIS, MO.**



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

## Refer to . . .

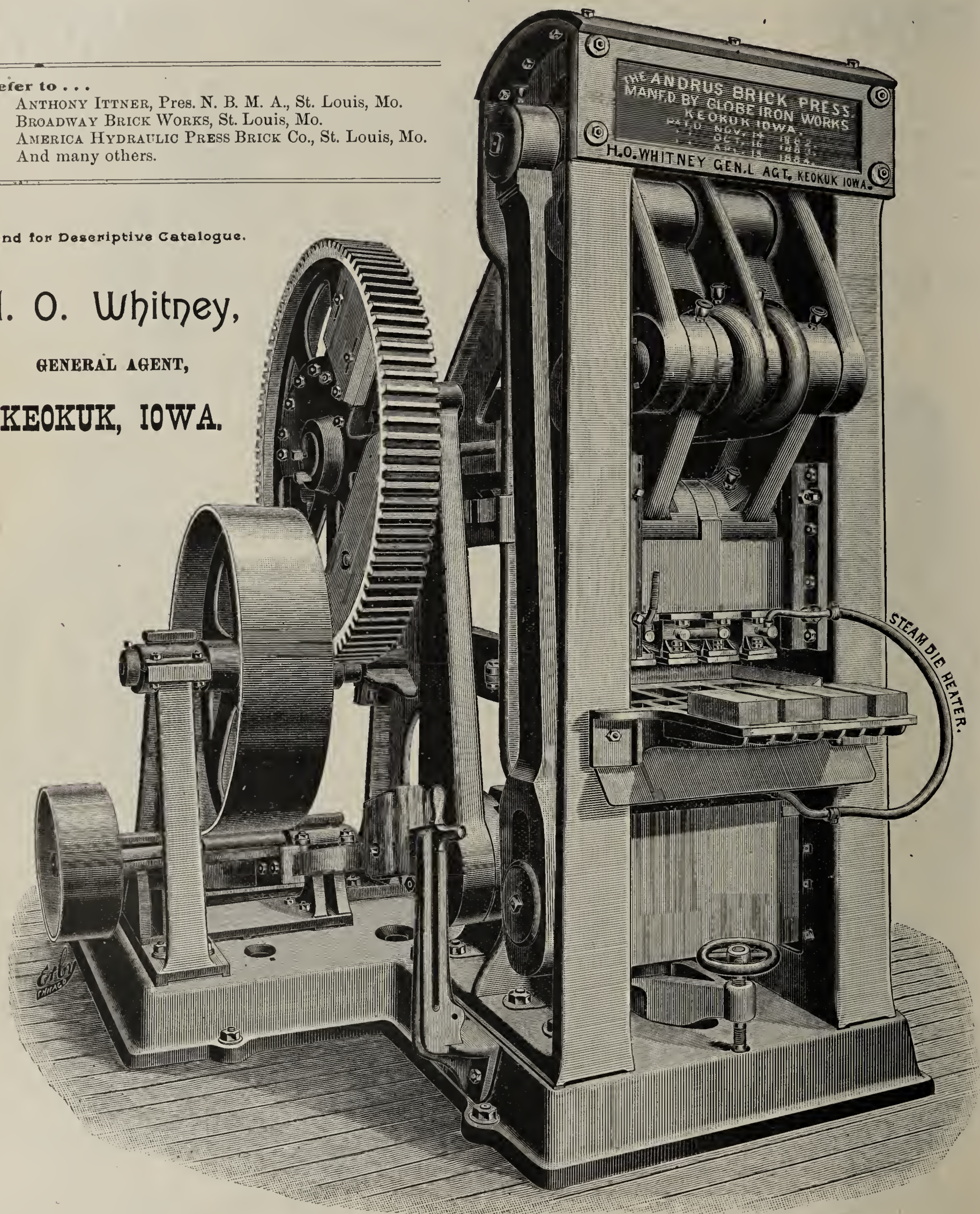
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
 BROADWAY BRICK WORKS, St. Louis, Mo.  
 AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
 And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





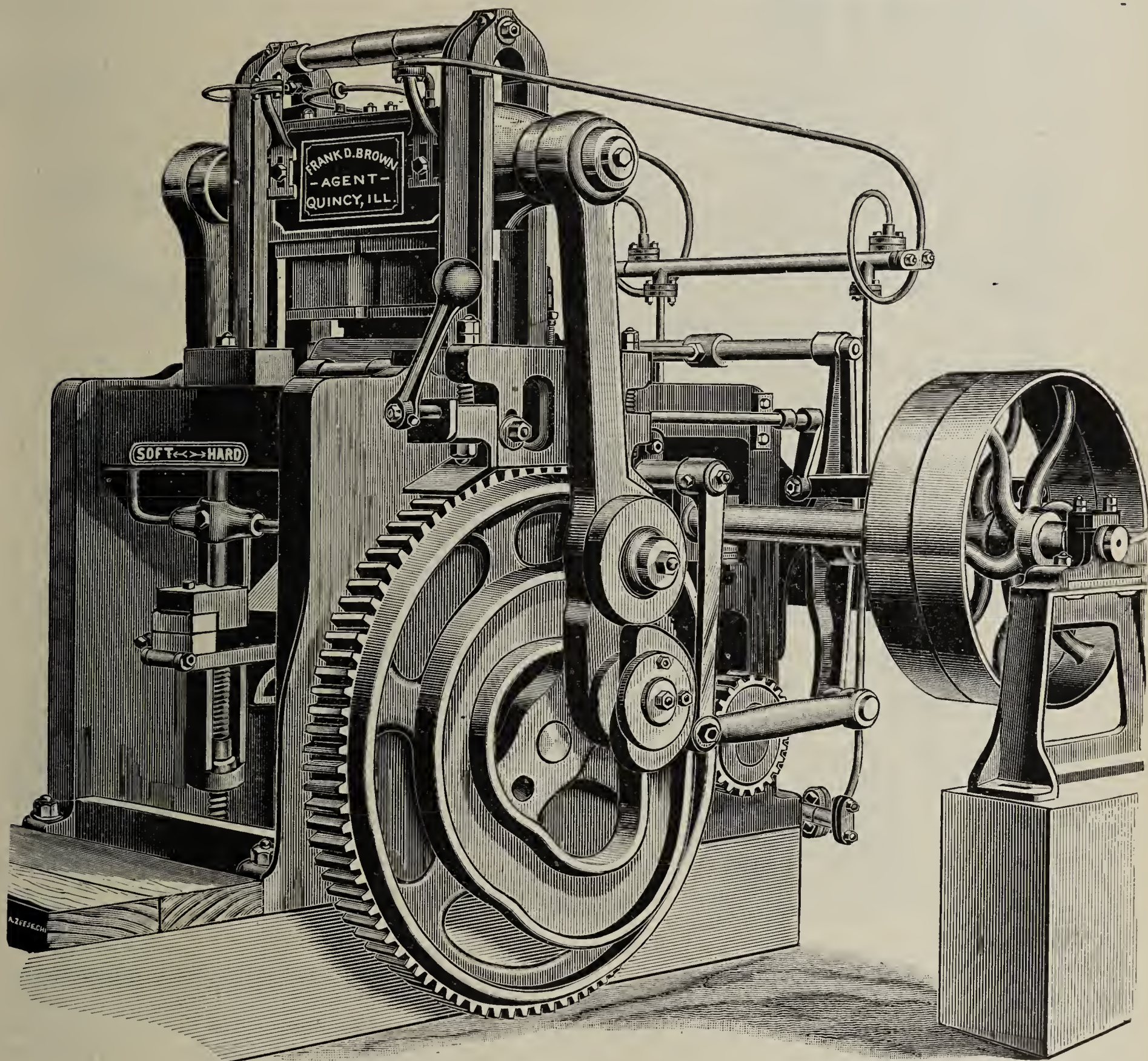
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.  
Will place the machine in your yard and guarantee entire satisfaction.  
Your correspondence solicited.

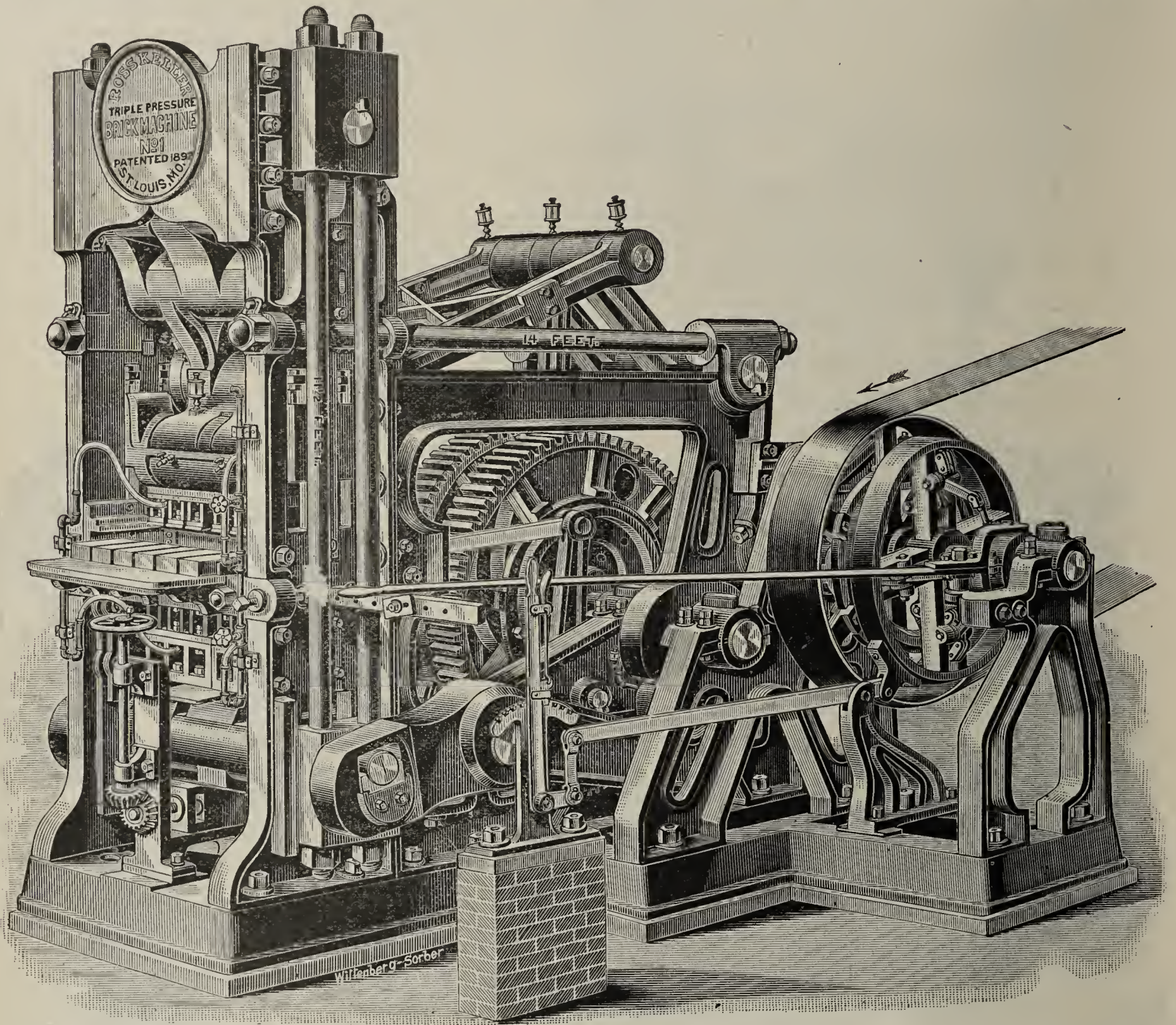
**FRANK D. BROWN, Quincy, Ill.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

*Weight 75,000 pounds, Capacity 35,000 pressed brick per day.*



**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from the face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five and six inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address

**Ross-Keller Brick Machine Co.,**

*Room 207 Laclede Building,*

*ST. Louis, MO., U. S. A.*



# Millions . . . . .



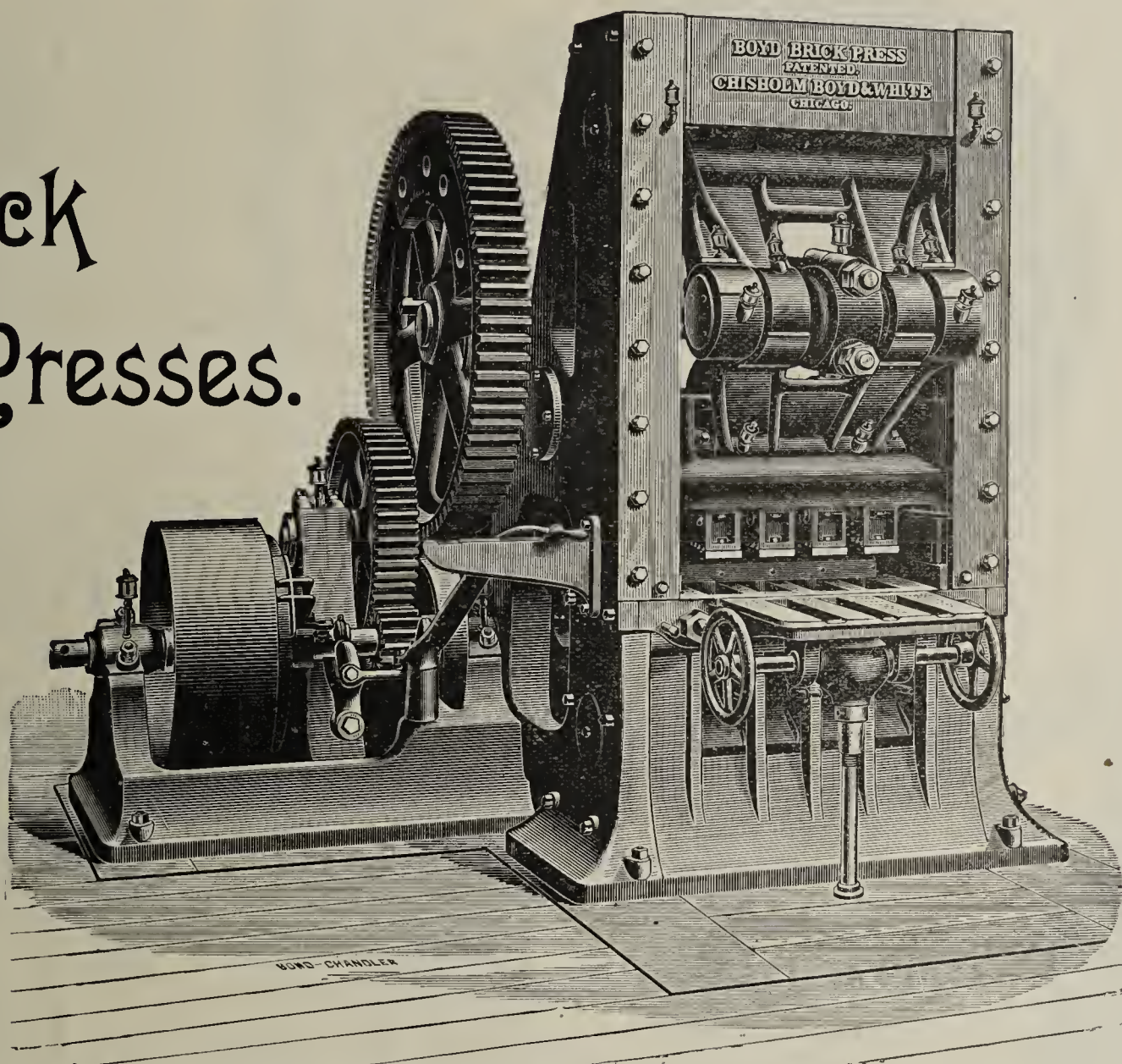
--- OF ---



# Beautiful Brick

Are Being Made Daily on

## Boyd Brick Presses.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you can have a sure thing?

CHISHOLM, BOYD & WHITE,

MONON BLOCK,  
324 Dearborn Street,

CHICAGO.



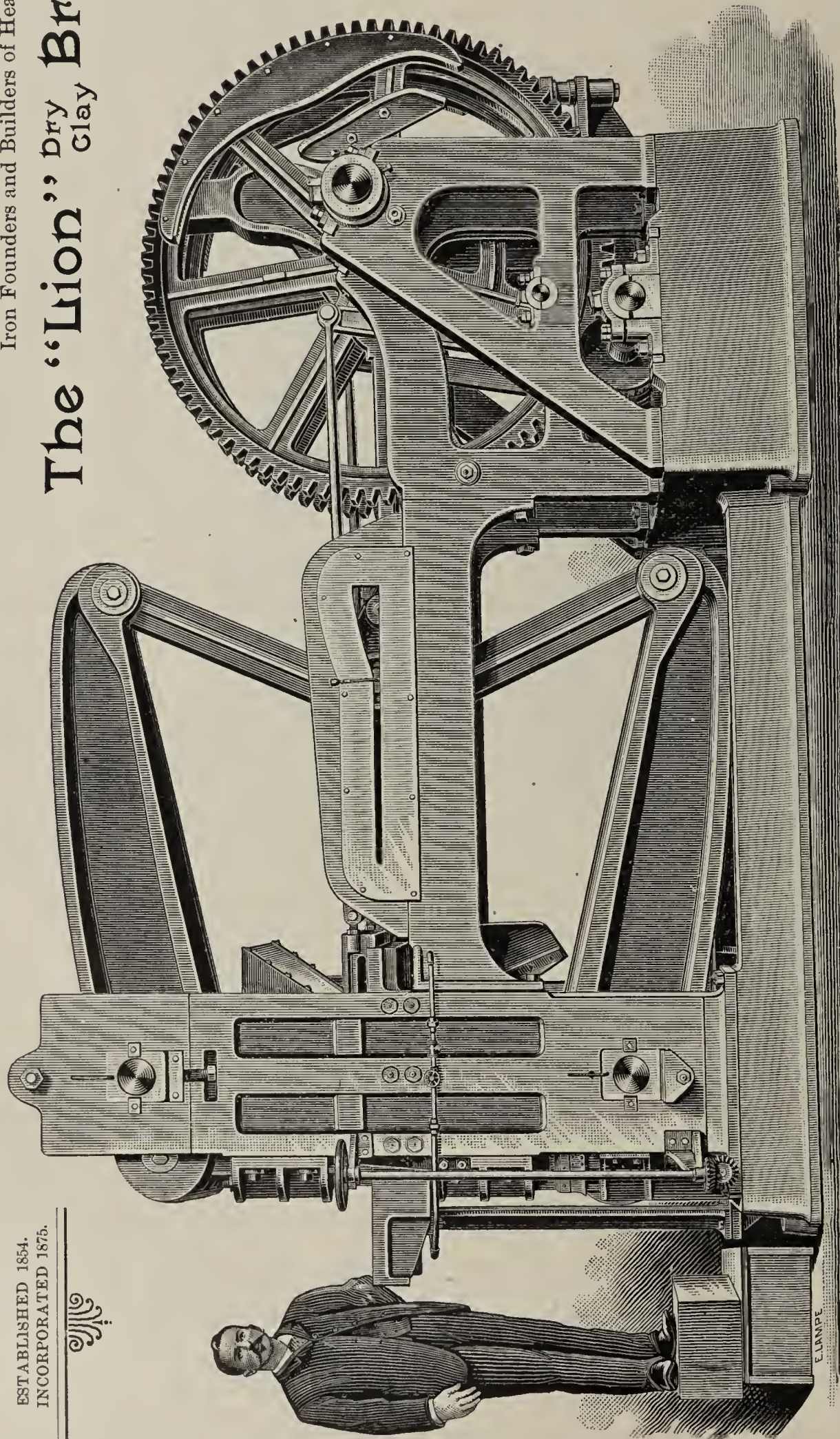
# ST. LOUIS IRON AND MACHINE WORKS.

Iron Founders and Builders of Heavy Machinery.

ESTABLISHED 1854.  
INCORPORATED 1875.



## The "Lion" Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to

30,000 pressed

bricks per 10 hours

Pressure, 200 Tons on Five Bricks.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press. to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time. Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given. If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepaies the freight charges. For circulars, price and other particulars. Address.

**ST. LOUIS IRON & MACHINE WORKS, Main Street and Choteau Ave., St. Louis, Mo.**

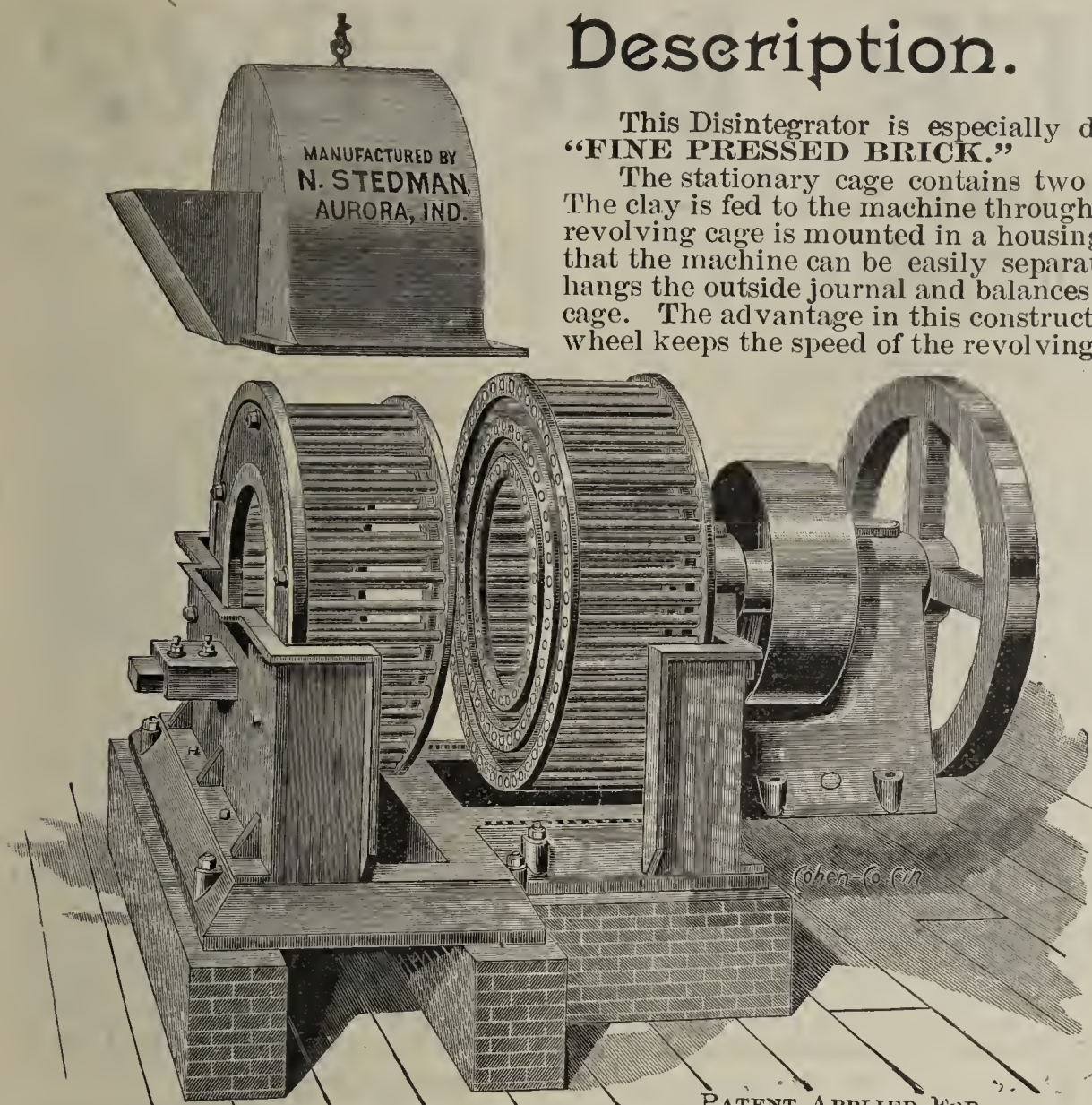


## Description.

This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

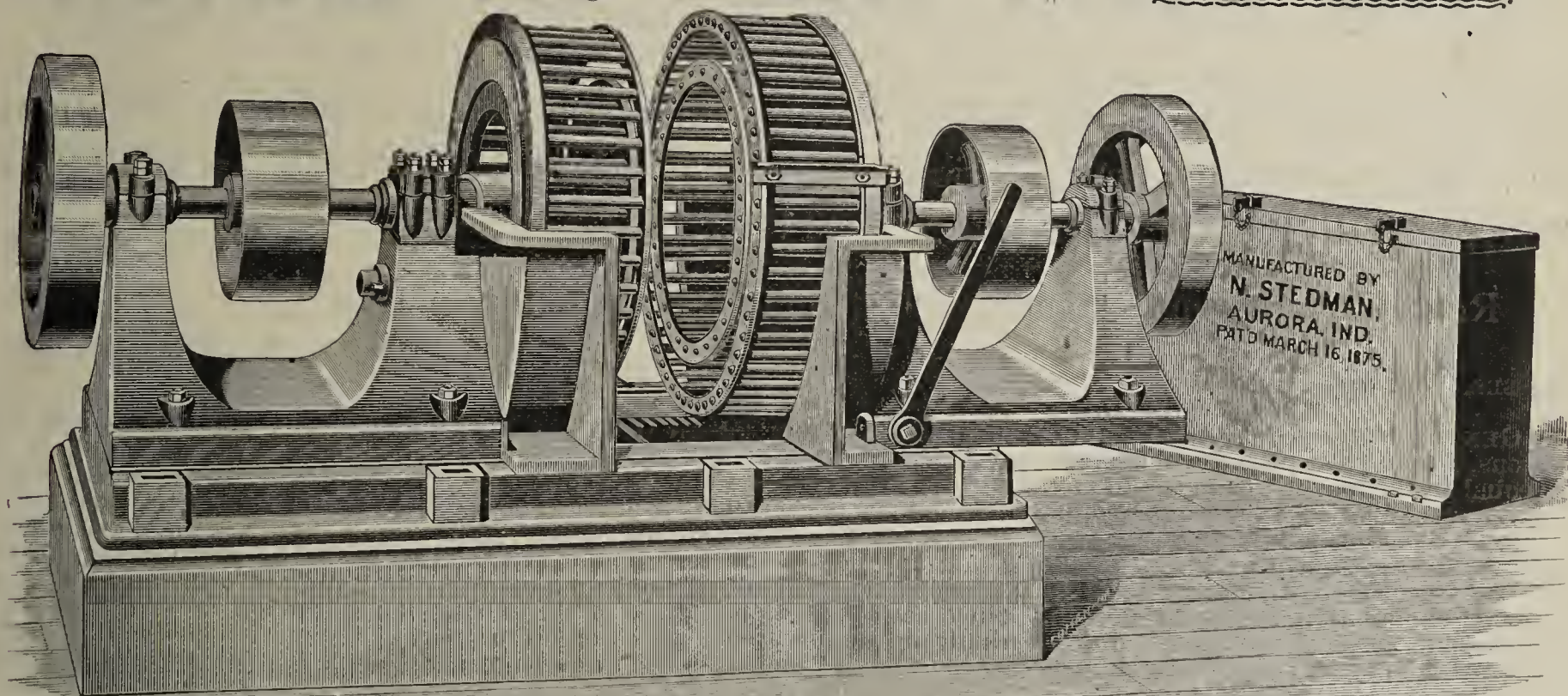
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

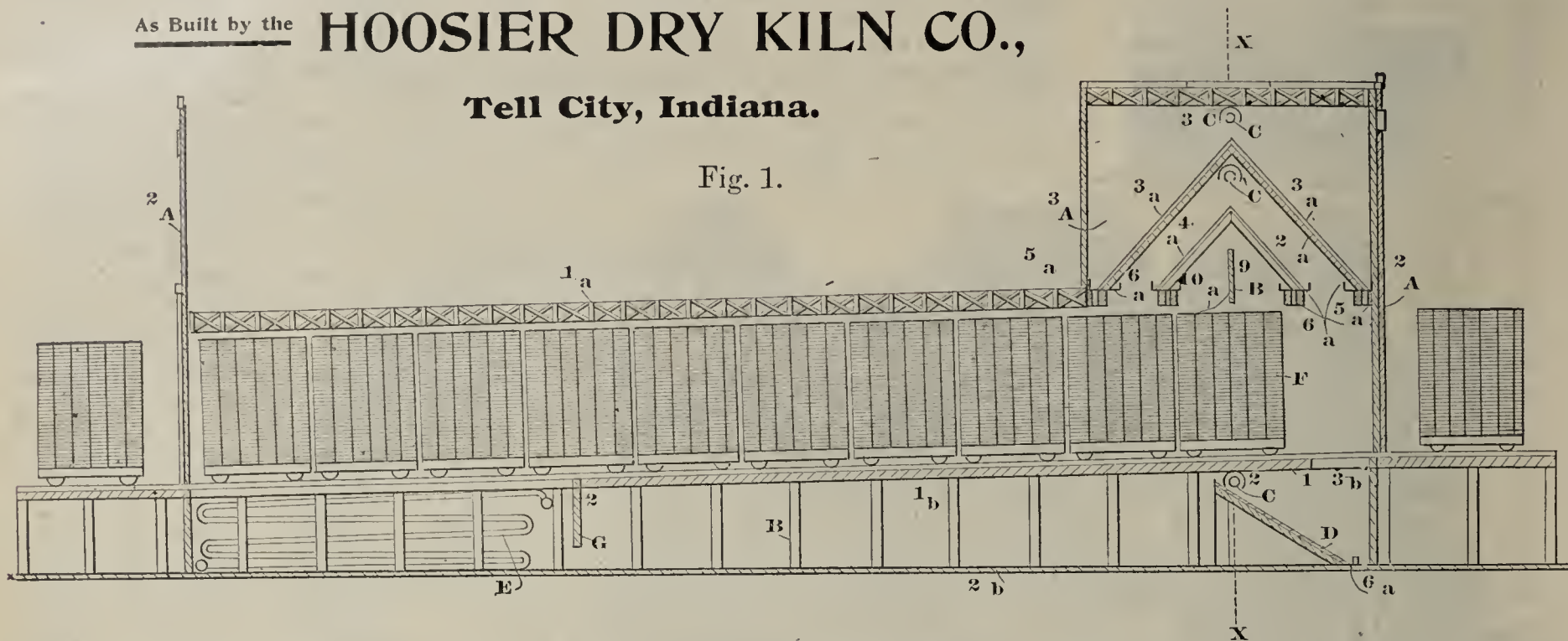


# HOOSIER DRYER,

As Built by the **HOOSIER DRY KILN CO.,**

**Tell City, Indiana.**

Fig. 1.



**TEST ON THE MARKET.**  
**ITTLE IN APPEARANCE.**  
**ARGE IN RESULTS.**  
**EAST IN FIRST COST.**  
**IGHT IN COST OF OPERATION.**

**THE HOOSIER DRYER** in addition to the advantages indicated is constructed and operated in a manner that enables us to guarantee quicker work and more satisfactory results than any other dryer now on the market. By our system, which is covered by letter patents and which does not conflict with any former invention, we can handle clays that heretofore have defied all attempts at rapid drying. Our terms are reasonable and satisfactory results are guaranteed.

Either Gas or Steam used for Heating.

## THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has **MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.**

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

ANTHONY ITTNER.

For further information and Illustrated Circular, address,

**WM. & S. H. ALSIP,**

[Mention the Clay-Worker.]

**BELLEVILLE, ILLINOIS.**



# Morrison's



ESPECIALLY DESIGNED FOR  
Burning Common Repressed  
and Ornamental Bricks.



## Improved

COST OF CONSTRUCTION  
Less than One-Half that of down  
draft kilns of equal Capacity.



## Kiln.

Read the unsolicited endorsement from one of the largest brick manufacturers of  
Washington, D. C.

Office of JNO. MILLER,  
**Brick Manufacturer,**

505 E. Street, N. W.

WASHINGTON, D. C., Dec., 13, 1892.

R. B. MORRISON ESQ., Rome, Ga.

DEAR SIR:—I have been using one of your furnace kilns for about three years and as you have never asked me for a testimonial I thought I would write you one.

This kiln saves me a great deal in burning my brick as I mostly get 95 per cent. good hard red brick out of it. I do not lose 500 brick in a kiln of 327,000, and I am now going to change my other kilns into your furnace kilns. I think yours the best furnace kiln I have even seen, and I am very glad indeed to tell you so, as I have never had a bad burn in it yet and the burner seems to control his heat perfectly. If you want any one to see this kiln in operation, send them to my yard and I will be glad to give them all the particulars about this kiln.

Yours truly,

JNO. MILLER.

For further evidence of the superiority of our kiln for the purposes for which it was designed, descriptive pamphlet and special information, address

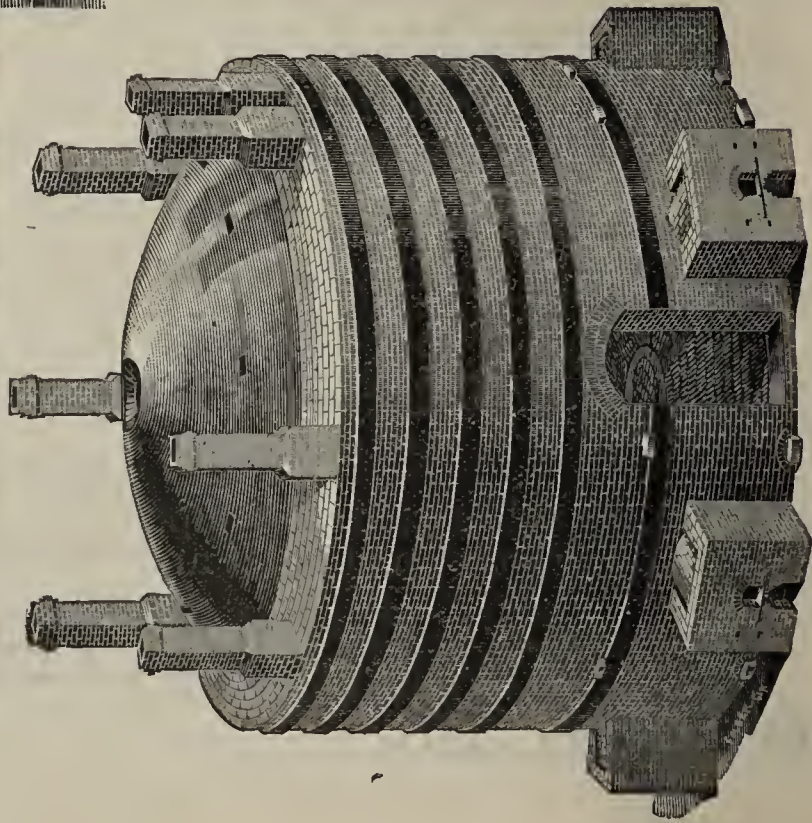
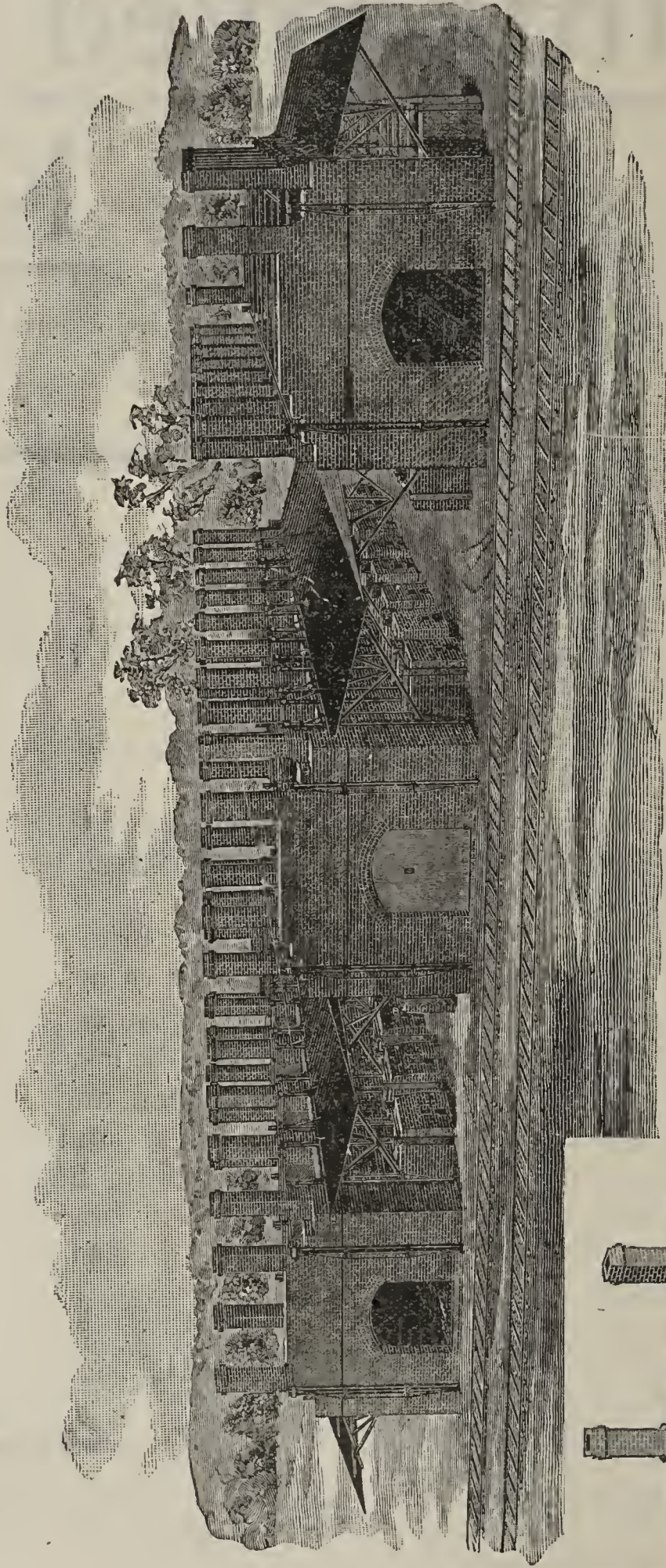
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of **large capacity** on account of **economy in cost of construction and space** occupied on the plant; while the Round Kiln is better adapted to plants of **small capacity**, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for **burning all hard and uniform**. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire. It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers. Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT &amp; CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully,

WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS &amp; COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no five marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,  
Fulton Fire Brick and Mining Co.

## FROM CANADA.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular. (Extract.) Yours truly,

N. B.—Messrs. Carroll &amp; Co. are erecting one kiln, and contemplating erecting others.

TORONTO, February 28th, 1893.

CARROLL, VICK &amp; CO.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



W. H. KELSO, President.

PAUL BOEHNCKE, Treasurer.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

F. HASPER, Secretary.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

## Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware  
of  
Infringe-  
ments.

### ADVANTAGES OF THE KILN.

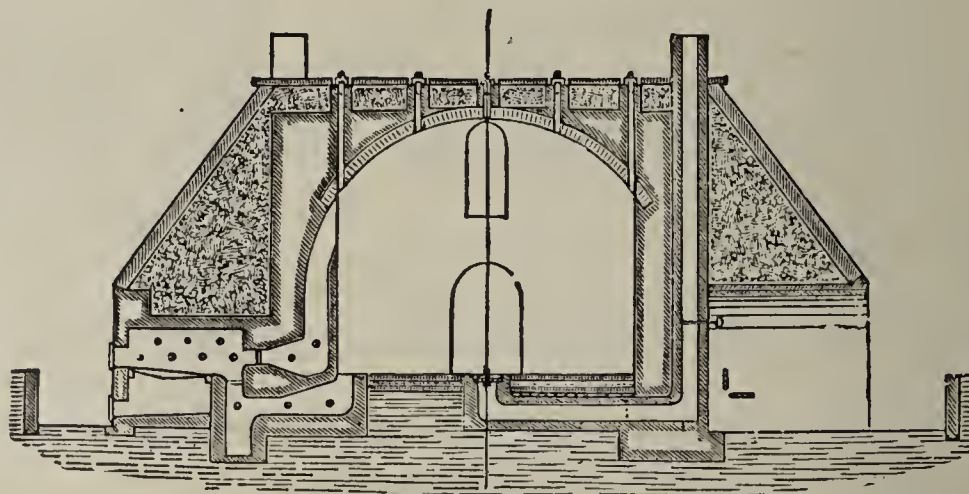
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln &amp; Drier Co.,

Box 35,

Centinela, Cal.



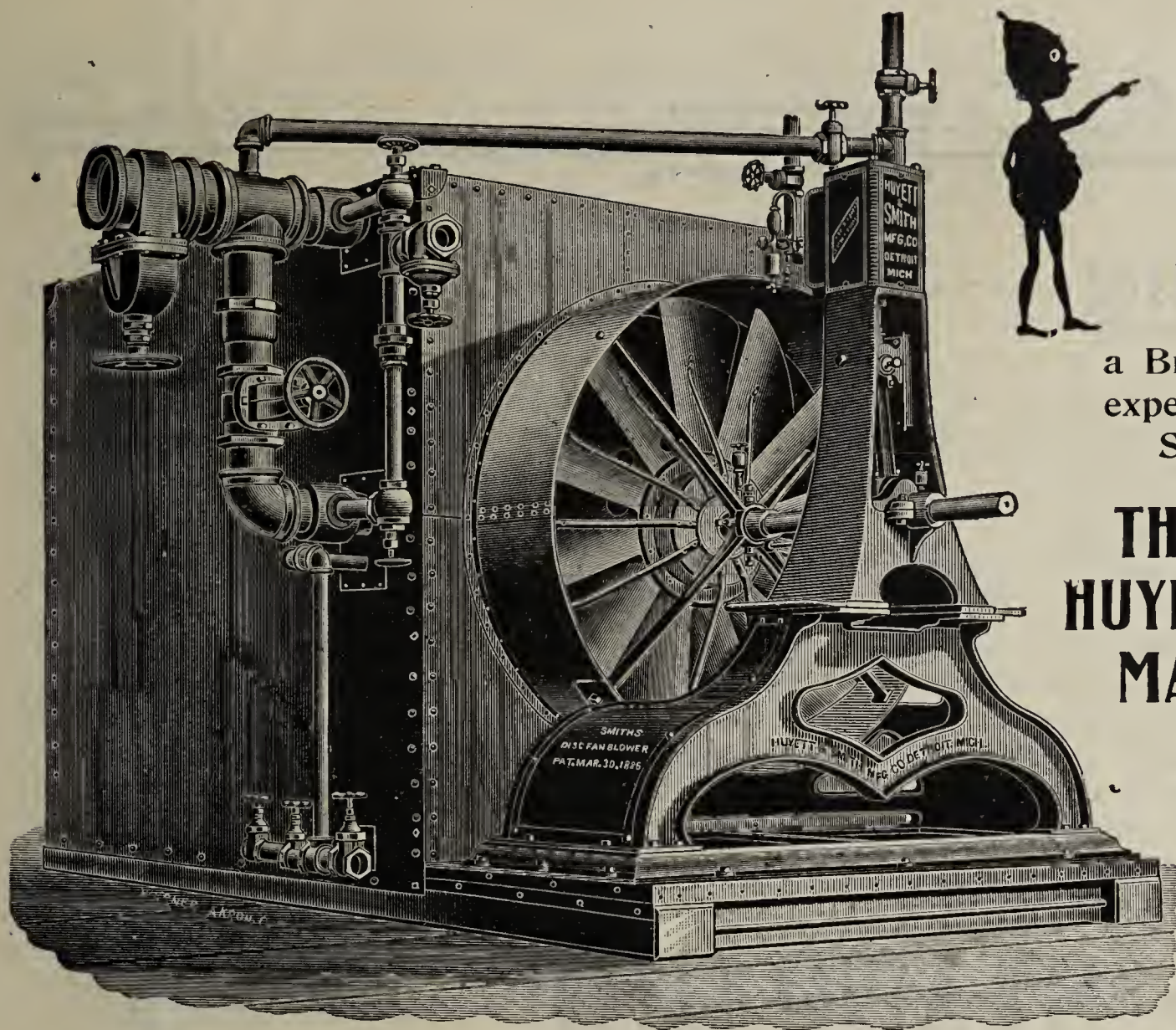
FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

does not need any extra fuel or labor in connection with continuous kilns. Write for circulars and catalogue.

We have also Boehncke's Brick Drier, which is very economical,





## Old Sol

What about him?

He is uncertain in this rainy weather,

Why not purchase a Brick Dryer that is no experiment?

Such a one is made by

THE....  
**HUYETT & SMITH  
MANUFACTURING  
COMPANY,**

Main Office  
and Works.

DETROIT,  
MICHIGAN.

This Hot Blast Apparatus used in connection with a system of tunnels forms the only perfect and efficient Brick Dryer known for the following reasons:



- 1st. It duplicates nature, the brick being placed in contact with a large volume of air in rapid motion.
- 2nd. The drying can be carried on continuously night and day in all kinds of weather.
- 3rd. Dries more brick to the ton of coal or cord of wood than any Dryer made.
- 4th. The brick are evenly dried, without cracking and will not "mash" in the kiln.

*For full information, prices and references, write*

**The Huyett & Smith Mfg. Co.,**

MAIN OFFICE & WORKS: DETROIT, MICH.

CHICAGO, 31 S. Canal St.

BOSTON, 48 Union St.

NEW YORK, 107 Liberty St.



## Drying ♦ ♦ ♦ ♦

Is the department of brick manufacture that decides, directly, the strength and finish indirectly, the "burn," sale and reputation of your product.

**THE BEST** system of drying is that which subjects the whole product to an even process of absorption and delivers it to the Kiln in the shortest time, free from loss or impairment.

Many years, and very many dollars, are often spent in experiments to attain this, only to fail. See that YOU have **THE BEST SYSTEM** to start with.

**THE BRICKMAKER** who does not dry his product by modern, labor saving means cannot compete with his more progressive neighbor.

**AN INVESTIGATION** of the methods of the shrewdest and most successful brick-makers will convince any one that the Artificial Drier is as necessary to-day as the hand mold was years ago.

**OUR BUSINESS** is to dry brick, tile, etc., of every kind, of every clay, in the very best and cheapest manner.

# The STANDARD PATENT BRICK DRIER

Is the main product of our manufacture, and it distinctively marks the farthest advance of science, art and mechanism in Drying to date.

Investigate its merits.

**Our new Fall Catalogue is ready.**

It is a comprehensive and beautifully illustrated volume; describes fully our apparatus and system of drying and contains scores of testimonials from prominent brick-makers throughout the country, which prove conclusively that the above statement is correct. Send for a copy at once.

## The Standard Dry Kiln Co.,

Gen'l Office and Salesrooms, 923-925 W. Main St.

LOUISVILLE, KY.



# THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XX.

INDIANAPOLIS, IND., OCTOBER, 1893.

No 4.

Written for the CLAY-WORKER.

## ANCIENT BRICKWORK.

A FREE translation of the name of the structure illustrated, would be the Castle of the Mill. On the side of the court opposite that shown in our illustration, there is a mill which belongs to this castle, which is constructed in the middle of France. It belongs to the period of the fifteenth century. It was originally constructed for military purposes, without distinctive regard to appearance or picturesque qualities. However, it is a justification of the statement that some of the happiest designs, some of the most beautiful structures have been developed without intention. It has happened often before, that through a desire to do the natural thing, that which is suited to

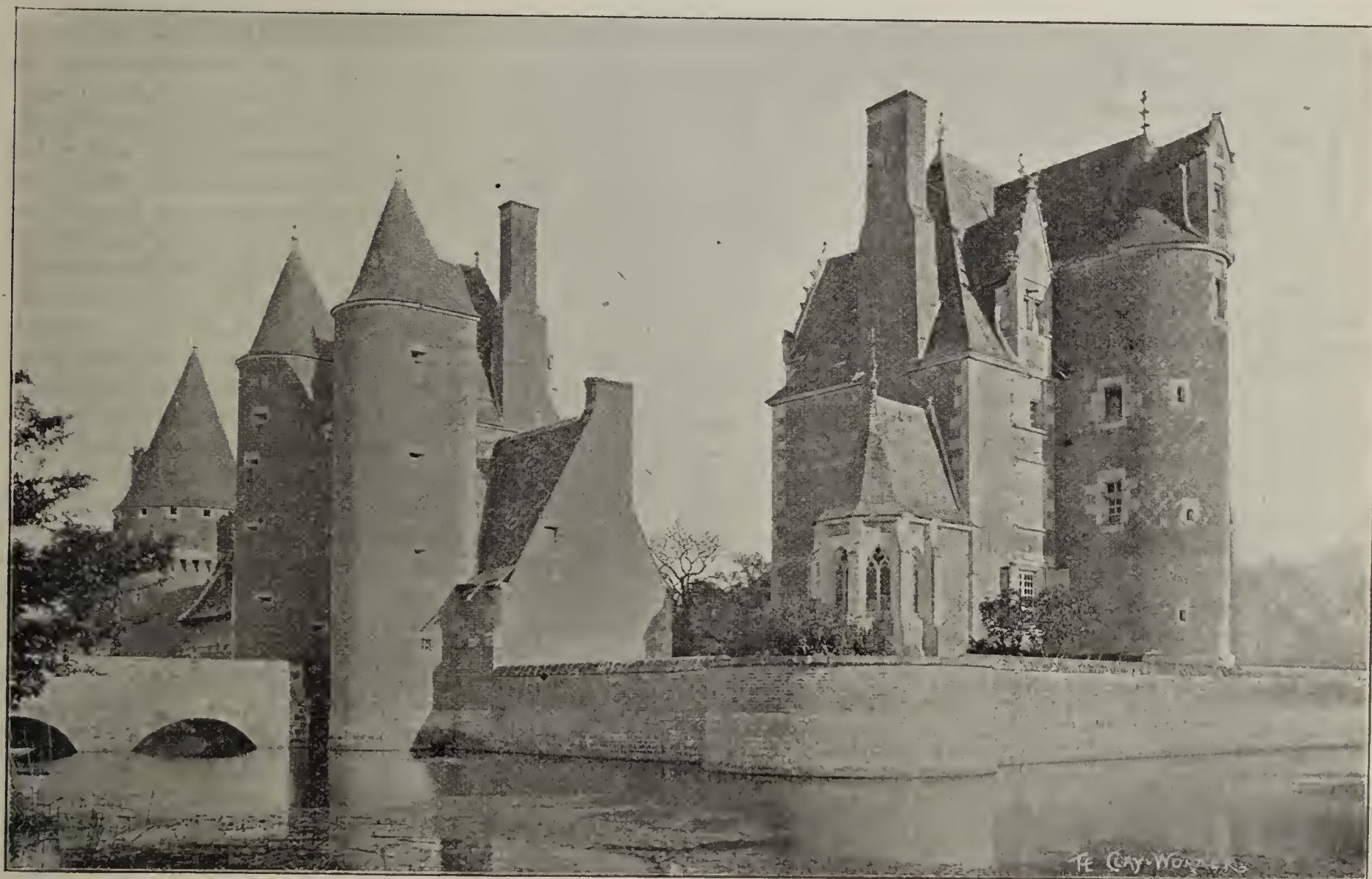
the time and place, the truly great things have been done.

The brickwork of this building is particularly interesting, showing the quiet but decorative way in which plain surfaces may be handled in a building where it is desired to reduce the size and number of the openings to a minimum. There is only a slight difference in the color of the brick used to bring out the pattern, yet the result is altogether effective and artistic. It is to be noticed that a change has been made in the tower on the right. New brick has been added to the top. Originally this part of the tower projected beyond the face of the wall, and was provided with battlements or other means of defense. About a hundred years after the invention of gun-powder, however, these people learned how to use it in their engines of

war, and in that way a structure of this kind became practically useless as a means of defense. Then they took upon themselves to make these buildings somewhat more domestic. Since that time they had taken a distinctively social character. This chateau is now used as a private residence, while formerly it was a fortified residence.

The bridge on the left does not approach all the way to the entrance, but is separated by about twelve or fifteen feet from the doorway. In this interval one finds a draw-bridge, and it is interesting to note that these same draw-bridges are still in use. Their interesting character alone suggests naturally their proper maintenance.

It is well to bear in mind that, notwithstanding the preservation of the brickwork in these structures during all



CASTLE OF THE MILL—PROVINCE OF LOIR AND CHER, FRANCE.



the generations and periods of struggle through which they have passed, that the brick themselves are not nearly so good as are made in our best yards to-day. Our brick, if well laid, according to a good plan, may have a longer life than any brick which have been made in the past. The actual examination of the brick in this building would show that they are not very hard, certainly not of good form, nor uniform in size and structure.

This castle has a natural moat. It is surrounded by water, being built the middle of a river, the water flowing around it. This feature added materially to the readiness with which it might be defended.

The contemplation of this design indicates the excellent results which may be secured by relatively simple means with plain brick. It shows also the enduring qualities of this material. One might think it unnecessary to bring forth evidence of this character to show the lasting qualities of brick; nevertheless we see every day through the public press and by other means the exhibition of great ignorance on this question.

LOUIS H. GIBSON.

Written for the CLAY-WORKER.

#### HINTS ON BRICKMAKING.

No. 80.

BY R. BRICK.

#### LABOR AND CAPITAL.

**J**UST at this time, although in the midst of the season for building and making brick, a great many works have closed for lack of orders. In fact, some works are idle that have never shut down until the present since they were put in operation. At a time when men cannot get money they cannot build. When building ceases there is no demand for building material. When a brickmaker has made as many bricks as he is able to carry he must shut down. As a result, working men have no employment, and, in most cases, no income. The question arises, What is the duty of the employer under the circumstances? Some will say, "When men work for me I pay them for their time when it is due; when I have no work I pay them in full, and my responsibility ends when that is done." From a legal standpoint it does. But is there not still a moral obligation resting upon you, in regard to the well being of the men who have faithfully served you through years of

prosperity? It would seem but just that the employer, even after he has paid them their wages, should still take an interest in their welfare. Some of the most successful manufacturers and employers in the business world have exemplified this duty of employer to employe. They not only paid them their wages but interested themselves in their comfort and moral well being, saw that they had pleasant and healthy homes to live in, amusements for their leisure hours, and facilities for mental improvement. They did this when their men were working regularly and drawing their pay. It goes without saying, that such employers would take deep interest in their men, when they are in enforced idleness. There are tremendous responsibilities resting upon the capitalists of our country which they cannot evade, and which they should recognize.

There should be no war between labor and capital. Labor depends upon capital for sustenance. Capital depends upon labor for its perpetuation. Neither can long exist in a normal condition independent of the other, and he who endeavors to array the one against the other is a foe to both. Every employer should advise and aid his men to procure homes of their own. At what great advantage is the workman, who at a time like this owns a home of his own; however humble, he has no rent to pay, he cannot be thrown into the street, and more than this, when he is out of work, he can employ his time profitably, perhaps, about his home improving and caring for it, instead of walking the streets brooding over his condition. The working men with homes of their own are, and will continue to be, the balance wheel of our social fabric, and a mighty bulwark that shall forever stand between anarchy and social order.

The question arises, What can the brickmaker do to aid his men when he cannot make brick? Are there not some improvements that have been contemplated for some time? Are there not some needed repairs about the works, that cannot be made when the works are in operation? Yes: "But," says the employer, "I cannot spare the money to do these things at this time." Here is just where you should make a sacrifice, if need be, for the benefit of your workmen. In the end it will cost no more, in fact, you will save money. You can do this work now

without interfering with your business. If not done now it may have to be done in a busy season, when the stopping of your output will incur greater loss than the cost of repairs. Again, you now have leisure to give these matters your personal attention, which you might not be able to do when you were pushed with orders.

It is true that, in times like these, we are inclined to the opinion that we will never be rushed with orders again. This is a great mistake. The business men of this country who have achieved greatest success are those who in times of adversity prepared for coming times of prosperity. History and experience teaches that prosperity will succeed adversity as surely as day will succeed night. While it is not practical to employ all our men, much good can be done by employing even a few of them. Some are able to enjoy a season of rest, some may find employment in other lines, some at their homes, but try to employ those that will surely suffer without it. In this way the employer not only helps his men, but in the end it will prove a good investment. It will promote a feeling of good will between employer and employe, which will always be of mutual advantage and benefit.

In adverse times like these we must exhibit some of that article, which has been so generously supplied free of cost, post-paid by the CLAY-WORKER to its patrons, namely, SAND. Thanks to our great journal, for the gentle admonition. By the way, where in all the wide world is there another first-class journal that will compare with ours? People who are not interested in clay products at all financially, read the CLAY-WORKER and declare there is none other like unto it.

There is no real cause for these hard times. Our country is free from pestilence and epidemics. We have been blessed with abundant harvests for years. The granaries and ware houses are bursting with the necessities of life stored therein, overflowing with everything that pertains to man's existence and comfort. We have but to reach forth our hands and they are ours. Kind Providence has left nothing undone on His part for our good.

If this be true, then "where are we at," and what's the matter with us?

Let us see. One half the people of this country are afraid that the party in power will not carry out their promises, as set forth in their platform at Chicago,



and the other half are trembling in their boots and shoes for fear they will carry them out. In the mean time let us all go to the World's Fair, and we can then see the town where all this trouble originated.

Written for the CLAY-WORKER.

#### DRY PRESS HINTS.

##### Eighth Paper.

NOT the least interesting—to me—of the articles in the last issue of the CLAY-WORKER, was Bro. Crary's "Brick Burning and Setting." It interested me particularly as I am a believer in the superiority of the down-draft over up-draft kilns; it also strengthened my belief, for in it one of the ablest—or I might say—one of the oldest exponents of the up-draft theory, has utterly failed to advance a single convincing argument to the advancement of his claims. Of course "conditions alter cases" and if, as I presume, Bro. Crary is a common brick man (please get the correct accent on the last three words) an up-draft kiln may suit his purpose well enough. Perhaps he will allow that for burning fire brick, an up-draft kiln is *not* advisable, but that is only by the way. It may be that he will draw the line at vitrified paving bricks, so we will pass that over, with the remark that, the reasons for these concessions, will apply in other cases equally as well. So far as I can see after reading his paper very carefully, the only draw backs that he knows of are, expense necessary to build, the im-

possibility of getting the bottom of the kiln better than a good salmon, and his inability to judge of the heat in the bottom, and tell when the kiln was "cooked." Please allow me to prescribe a dose out of his own bottle (page 253, middle column, half way down.) "I don't doubt that, but I very much doubt your knowledge and skill in being able to fairly and properly test the (down) draft principle of burning

bricks, \* \* \* but, if you will read and notice what I, etc."

It seems to me a contradiction to say first, that a down draft kiln requires superior skill to burn, and then declares that a man turns to that kiln only when he has satisfied himself that he does not possess skill enough to burn an up-draft kiln. But we will take his objections in order and see what can be made of them. They are expensive in the matter of first cost but there are other things to be considered. Let me illus-



D. O. LOY, Brick and Tile Manufacturer and "Poet Laureate" of the Illinois Brick, Tile and Drainage Association, MONTICELLO, ILL.

trate. A friend of mine had a territory to canvass, which he did on foot because it was expensive to keep a horse, finally however, he decided to try it, and found that the horse account was "swamped" by the increased business done. My point is that the extra cost of building a down-draft kiln, is more than counter-balanced by the superior quality and quantity of bricks burned, by the better

facilities for rapid setting, by the saving of fuel, and by the saving of labor and material in the matter of flatting. In a down-draft kiln you need not have soft bricks up along the walls, and as to being "scarcely a possibility of getting better than a salmon at the bottom," I want to inform Bro. Crary that I (Oh, that pronoun) have burned a down-draft kiln of dry press bricks so even, that it was almost impossible to tell the difference between bottom and top, and it was not by accident either. That trick is

common with us "down-draft fellows." How do we do it? By the careful and systematical manipulation of the draft and heat, having it under perfect control at all times, something impossible in an up-draft kiln. The damper question seems to be a "buggerboo" and an added expense, but it appears to me that a damper to a kiln is like a bridle to a horse, or an anchor to a ship, they don't cost much comparatively, but they are handy to have around sometimes.

Another point in favor of down-draft kilns, is that they afford better facilities for perfect combustion, than do the up-draft, hence the "saving of fuel" claim. Bro. Crary is correct when he says "a given quantity of fuel under certain given conditions of combustion," etc., but here the conditions are *not* equal. In an up-draft kiln the combustion space is confined to the area of furnace and the arches. In a down-draft kiln, it is the furnace, space between flash wall and kiln wall, and the space between kiln crown and burning brick. This

latter space is also a great factor to an even burn, as the heat is allowed to diffuse itself all over the kiln, consequently is not concentrated in spots as in the arch of an up-draft kiln, *however you set it*. In the latter kiln the greatest heat is accompanied with the greatest weight, while in a down-draft it is just the opposite, which to any thinking mind is good sense and also theoretically correct.



To my mind it appears, that any brickmaker who cannot see how it is possible to get the bottom of a down-draft kiln hotter than the top of an up-draft, must have his bump of obtuseness fully developed. The top of an up-draft kiln (open top of course) is in a sense at the mercy of the elements, too much so for the economical burning of the top. Flat it how you will, double or single, in nine out of ten cases, the top two or three courses are a salmon or worse, often worse. In an up-draft kiln there is nothing beyond the flattening to retain the heat after it leaves the bricks, consequently it is wasted, while in a down-draft kiln this heat is largely absorbed by the kiln floor and the flue work. Even Bro. Crary will, I think, admit that it is very much easier to burn bricks with a hot backing, than with a cold one. Of course I am reasoning on a common ordinary-mortal basis, my points are drawn on practical every day experiences, I do not consider isolated "freak" cases, the great average is the main factor in this calculation. But to resume.

If the appearance of the "efflorescence of oxidised mineral salts" is the "only true criterion for a well burned kiln of bricks" then I never heard of a true burn in a down-draft kiln, but it very fortunately happens that we down-draft fellows have other methods for determining a true burn; methods invented as part of the system therefore applicable. I need not take up the valuable space of these columns explaining these methods, as former papers of this series were devoted to the question and I think gave the required information, but will just remark that the heat in the bottom of a down-draft kiln can be judged to a "nicety" by anyone familiar with its nature. This combined with the settle is the only guide we have or need.

It may not be out of place to remark, that I have burned up-draft and down-draft kilns with equal success comparatively, consequently I know whereof I speak. It has also been my very good fortune to have read books (and the CLAY-WORKER very especially) and met men from whom I have learned much that is valuable to me in my profession, the noble profession of brickmaking. I hope I have fully covered Bro. Crary's enquiries, if not, will be glad to further accommodate him at any time through the CLAY-WORKER columns. Like him I am anxious to add my mite towards the improvement of our craftsmen, con-

sequently I felt it incumbent on me to answer his questions—or shall we call them challenges—to prevent any misunderstanding of the matter, and to back my outspoken and written convictions, or die with them. This paper of Bro. Crary's should at all events teach us a very valuable lesson i. e., never to think that we are "too old to learn" or ask for information. It certainly rebounds to the credit of our venerable friend who after "65 year's of practical experience" comes to this fount of knowledge to satisfy his thirst. I trust some abler pen than mine has taken this matter in hand. This question of the best kiln is one of gigantic importance to the craft. It is often the last straw to the brickmaker's back, and after the collapse you can hear him murmuring out from under his load of ruins "Alas, if I had only read and noticed what is written for the edification of men like me, or hearkened unto the words of wisdom that generous minded experts are always ready to give, I might not now have been in this sad plight." Then follows a cry for help, which is readily responded to, and, as you resurrect him and place him once more on his feet you are tempted to exclaim, "Go and sin no more lest a worse fate come upon thee."

In your last issue I was made to say in the matter of hacking ornamental bricks on pallets "eight on eight" it should read "eight on each pallet." PRESS.

#### NOTHING EQUALS TERRA COTTA.

THE fair White City holds forth to the architects of our country fine examples of the beauties of classic architecture, and it certainly avers its imposing grandeur to this modern revival of the legitimate.

What a regret that all those piles were built but for a season; so far all pens have failed to describe its imposing grandeur: but to call it the fair White City of frozen music, which is a compliment to its beauty of form, or music taken upon itself form.

But if built of Terra Cotta, what a joy forever. We look forward to a further development of the orders, not only for our public buildings, but our street architecture, business houses and private residences will wear the graceful lines of Grecian beauty; not marred, but enlivened with a modern touch, keeping intact all that is chaste and pure, embellished, not by the vulgar, but to show that the refinement and education

of our times will leave its impression on everything that takes upon itself form.

The epoch that we have passed through has been strongly marked by the revival of the Romanesque, for which the country is indebted to the laudable efforts of the late lamented Richardson, and dated from his Harvard Law School; he has found many admirers and followers, but alas! it is becoming debased by the efforts of the profession to reproduce its effects in materials that are not what they represent themselves to be—To make galvanized iron, sanded wood, take upon itself the appearance of stone, or, what is even a more grievous fault, to make brick or terra cotta take upon itself the appearance of ashler or rock faced stone. Our noble calling is being prostituted by the manufacturer, who caters to such a depraved taste.

What substitute could be held out as a material to take the place of staff, that would be permanent; what would give color without being marred with paint? TERRA COTTA! What else is there that will not melt or turn to ashes, though it grows red hot, to cool down again into the shape we have fashioned it, proof against fire and time? It is not an imitation of any known material, and the pleasure that arises from its use, is the satisfaction engendered by the simple merits of itself.

What is more pliable in the hands of the architect? Sensitive to every touch of his pencil, bends to the expression of thought, curves itself to every conceivable position of utility and usefulness, takes upon itself every color like a chameleon; wears a coat as fine as silk, or as rough as rugged rock; blends into mouldings sharply defined, undercut, accurate and delicate as chisled marble, to burst from its repose into full bloom of all nature's richest flowers, with all their delicate textures it interweaves its mellow lines to the enchanting simplicity of classic dignity and beauty; or take upon itself form of some horrid extinct goblin, and perch upon some treacherous dizzy gable, look grinning down, defying time and elements for centuries.

Would that those Columbian monuments of Art, fountains of joy, were with us to last and play forever; if in Terra Cotta they would be handed down to future generations as mementoes of our past greatness, or to wait the coming of some Hawaai islander to sit upon Chicago's boulevard and sketch the ruins of our now famous White City.

A BUILDER.



Written for the Clay-Worker.

## CHEMISTRY FOR CLAYWORKERS.

Paper No. 15.

CONTINUING our remarks on chemical affinity, and before proceeding further, let me caution you against confounding intimate mixtures with chemical combinations. I think I have cautioned you before on this point, but it is an error so common with beginners that I think its repetition is justifiable. Gunpowder, for example, is a very intimate mixture, but not a combination. There has been no chemical force exerted in its preparation, the grinding and mixing were done by mechanical force, the physical qualities of the charcoal, the sulphur, and the nitrate of potash (saltpetre) remaining intact. The water used to reduce these substances to a paste produces no chemical effect, it only assists in dividing more minutely and consequently mixing more closely, still the atoms are too far apart to arouse the energies of chemical affinity.

If we take a grain of the finest gunpowder and crush it, the dust, to the naked eye, appears like a simple black substance pulverized, but under a powerful microscope all three of its constituents may be seen; further, by very simple means we may separate these constituents and show them in their original state before the mixing took place. They may not be exactly the same shape, but there will be some sulphur, some saltpetre, and some charcoal dust. Later on I will give you the *modus operandi* of this little chemical feat.

Chemical compounds are totally dissimilar in their properties from the mere mechanical mixture of their elements; nor can chemical compounds be broken up by mechanical means.

Bearing in mind the appearance of crushed gunpowder under the microscope we will explode a few grains and collect the products of the explosion. Now, chemical affinity by means of a small amount of heat,—a little spark only—has asserted its power, and, where is our charcoal now? In fact, where are any of the three substances which composed the gunpowder? The only visible thing left is a little film of bluish sediment, this is sulphide of potassium,

the balance we have in the form of invisible gases and vapor.

Now supposing the few grains of powder to have been fired in a vacuum we should find that the weight of the gases vapor and the pellicle of sulphide of potassium and of the original few grains of powder to be exactly the same; showing that *there is no loss nor gain of weight in chemical combination*.

It may be interesting to know what gases and vapor were formed by the explosion; I will therefore refresh your memories with the formula of nitrate of potassium, or saltpetre; the symbols for



P. L. SIMPSON, Pres. Simpson Brick Press Co., CHICAGO, ILL.

sulphur and carbon you know.  $\text{KNO}_3$  then is the formula for saltpetre. From this we see that it is composed of over 62 per cent. of the gases nitrogen and oxygen. The oxygen combined with the carbon (charcoal) forming carbonic acid and carbonic oxide, the nitrogen was set free, while the sulphur and potassium combined forming the sulphide of potassium.

The sudden liberation of such a volume of gases, and the conversion of carbon into gas, fully accounts for the force of gunpowder explosions, and is also a measure of the power of chemical affinity under those particular conditions.

The dissimilarity of chemical compounds and mechanical mixtures is mentioned above and is forcibly illustrated in gunpowder, which can be seen and handled until it is fired, then it is a very different thing, as I have shown above.

A few more examples of this difference may not be uninteresting. Take a mixture of oxygen and hydrogen gases, and however minute a portion of it is examined it is the same in composition and qualities as the bulk from which it was taken. Now fire this mixture by a lighted match or an electric spark and you produce an explosion very similar to the one with gunpowder; and where are your bulky gases now? they are contained in that small quantity of water, which is the result of that explosion, or the chemical combination of the two gases. Those few drops of water are exactly the same weight as the mixture of gases which produced them.

You will not fail to observe that this last experiment is nearly the reverse of the one with gunpowder, where a few small grains of a solid, produce a mixture of bulky gases, and in the latter experiment, a mixture of bulky gases produce a few drops of a liquid.

Chemical combination furnishes us with different colors, different smells, and different physical qualities altogether from elements of which they are made. A combination of iron—which is whitish in color—and clear or colorless sulphuric acid, yields green crystals of copperas, or sulphate of iron. Again, when metallic copper—which is of a red tint is combined with colorless sulphuric acid it forms crystals of a deep blue color, well known as "blue vitriol" or sulphate of copper. When sulphur and carbon combine the compound formed is neither yellow nor black, nor of any tint that can be produced by a mixture of yellow and black, but as clear and colorless as pure water.

Again, if sulphur and quicksilver (mercury) be heated together the valuable pigment vermilion is found, this is sulphide of mercury. Now the sulphur is a pale yellow substance and the mercury is a bluish white colored metal in the liquid state at ordinary tempera-



tures, but who thinks of mixing yellow, blue, and white to get a vermillion tint? It is simply impossible to do it by any mechanical mixture of those colors, and the same may be said of the brownish red copper and colorless sulphuric acid giving us a deep blue crystal.

Many more exceedingly curious and interesting examples could be given of the apparent vagaries in chemical color making but the above I think is sufficient for the present.

The changes in odor and taste of substances subjected to chemical action are as remarkable and as interesting as the changes in color.

If you have ever made chlorine gas you know something of its suffocating odor, yet common table salt containing more than half its weight of chlorine is quite odorless. Both carbon and hydrogen gases are odorless, nevertheless they compose many of our richest perfumes such as oil of bergamot, oil of citron and attar of roses.

Nitrogen is another odorless gas, but when combined with hydrogen (also odorless) they give us one of the most pungent odors known, viz., that of spirits of hartshorn (ammonia).

The three substances named, carbon, nitrogen, and hydrogen are harmless enough under ordinary circumstances, the gases may be breathed and the carbon may be swallowed, they may be taken separately, or mixed, and in either case they are harmless, except in large doses. We could not live in an atmosphere of either of the gases, but if confined in such an atmosphere we should die, not by poisoning, but by suffocation, for the want of oxygen. Harmless though they be in their ordinary states, they make up the deadly prussic acid when arranged in a certain way by chemical affinity.

The atmosphere we breathe is a mixture of the same elements that make the corrosive "aqua fortis" (nitric acid) and the same elements go to make the "laughing gas" (nitrous oxide) used by dentists.

If we now take carbon, oxygen, and hydrogen, all three are harmless, separately or mixed, but combined by chemical affinity in one order they give us another deadly poison, oxalic acid. All three are tasteless, but when combined in another order we get sugar, a slight change in composition and we have alcohol; another slight change and we have vinegar (acetic acid).

These examples might be extended

*ad infinitum*, but the above, I think, are sufficient to show the dissimilarity of a mixture and a chemical compound.

Affinity plays no part in compounding mixtures, while chemical combinations could not have existed without it.

WM. WAPLINGTON.

Written for the CLAY-WORKER.

## STREET PAVING BRICK.

### Third Paper.

BY ALFRED CROSSLEY.

I HAVE stated that the intelligent consideration of this subject divides itself into three parts, viz: The materials best suited for paving brick, the characteristics of good pavers, and the best methods of producing them. The second of these should be considered first, for a proper understanding of this will make the solution of the other two very much easier. The old saying is, "The knowledge of the disease is half the cure." Just so, if we first know thoroughly what we want we stand a much better chance of obtaining it.

What then are the characteristics of genuine street paving brick? To answer this satisfactorily we have again to get behind it and find out what are the requirements of this brick. Much has been said and written during the past few years as to the advantages of brick pavements, and, much as has been said, the charge cannot be truthfully made that the merits of brick, as a pavement, have been exaggerated or over-estimated. It is not the purpose of this article to discuss that part of the subject, nor is it necessary, for the public mind is pretty well made up as to the desirability of brick paved streets, and the only object in making reference to it here is to emphasize the fact that in the claims made for brick paving by its advocates, good brick, especially suited to this purpose, are the only kind referred to. So far as the qualities inherent in the material itself are concerned, the requirements of brick pavement are durability, smoothness and non-absorptiveness.

#### THE CHARACTER OF THE BRICK

Is most largely determined by this first requirement of durability. The disintegrating influences to which a street pavement is subject are, the action of the elements, the impact blows from horses' feet, and the grinding action of laden vehicles. The question of the durability of brick in a street pavement resolves itself into the measure of their ability to

resist these influences. Much stress was formerly laid on the crushing strength of brick for paving, but this is no longer regarded as a test, and a big step in advance was taken when that was abandoned. Assuming the possibility of occasional loads as high as ten tons traveling over a street pavement, a little calculation only is necessary to see that even with such an unusual load the pressure or weight cannot exceed 2,000 pounds per square inch, which any good common building brick is qualified to stand. It may therefore be safely taken for granted, that any brick that possesses the necessary hardness and toughness to resist the wear of traffic, has also a large reserve of crushing strength over and above any possible requirement in a pavement.

The requirement of smoothness in the pavement is met in the brick by regularity of shape. Non-absorptiveness may be secured in either of two ways, viz:

#### GLAZING OR VITRIFICATION.

The former has been resorted to by some manufacturers, who thus attempt to pass off what are otherwise defective brick. To many peoples eyes it improves the appearance, which has led to large numbers of such brick being used. It cannot be denied that a well glazed brick is non-absorbent, or practically so, and if subjected to pedestrian traffic only, *might* be accepted, for it fulfills all requirements as to cleanliness and healthfulness. But streets are not put down just to be looked at, nor for the exclusive use of foot passengers, hence the glazed skin soon wears off under vehicular traffic and the street is no longer non-absorbent. Glaze on a paving brick is like gold plating on a ring or other objects; it looks well enough at first, but the thin film of gold wears off and the common metal is disclosed to view. Another objection is that a glazed brick is slippery and does not afford good foothold for horses—this objection, of course, only lasts till the glaze is worn off.

It has been occasionally claimed by the manufacturer that his brick are vitrified and that the glaze is given in addition. If this be really true, it is like lighting a lamp in broad daylight, perfectly superfluous. A well vitrified brick needs no glazing, nor can it be improved thereby. It is impervious to water without.

At the sixth Annual Convention of the N. B. M. A. there was some difference of opinion expressed as to the appropri-



ateness of the term "Vitrified" as applied to paving brick, and some were in favor of foregoing the term. At the same time the Convention was almost a unit on the desirability of the condition expressed by this term, as popularly understood. The most notable exception was the gentleman from Sioux City, whose essay on "Paving Brick" was probably the most able contribution on that subject ever presented to the Association. Nevertheless on this question of "Vitrifying" he was certainly astray. It will be remembered that he took the ground, based on the dictionary definition of the term, that to *vitrify* a brick was to turn it into glass, and hence that the use of the term as applied to brick was incongruous. It should be remembered that this is only one of

many words in the English language which have a well understood application, either in a modified or exaggerated sense of their literal or precise definition, often for want of some other word to *exactly* represent the condition spoken of. No one would object to the use of the word in question when applied to slag from blast furnaces or lava from volcanoes, and yet neither of these substances can be correctly spoken of as *glass*. And the term "Vitrified" is just as correctly applied to brick that are burnt to the condition now technically known by that term. That condition is produced by the brick having been heated in the kiln to a state of

fusion, more or less pronounced. In this lies the solution of the whole question.

It may be well here to remind those who have been taking the same position as the gentleman alluded to above, that clays contain, in varying degree, the very elements from which glass is produced, viz: Silica, lime, magnesia, potash and soda. All clays do not contain the last four elements. For instances, pure kaolin and high grade fire clays, but all *paving brick clays* do contain some or all of these four fluxing elements, and also oxide of iron. Hence bricks or other ware produced from such clays, and heated in the kiln to the point of fusion, are, in a sense, distantly related to glass itself, and are therefore correctly spoken of as "Vitrified." This is the reason why such brick, in order to be sound, must be cooled slowly or annealed, for the same reason that glass, unless so treated, would be brittle and worthless, and thus the relationship between the two substances is again shown.

The *degree* of heat applied is not the determining factor in the case, for the reason that the fluxing elements are of varying

proportion in different clays. One man may burn his brick to a high degree of heat and not vitrify them, while another with a lower degree of heat may melt his kiln into a solid mass. But whatever the degree of heat required to vitrify the clay, that heat



AT THE WORLD'S FAIR—AMERICA. A REPLICA IN TERRA COTTA OF THE PRINCE ALBERT MEMORIAL, SOUTH KENSINGTON, ENGLAND—See page 343.



must be attained or the bricks cannot be termed vitrified. Glass, as we know, is made from a mixture of sand (silica) and lime or potash or soda, according to the kind of glass required. These elements may be mixed together and heated up to a certain point without any glass being produced; it would still be only a mixture of sand and lime, etc. In other words, it is not vitrified. But heated up to the required point, fusion takes place and glass is produced.

The same heat applied to a kiln of good fire brick will produce no sign of vitrification, for the same reason that the fluxing elements in high grade fire clay are absent, or present in so small a degree as to be inoperative. But in all true paving brick clays, as before stated, the same elements which produce glass are contained, and when heated to the proper degree these elements meet and involve the whole substance of the brick in a vitreous mass. If the heat be maintained too long, or raised higher than is required, there is a strong probability of the kiln of brick being ruined, and here is where the skill comes in in burning vitrified brick, viz., to burn them to the right degree and quit at the right time. The brother from Sioux City may perhaps not vitrify his brick, or he may vitrify them and not describe them as such, but the point ought to be established, and accepted by brick manufacturers at large, as such is, that paving brick *can be* and *should be* burned to a point of being non-absorptive or practically so, and that this condition is most accurately described as "Vitrified."

Street paving brick should all be required to be vitrified, and to determine this should be compelled to stand an absorption test. What the limits of that test should be is not a settled point. The writer considers 3 per cent. of the weight sufficient latitude, but many city engineers allow 5 or 6 per cent. of absorption or even more.

While speaking on this subject, attention is asked to the following extract from a paper by the late Prof. T. Brown, written about seven years ago: "Common clay, such as is ordinarily used in the manufacture of brick or tile, contains more or less of lime, and usually both potash and iron. In such clays the temperature of a low white heat will be sufficient to induce the combination of the free silica, (which in the form of sand is always present) with the alkaline matter, and a true glass is the result. This diffuses itself through the porous

structure of the clay, filling all the space between the particles of clay, giving the mass a compact texture, and a vitreous or glassy fracture."

The characteristics of genuine paving brick may, from the foregoing considerations, be set down as hardness, toughness, regularity of shape and vitrification more or less complete.

What then are the materials best suited to the production of paving brick having these properties? On this, as remarked in the early part of this article, the most contrary opinions appear to exist. And yet the great difference of ideas is, after all, more apparent than real, and the possibility of harmonizing them to some extent is not quite hopeless. Much of the difference of opinions arises from the mis-use of terms, or the use of terms which do not accurately express the speaker's ideas. For instance, there are those who insist that paving brick should be made of *pure clay*, and yet not one of them in using this expression means clay that is *chemically* "pure," for such a clay will not vitrify and is useless for this purpose. What is probably usually meant by that expression is, any clay that is physically free from such foreign matters as pebbles, excessive sand, soil, limestone, etc. Again there are those who claim there is no material equal to fire clay for paving brick, and yet they would have no idea of using furnace lining or steel works brick for street pavers. In this case, what our friends mean by fire clay cannot be used for strictly fire brick purposes, except for some of the lower grades and then only as a mix with real fire clay.

[TO BE CONTINUED.]

#### A BUSINESS FINDER.

COBWEBS—"How do you find business?"  
BUSTLE—"Advertise for it, of course."

So reads a "funnygraph" at present floating around in the daily press. After you have smiled at it, let its common sense fasten its barbs in your grey matter. For it is a timely quip, and has more of sound business policy in it than many of the half-column articles written on the business situation. Of course it is possible for a man to be an advertising fool. He can spend a fortune in advertisements that will never turn any business his way. But advertising good articles in a reputable journal that circulates among the people whom he wishes to reach is a safe investment for

any man, and will, in dull times, bring him trade he never otherwise would catch. Too frequently advertising is thought of as a luxury, to be indulged in when business is booming, and shut off when trade grows dull. There never was a bigger business blunder; and the man who lives up to that theory will neither have nor deserve success. No amount of argument can suppress the fact that a good advertisement, rightly placed, is a business-finder; and when trade is slow is just the time advertising should be pushed in the most careful yet persistent manner possible. The man who does otherwise, sets his theory and judgment against the judgment and experience of the keenest merchants and manufacturers in the world to-day, the steady growth of whose business to enormous proportions backs up their statements in the most forceful manner.—*The Helper*.

#### THE GOOD TIMES COMING.

It is gratifying to note in all manufacturing quarters a very general tone of hopefulness as to future prospects. Good opportunities for observing this lead us to say without hesitancy that such is the case in all machine business, and it appears to be equally true in all kinds of business. The prospects of a satisfactory solution of the currency question, and the fact that a good many large machinery manufacturers have but little stock on hand are working together to bring about a better feeling, and to set the wheels turning. A little patience is still necessary, but it is never long between daybreak and full light. There is an astonishing amount of energy yet left, and the fact that manufacturers, as a rule, have only looked at the break in the times as temporary, will help to bring good times along. While there are no signs of a boom—the country has seen too much of booms in the past, and it is to be hoped there will be no more—there are signs that improvement will be rapid, and that the country will soon be through the dull spell. If all hope and work to the end of good times, it is about as certain as anything can be that they are near at hand. There are and always will be those who can see nothing satisfactory ahead, but the majority of American manufacturers are not given to neglecting their business in search after impending disaster that is only in the imagination.—*American Machinist*.





THE last month of the Columbian Exposition is at hand. It comes laden with an extra quantum of the regretful atmosphere that makes the month dear to us in a strange manner. For it is often said that the golden October, the sorrowing October, is the sweetest month of the year. We know that summer is no more. But it is not till the long Autumn days come with their haze, that we feel it to be true. With the tinting leaves we know that the winter is at hand.

Nowhere, more than at the Exposition is this feeling prevalent. Already cold nights indicate the impossibility of the great Fair being continued longer than was originally intended. The great and wonderful buildings were constructed in a day, and shall last but a day. Nature speaks in an authoritative voice. The Exposition must in all probability close at the date first intended.

The Fair will soon be a memory. It

is by the gateway of the Lake, when its face is not fretful from the storm's chafing. From the steamer's deck, far out o'er the blue waters, we see the morning sun searching through the water's misty veil for the great Administration Building, and with golden flame, flash from its lofty dome the opening of another day of weary wonderment. What a sight! As we slowly approach the magic city, its great white mass rises, and unfolds itself into grand divisions. Then our straining eyes trace its magnificent outlines, and now its detail of exquisite beauty. Our breast swells with patriotism as we think what prestige the Columbian Exposition brings us as a Nation; what honor as a people.

Among the first objects that catches the eye as one leaves



the great pier are the Columbus Caravels. They seem to be very faithful reproductions of the original fleet. The flagship Santa Maria is

open to the public, and one can walk the deck where the great Admiral stood in anxious silence on that memorable morning four hundred years ago. The present crew are a swarthy set of young seaman, and, luckily for them, cannot speak English well enough to answer

questions. We sparred for an opening by the tender of a cigarette, and learned that Christoforo Columbo "found" America and died afterward with a "sorry-heart." The cigarette was undoubtedly a bad one.

#### VICTORIA HOUSE.

The building by Great Britain and by the wish of the Queen named Victoria House, is not at all a pretentious building, but the solidity and care with which it has been constructed, is a palliation of what has been considered by some as rather a failure in that nation to take a place among the more conspicuously handsome buildings. The location is on the Lake front, very near the brick Man of War, a vessel of more than ordinary interest to brickmakers from the material of which it is constructed. It is an unusual step for the trade to make, this entering into marine construction.

In the accompanying cut, the flag from the bow of the "Illinois" is plainly seen to the right hand of the building. Back of the building is the Lake, coming up to within a few feet of the walls, and



it is pleasant thing to sit upon the eastern porch and rest. The water laps upon the sandy beach in a musical manner, and if the day is warm, the breeze from over the lake is always fresh and moist. With the eye of an Englishman for beauty, every advantage of the situation has been taken, and a green well kept lawn surrounds the structure, adorned by several trees that have escaped the devastation which has overtaken the remainder of the verdure that once made Jackson Park one of the garden spots of the earth.

The British building is of a true Queen Anne type, being somewhere in

will mellow in the minds and hearts of the myriads of people whose feet have trodden the magic park, and as the years pass away, they will appreciate more and more the marvelous wisdom and learning here brought together.

The ideal entrance to the White City



the neighborhood of 60 feet long by 40 feet broad. Up to the second floor the construction is entirely of brick and terra cotta. It lacks the interest that might otherwise attach, in the fact that it was erected by a Chicago contractor, and the materials are all of American make.

As far as ornament is concerned, it is confined to the cornice that finishes the brick construction, being of terra cotta and designed in a horizontal scroll of the acanthus leaf. The front or west porch, the one seen in the engraving, is arched in terra cotta, and the pillars are decorated by a spiral bas-relief of a running rose, a pretty motive. Over the front porch, the central arch is placed the familiar coat of arms, being wrought in terra cotta.

It will be noticed that the upper part is not the same as the portion already

spoken of. What appears to be dark bands are in reality pieces of board that are nailed in the upright position. Between them plaster is filled flush to the edges of the boards. While this is yet soft it is indented with a stamp, thus presenting a rather pretty cinque foil of a conventionalized wild rose. The gables are extended over the remainder of the building some eighteen inches, the ribbing of wood being bent to the edge, and continued into the cornice. The plastered portion of the gable proper is stamped with an Egyptian pattern of diagonal bars and dots. The roof of the building is tiled with red tiles of a plain pattern, very conventional throughout.

The building at the ends extends back in wings, making a sort of a court in the rear, if it can indeed be so called, for to one of a poetic temperament it is

more fitting that this Lake view should be called the front. This court is paved with tile and in the center is a porcelain fountain made by the famous Doulton works at Lambeth. It is a pavilion in miniature, and the work is decorated with a host of minute low bas-reliefs of shells, crabs and other aquatic things. In the center, the place from whence comes the water, sitting upon a stone are four little chaps with a total disregard of the fact that their trousers are not present. These little fellows hold jars from which they seem to be pouring, only the liquid does not come. That is procured from a spout lower down, which is made to give up its precious burden upon the pressing of the omnipresent button. Doulton does not charge for it, as do the dispensers of the famous Waukesha water. It costs a penny to get a drink of Waukesha



AT THE WORLD'S FAIR—VICTORIA HOUSE.



water, a fact that is palliated perhaps by the knowledge that it is piped many miles from a rural spring, and is perhaps free from the dreaded germ.

When the writer made his call upon the Britishers he found in the doorways some huge boxes wherein were growing in a luxurious manner white English daisies. Their heads rose gallantly upon the winds that always blow from the Lake front, and it is probable that already they have gladdened many an English heart.

#### TERRA COTTA STATUARY.

Not far in front of the building, and acting as a sort of ornamental piece, is a copy of the Doulton figures that stand at the foot of the Albert memorial in Hyde Park, London. The one that is shown is only a single group, being entitled "America," and representing the spirit of the new world. By the way, the originals of these are made in clay, being some of the most notable pieces that firm has produced of the kind. A beautiful engraving of this group is shown on page 339.

#### ENGLISH POTTERY.

One of the famous English potteries is the famous Ault Faience, made near Burton-on-Trent. They exhibit some of their handsomest work, confined however, principally to vase forms, and jardinières of several shapes. Some of the pieces displayed are beautiful in design, as may be seen from the accompanying illustration, but perhaps the most pleasing feature is their coloring. The tones are very clear, and selected with the greatest taste. The specimens shown are of the yellow and brown shades, and are rich in their depth. The vase shown is a pure Etruscan form, and is relieved in a splendid design. Perhaps the classic designs that William Ault has succeeded in accomplishing is as prominent a factor in the success of the ware as the coloring.

#### FRENCH POTTERY AND FAIENCE.

In the French section of the Liberal Arts Building, a section which by the way is very popular for the magnificence with which it has been arranged, there is a display of faience by a noted firm.

Emile Muller & Co., is a name so well known in the art clay world that it seems hardly necessary to speak very much of them. The factories are located at Ivey-Port, a suburb of Paris. In the great Exposition of 1889 in Paris, Muller executed a large amount of work in his line for the decoration of the buildings. Among these were some

200,000 enameled tiles which were utilized in the famous blue domes which were roofed in mosaic. About them were placed forty-eight handsome vases ten feet high, which, however, at their altitude, assumed their proper proportions. The interior drums of the domes also were finished in detail in faience. Between the iron girders were placed fireproofing which also assumed the arched form. Three thousand feet of balustrade was another novelty in the clay art. In the central pavilions were four large friezes, the motive being a design of lyres and rams heads upon a ground of gold. In the spandrels of the arches in the same



AT THE WORLD'S FAIR—WILLIAM AULTS FAIENCE VASE FORMS.

pavilions were medallions some six feet in diameter, and the archivolts with rope moulding were of the same material; that is, a faience.

Muller's exhibit in the Columbian Exposition is fully up to the standard of his former efforts, and is perhaps handsomer than the rule on account of the rich and effective scheme he has chosen for making the display. A bulkhead has been erected, and upon it is placed an array of the flat pieces such as from their nature can be placed against a wall.

As the bulkhead is covered with a dark cloth, it acts as a fitting foil to the pieces of brilliant wares. At the corners of the platform upon which this bulkhead is placed, are erected posts which

have the form of immense lances, such as we associate with the days of King Arthur and chivalry. A great drapery of velvet extends from the bulkhead over the lance points at the corners, and the result is a canopy of ideal richness, such a canopy as might have shaded the good King Richard from the sun.

Upon the one wall is placed a large faience copy of some of the famous carvings of Sousa, the ancient capitol of the great monarchy that in past ages made the name of Persia famous. The particular piece is known to the archeologists as the Frieze of Archers, and in composition is nothing but figures of soldiers of the period when Sousa was in its glory. In the fragment as reproduced, there are four of these strangely clad figures, and they bear long bows in an erect position. It was with something of an outraged feeling that your writer heard a comment made by one of the vast host of unappreciative people who pass through the Exposition in a dazed fashion.

The little knot gazed at the piece critically for a time, and posed as well versed in the inner meaning of it all.

"How lovely," quoth one.

"What is it?" asked another; "A broom drill?"

That's the kind of clay some people are made of.

Standing before the frieze are some pillars imitating those found in the ruins of the same great city. They have the "Bull capitols" which by the way were never found in any other style of architecture. The beams are placed across the capitols, the heads of the bulls being two in number, and the beam being placed so as to cross the necks of the animals. A piece of the beam is placed over the necks in the copies to illustrate them as found.

Below the faience of the frieze is a copy of the famous "Dado of the Lions." In all of these the decay and broken edges of the original are carefully preserved, and the copy amounts to a replica.

#### A CLAY NOVELTY.

A rather pretty application of clay is in the benches and chairs of handsomely carved cherry. The ends of the benches are of earthen ware, fashioned in the form of griffin. The form is solid, and the seat of the bench and back are both fitted into the end pieces. The chairs are of the same material, the front legs being lions of clay material. The modeling of these forms in clay are very



fine, and the colors of a green shade. These are among Muller's latest ideas, and it is said that they are becoming very popular. At any rate, they are very effective in their ornamentation.

Beside these are a great number of copies from all sorts of antiques and from various architectural decorations of the Louvre. A copy of the famous Vase of the Twelve Gods is shown, and all sorts of other pieces of friezes, figures, and portions of noted sculptures.

On the floor in a corner are shown some very handsome enamel bricks for the purpose of facing walls, they being hollow.

Mr. Muller is himself an indefatigable designer, and among other things are a number of colored drawings of some of his famous works. And also of some things that have not been erected. These are more for the purpose of illustrating the fact that the firm is engaged in the main in original order of work. And it is also shown that while they are perfectly competent to execute the designs of other people, they are at the same time no mean originators of designs for the work in hand themselves.

The handsome photo of this exhibit, which the CLAY-WORKER is enabled to reproduce is half tone, and was furnished

by the firm, who had it made especially for the purpose. It shows the side of the exhibit upon which are placed the great number of smaller pieces. The larger faience is upon the opposite side.

#### BRICK ASHLAR.

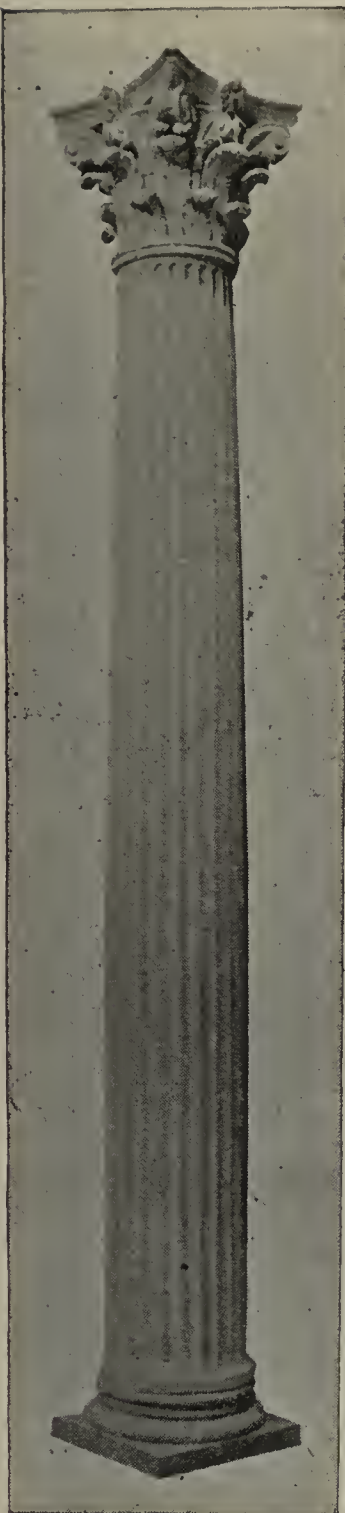
Fiske, Homes & Co., of Boston are on hand in the Liberal Arts Building with a liberal chunk of their brick ashlar. It is a piece of wall some ten by eighteen feet in dimension, and four styles are shown in the same number of quarters of the face, two sections of colors being sandwiched in between. An illustration of this form of brick masonry is shown on page 383.



AT THE WORLD'S FAIR—EMILE MULLER & Co.'s EXHIBIT.



We all know what "ashlar" means, that it is a manner of trimming stones in an irregular number of rectangular



forms, that arrange themselves in an even manner when properly placed. It was noted in the building of the wall in question, the close attention given by old masons, and their quick criticism when a piece was misplaced in the erection. They knew what ashlar was, and said so very quickly. The pieces were corrected immediately, and as the wall now stands, it is a perfect ashlar. The bricks are made of clay, and while the process is kept somewhat secret, and there are a number of patents cov-

ing the make, just what their scope is would be obtainable only by reference to the specifications themselves. The representatives of the firm are non committal upon the subject.

The corner portions of the wall are made of clear clays, the upper ones be from Nova Scotia. These are of a buff sandy color. The brown stone is colored artificially, but all of the others are of the natural hue. The two portions of the wall that lie between these are what is known as the flash ashlar, that is the pieces are exposed to the flame of the kiln. They contain some iron in the make up, and the coloring is due to this. They are known as the old gold, and the Pompeian brown and are both of a mottled appearance.

The entire wall is of the rock faced

material, but the stone or tool faces are shown in small pieces.

Probably the valuable feature of the ashlar brick is the perfect imitation of stone, it being a fact that while the construction was going on, old stone men were deceived and could hardly be made to believe that the material was not in truth stone. Each piece is moulded, and the pieces of the same form and size are identical, but as some six or seven forms are utilized and are placed in close contiguity with each other, the impression of sameness that might arise is entirely lost. There are in some portions of the country, but very few, sandstone of such a soft nature that it can be worked and placed upon the market to compete with the ashlar brick, but the stone is so soft as to be of inferior wearing quality. And this is one of the strong features of the brick ashlar, its good wear.

To make more attractive their display, for a blank wall cannot be said in the popular mind to be very attractive, the company have placed about some other pieces of their ware, the firm is not confined to the manufacture of ashlar. Terra cotta is also in their line, and some ornaments of that material are shown, some pillars with their capitals, and some trimmings for windows and doors.

#### A REMARKABLE TERRA COTTA COLUMN.

A pillar fifteen feet long made in a single piece is shown, said to be the largest one of its kind ever made. It is a Corinthian pillar and made after the earliest patterns. The making and burning of this column marks an advance in the Terra Cotta business in America. It was made in the same

manner as retorts are built, that is in sectional moulds, by Mr. Geo. C. Hicks formerly of the Baltimore Retort Co., and later of the Chicago Fire Brick and Retort Co., and now superintendent of Fiske, Homes & Co.'s Boston Fire Brick Works.

A short distance from the ashlar wall, the same company have upon exhibit some of their handsome faience. An entire Pantheon is shown in green and buff effects, the pillars being fluted and some eight feet high. The frieze is in buff, and the decorative motives are of a classic nature.

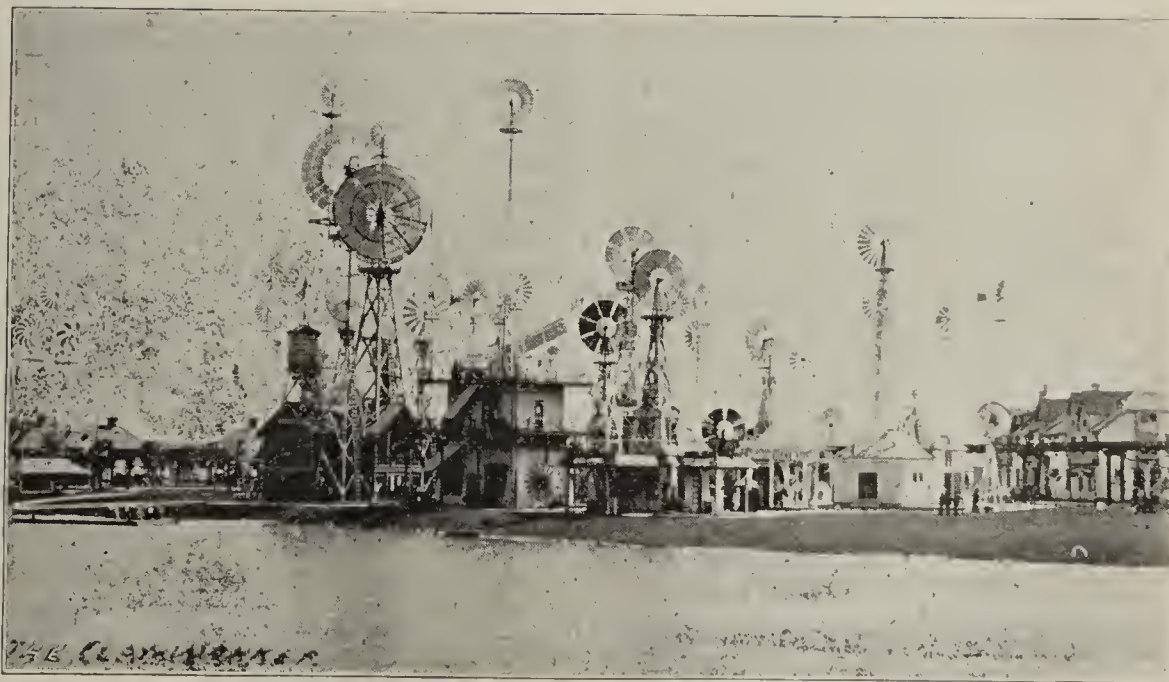
The feature of all of these enamels is that they are not transparent as some, but are opaque, and are themselves the coloring matter.

Another handsome thing is the faience pier, a copy of those set up in the Railway depot at Philadelphia. It is a superb design of flowing scrolls in leaves and disporting cupids.

All of this faience work is very beautiful and entirely American, and it is worth the time spent in its examination, even if you are not interested in such things more than as a lover of the artistic.

#### NEW YORK STATE EXHIBIT.

Of crude clays, probably the exhibit made by the State of New York in the Mines Building is the most thorough. The various sections of the country are each represented by a typical body of the material pressed compactly into a cubical form about a foot square. The arrangement is with the skillful hand, and not only the locations of the cubes are given upon the labels, but the glacial period of the clay, and the stratum as well. Of course the large number are of



AT THE WORLD'S FAIR—THE WINDMILL CITY.





AT THE WORLD'S FAIR—THE FISHERIES BUILDING.

the quarternary era, but some few are devonian clays. A few cretaceous clays are utilized for potteries. Besides these are some shales, and a number of sands, all of which go to the hands of the clay-worker. The thoroughness of the display has been the delight of all those professional men whose interests are in the clay world. In one corner of the State pavilion is placed a small exhibit of the finished wares. Bricks of various forms and uses are shown, tiles, furnace blocks and terra cotta. Above is a small cupola which is roofed with tiles made by the Celadon Terra Cotta Company. These are of the Spanish patterns, and also the true Celadon tiles, of which, by the way, there is a much more pretentious exhibit made in the north-western corner of the Manufacturers Building.

#### AMERICAN ROOFING TILES.

This latter is such an interesting structure that it is deserving of more than passing mention. It is a little building which in architecture is rather simple, but which gathers its value from the fact that it is built entirely of the various roofing tiles made by the firm, some fourteen in number, and for that reason it is a thorough exposition of the manufacture of the Celadon roof covers.

The four plain walls are composed of solid tilings, being ornamented by the regular introduction of the various shapes. Thus the windows, which are by the way fashioned after the same patterns of tile, only of glass, and fastened the same way, are edged with the horn tiles. These horn tiles are novelties in their form and are best described by their names. Their horn is a pointed yet rounding concern, reminding us of

a young rhinoceros, and they serve the double purpose of being snow guards, and as roof footings. And they are ornamental as well, their peculiar form breaking the light upon the roof in an attractive manner.

The roofing is accomplished with the "Conosera" tile, which is, by the way, one of the favorite styles made by the firm. It is an odd shaped tile, briefly described as of generally a rectangular form with a conical convex central portion. One end is fitted with two openings for nails or screws, and deep interlocking flanges arm the edges. As they are made in five widths, they are a popular form for the finishing of towers and similar cone surfaces.

The Celadons are also makers of handsome terra cottas, little of their work, however, in this line beyond a few finials, combs and gable ornaments being shown. One of the features of the tilings is that they are all vitrified, which is accomplished by the most expert firing. The result is that they are unexcelled for strength and power of non-absorption. In the world of tiles for roofing purposes, there has been a certain leaning towards the Spanish or pan tiles, as they are doubtless one of the most effective

forms ever invented. The Conosera tile presents a very similar surface, but combines with it all of the improvements that mark the latest ideas in the art.

#### ANOTHER ILLINOIS EXHIBIT.

In the September CLAY-WORKER, page 245, was shown a cut of the handsome display made by the Illinois Brick, Tile and Drainage Association, in the gallery of the Manufacturers building.

In the Illinois State building there is another exhibit of clay products, and a very handsome one too, as our readers may see from the accompanying engraving, for the use of which we are indebted to Mr. D. O. Loy, whose portrait appears on page 335 of this issue. To Mr. Loy's efforts is due the credit for this latter exhibit and he also rendered good service in behalf of the State association. Many of the ornamental pieces shown in the State building display were made by Mr. Loy himself. He is a peculiar genius full of quaint ideas that find happiest expres-



AT THE WORLD'S FAIR—EXHIBIT OF THE CELADON TERRA COTTA CO.'S ROOFING TILE.



sion in bright rhyme and deft handiwork.

There are a few more things in the vast clay world as shown in this wonderful fair of which we might speak if space would permit. As it is we must pass them by for the present. We have tried to give our readers some idea of what it is to be seen at the Columbia Exposition of special interest to them. How well we have succeeded we leave for them to say. If the verdict is "Well

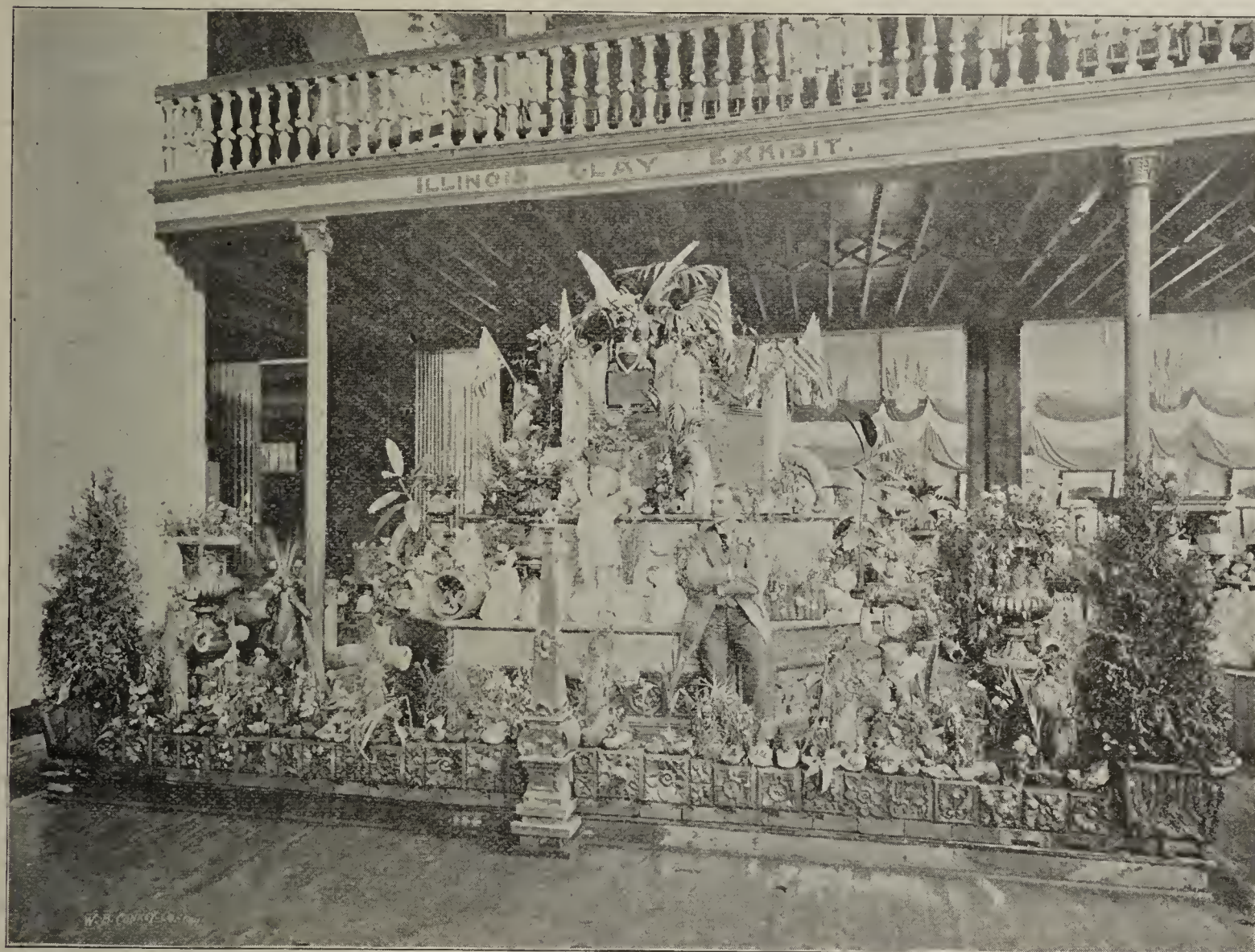
motion for the purpose of drying bricks, no doubt whatever can exist as to such an expenditure of effort paying much better than to "do your own blowing," and this "fanning influence" constitutes the principle element in considering the "favorable conditions for radiation," that was reserved from the last, to be described in this communication.

So little positive current of air is ordinarily exerted within the room in which drying is done, or in a dryer; that

room to create a positive and horizontal direction to the air pass it from one, or one set of fans, to another, or insure ascending or descending currents, or both, and all in the same connection of control, comprizes a very thorough means of distributing the heated air for uniform as well as effective drying, as each fan constitutes an air center toward which it is drawn, and from which it is forwarded to be drawn by another fan, or set of fans.

With standing radiators within the influence of a current so created, and especially when close to the fans, the accelerated passage of the air over the surfaces of the pipes radiates the heat, very rapidly, and the greater "fall" is more desirable because of the increased quantity of condensed water to be necessarily carried off, and material may be placed on racks or cars for the air to be conveyed to, or forced through, either in a horizontal direction or otherwise.

Therefore such radiators and racks for drying bricks, as often tried, may be



AT THE WORLD'S FAIR—EXHIBIT OF CLAY PRODUCTS IN THE ILLINOIS BUILDING.

done, good and faithful servant," we shall count all the time, effort and money expended, a good investment.

Written for the Clay-Worker.

#### DRYING BRICK.

BY S. GREEN.

#### MAKE THE WIND BLOW.

WHATEVER the opinion may be, as to whether the cooling realized from the motion of a fan compensated to any material extent for the heating effort to create the current, there is less question about it when another does the fanning, and if we compare the power from a steam engine to drive "volume" fans to put the air in

the most desirable position for steam radiating pipes seems to be below the material to be dried, in order that benefit may be obtained from the current created in the ascending air.

Standing radiator pipes admit of steeper and more favorable drainage, yet they appear to be more in range with the upward direction of the air, and less suited for the distribution of the heat to the drying product. This form of radiator seems to be readily suggested, since it has been so generally tried, and with disappointing results in the attempt to evaporate as much moisture as contained in bricks to be dried, since their use appears to have been discontinued for building or fire bricks.

Placing "volume" fans in the dry

found to be other than satisfactory; yet with the fans placed among them, to "make the wind blow," decided success may be realized, and increased product be obtained from the enclosure, or space, employed, with more heat from the pipes to aid the air in carrying the moisture to be rapidly evaporated from the surface of the bricks.

This appears to be more like the natural out-of-doors air drying plan, that so many experienced brickmakers still adhere to. The wind passing over the bricks as placed on the ground, or in hacks, carries off the moisture rapidly, and quick, and satisfactory drying is obtained by this means, when the weather and general conditions are favorable, and these results are secured from the



use of an abundant supply of air at low temperature, and in a comparatively dry condition, to thus enable it to carry the moisture.

Instead of depending much upon enclosure and an ascending current created by the ordinary artificial means of communicating heat from under the drying material, the "air dried" bricks, whether they be on the ground, in hacks, or placed on racks, are subjected to the influence of the wind, which more nearly takes a horizontal direction, and standing radiators might be advantageously employed if such a supply of air could be fully and steadily obtained.

The volume fans do not depend so much upon enclosures, they might be placed on open yards and used in connection with the ordinary pallet system; either with or without the standing pipe radiators, and the air carried passed along, from one set to another, would be controlled to such an extent in its horizontal direction as to be quite independent of enclosure, yet a greater degree of efficiency would be secured in confining the course of the air more closely to the material to be dried.

The comparison between this means of putting the air in motion, and that of the wind, seems to be very fair; and to justify those using this system of drying, in the claim that it is most closely conducted upon "first principles."

Of course the wind furnishes drying capacity in its current at no cost for steam power to put it in motion, and the air is quite free from moisture and able to carry it from the wet bricks without occasion to furnish pipes or other radiating surfaces. Yet if a liberal number of fans be employed to insure more general distribution in uniform drying and thus permitting lessened speed and motion to the air, very much less proportionate power will be required. The heat for the pipes may be advantageously obtained from the engine exhaust steam at little or no comparative cost, the fans may be conveniently near where the bricks are made, and they need not be left "out in the rain."

Written for the CLAY-WORKER.

#### FIRE CLAY AND ITS PROPER APPLICATION.

IN continuing upon the discussion of the chemical properties and the general phenomena connected with, and bearing directly upon, the elements silicon and aluminum as the

the chief constituents of fire clays, we must remember that laws which are empirical, though not explained by science, are quite as valuable as those which are as clearly theoretical as practical. It is easy to say, after we have discovered a positive law working in our materials and manipulations: "That is nothing new. Anybody would have expected such results."

Had we not seen the law day after day, and week after week though not consciously, would we have been able to recall the conditions so plainly to mind as to trace out the results of each step with unerring certainty? The effect of various changes in the method of procedure, when engaged in experimental work, may be anticipated to a very large degree by persons well grounded in both theory and practice of the special field; however many a wise man falls far short of the mark, when putting his theories into practice. If experience has taught us that certain results are inevitable when particular forces, chemical or physical, act upon combinations of known substances, then we can say the law is there whatever the explanation may be, and it will always exist.

The reasons which I offered in my last paper for silicate of alumina not being as fusible as most silicates, was entirely from a chemical standpoint and since, so far as I know, it is original, I beg to offer it to my readers as a possible solution of the problem.

One might say that I am bringing theory in a little too prominently here, and yet, they are all interesting facts and, as suggestions, furnish a field for investigation.

I would ask the special attention of those who have followed me in the discussion, and solicit advice in regard to the matter.

Silica and alumina are two very stable oxides and, as we observed in the analyses shown in my previous paper, exist in varying proportions in different grades of clay, all of which are capable of resisting a high red-heat. These substances taken alone, most chemists would say, are practically infusible, which is true, though they will melt before the oxy-hydrogen flame.

Pure silica  $\text{SiO}_2$ , as it is prepared in the laboratory, is a perfectly white amorphous powder. In nature it occurs in many places as quartz, sand, etc., all of which are pure silica.

Alumina  $\text{Al}_2\text{O}_3$ , as prepared in the laboratory, free from all impurities and

like silica, is a white amorphous powder, while in nature it exists as the ruby, sapphire and corundum.

The purest combination of these two compounds, silica and alumina, is kaolinite in which they have combined chemically, crystallizing with two molecules of water.



This is the most infusible of all silicates of alumina. It will endure the highest heat used in metallurgical work, but will melt before oxyhydrogen flame. I doubt if my statement would be questioned, should I say that no fire brick in the market to-day bears the formula of,  $\text{Al}_2\text{O}_3, 2\text{SiO}_2 + 2\text{H}_2\text{O}$ . Simply because such clays cannot be moulded and burned to the satisfaction of the consumer.

Silica carries no water of crystallization, when in the form of quartz.

Silicate of alumina, whether the normal or a higher silicate, combines with a definite quantity of water. If other less hydrous substances are not mixed with it to reduce this properly, and perhaps put into a more favorable condition physically, to discharge its moisture and combined water, the result is a cracked, checked and unsound brick. Again, pure silicate of alumina alone has not the necessary properties for making a hard brick. If the conditions are right and the brick can be pressed when free from both its hygroscopic and combined water, a comparatively hard and sound brick is the result of burning. Silicate of alumina, having once been ignited at redness, loses not only its water of composition, but also its plasticity and is never able to recover either again.

Strange that it should lose its affinity for water, even after being heated to redness, unless the compound itself is broken up.

Substances, as a rule, are capable of absorbing their water of crystallization again, after having been deprived of it by subjection to a high degree heat, some quite rapidly, while others more gradually. The chemical elements of kaolinite must be distorted by the application of red heat, if it yields its power of attracting and holding water in its composition.

As a clay increases in silica, whether combined or uncombined with other elements, it will be noticed that the water of crystallization decreases; hence, most of its water being hygroscopic, is permanently liberated at a much lower



temperature. Some clays, which are so very silicious as to be almost exclusively finely disintegrated quartz, will be found to retain only one to two per cent. of water as a part of its composition. Clays running high in silicate of alumina, and necessarily combined water, will shrink very materially when burned. The very silicious clays, corresponding low in alumina, and combined water show very little shrinkage. This may be carried to such an extent as to find a clay so highly silicious as to expand when subject to the process of burning and return to its original dimensions when cold.

CHARLES FERRY.

### OBITUARY.

#### Death of Chas. P. Merwin, Recording Secretary National Brick Manufacturers' Association.

Friend after friend departs,—  
Who hath not lost a friend?  
There is no union here of hearts,  
That finds not here an end.

ON the evening of October 4th Mr. Charles Phillips Merwin died at his home in New Britain, Conn., after an illness which began in August last, when he was attacked by malarial fever. No serious results were anticipated by his friends until quite recently, when heart trouble ensued with fatal results.

Mr. Merwin was born in West Haven, Conn., in 1846, and received a common school education, after which he engaged in mercantile pursuits till 1882, when he established a brick plant at Berlin, Conn. His business ability and energy soon brought pronounced success, and at the time of his death his brick works were among the largest, best managed and equipped plants of the kind in America.

For the past five years Mr. Merwin has served the National Brick Manufacturers' Association as Recording Secretary, and during all of his connection with this Association he has been an energetic worker in its interests. In truth, he was energetic in all things. He was an ideal type of the keen, bright, capable business man of New England. Everything which came to his hand he gave his utmost strength of mind and purpose. There was no matter so unimportant that, if undertaken, did not meet with the best attention which this indomitable worker could give it. His mind was of that quality which com-

bined with his energy would have made a pronounced success in any profession or business in which he might have been engaged. This success in the manufacture and sale of brick was the result of his large general capacity, his great energy and perseverance. There were no accidents connected with his career. He dug the raw material out of the ground, put it into commercial shape and then marketed it. In short, Mr. Merwin was successful. Like all men of his type, he was strictly honorable and straight forward in all business affairs.

As with nearly all men who know how to take care of themselves in business, he was kind of heart and gentle and affectionate in his family. In his social relations he was genial and entertaining. He leaves a wife and three sons who

they had the control of it,—how the people are being swindled out of their hard earnings, etc.

But Bill Stoops put it right the other day at "Hawes Corners," when he said—after having heard a long disputation over the finances of the country:

"The biggest thing I've heard of yet is confidence."

"Why so?" inquired Jim Leathers.

"Because it does 95 per cent. of the business of the country without the use of money," said Bill, pausing a minute to look at the financiers seated around the cold stove at the post-office, then, continuing his remarks, said: "And you moneyed men are argufying yourselves red in the face, over the other five per cent., a kind of a tail-end business compared to confidence."

### THE MEAN MAN.

SOMETIMES I wonder, says Burdette, what a mean man thinks about when he goes to bed. When he turns out the light and lies down alone he is then compelled to be honest with himself. Not a bright thought, not a generous impulse, not a word of blessing, not a grateful look comes back to him; not a penny dropped into the palm of poverty, nor the balm of a loving word dropped into an aching heart; no sunbeam of encouragement cast upon a struggling life, no strong right hand of fellowship reached out to help some fallen man to his feet! When none of these things come to him as the "God bless you" of the departed day, how he must hate himself; how he must try to roll away from himself and sleep

on the other side of the bed, when the only victory he can think of is some mean victory, in which he has wronged a neighbor. No wonder he always sneers when he tries to smile. How pure and good all the rest of the world must look to him, and how careless and dreary must his own path appear. Why, even one isolated act of meanness is enough to scatter cracker crumbs in the bed of the average man, and what must be the feelings of a man whose whole life is given up to mean acts?

When writing to an advertiser, our readers will confer a favor on both the advertiser and publishers by mentioning the CLAY-WORKER.



THE LATE CHAS. P. MERWIN, Recording Secretary N. B. M. A., NEW BRITAIN, CONN.

have the sincerest sympathy of all who knew Mr. Merwin. His death is a severe loss to the National Brick Manufacturers' Association, and to the community, where he was an important factor in all progressive movements.

### CONFIDENCE A BIG THING.

We hear a great deal about the amount of currency per capita,—the amount needed,—the issue of legal tender notes, gold and silver basis, bimetallism, gold bugs, etc. At any cross-roads store we find men ready to argue and dictate what the policy of the government should be,—how they would manage the treasury of the nation, if



Written for the CLAY-WORKER.

## MIDWAY PLAISANCE.

## A Congress of Coin Chasers.



HEN weary of serious study, the World's Fair visitor naturally seeks recreation in "Midway." This has been aptly called the side show of the Columbian Exposition and few there are of all who have attended the Fair who have not contributed liberally to the money changers of all

climes who here abound more numerous than flies in harvest.

Here extremes meet and become fast friends. All recognized and unrecognized languages are spoken here. The man with the sign language gets along just as well as any. Its code is the same the world over. A Dahoman can make his wants known just as well as Herr Yawkob Schoonerglass. This World's Congress of tongues has but one theme and on that, wag from dawn far into darkness. While the Occident at Washington are running silver out, here the Orient is frantically "running it in."

Everybody visits Midway and it is here that the old proverb "A fool and his money is soon parted" is constantly illustrated. Were it not so the concessionaires would have to walk home, and fast during the journey.

Ordinarily, the average western nose wrinkles before wares of such chameleon-like values, but that same nose on a vacation is different, and here the owners of thousands of such go teeming with senses confused, with reason confounded by sights and by sounds outlandish by far. Loog-ow-it, Bum-Bum, Zallabia fresh, hot! hot! Dancing girls, Love songs, bright fez and bazar. Before such assaults, their purses spring open, for "entrance" or gew-gaw of Yankee-made ware. Old Ireland disguised may sell you the token, but your "eagles" will roost with the Crescent and Star.

In the Algerian Bazar sitting at the receipt of custom is a black-eyed rosy cheeked maiden. Garments of native cut and trimming, jaunty cap festooned with tinsel bespeak the true daughter of the East. What a chance for a novel flirtation! We hurriedly get together a

few words of Arabic, carelessly approach, take up a trinket and admiring it, say, "Kwi es Katerik." A blush and shake of the head. (Perhaps she knows French better, all speak it more or less.) I try again. "Quel est le prix de cet objet?" Bewilderment breaks into recognition. In sweet native accent she replies, "Oi shpake English sor av ye wants ter buy anny-thing." Shades of Cork!

From the topmost curve of the Ferris wheel we look down upon the nerve-centres below and think kindly of the man who successfully carried that great wheel in his head.

CAIRO STREET! what a study of eastern life—and western! The trot of the



donkeys and boys. The big awkward camels whose joint racking gait is always ajar. Old Nadi with his eggs; and "bac-sheesh." Fatatree with his piping Ramesean airs. The high strutting swordsman. The barber shop, with its scrapers and notched basins and the greasy woolled Gorden killers, shrink our purse and convulse our sides until the abdominal twirlers in the theatre grown green with envy.

The French rustling Dahomans give daily "Functions" under the personal observation and stage management of chiefs, Brierve and Hayshirt. The royal Copper and Boilermakers Regiment Band furnishes the music. Since the opening performance this company has played to standing room only—except to those who brought seats with them.

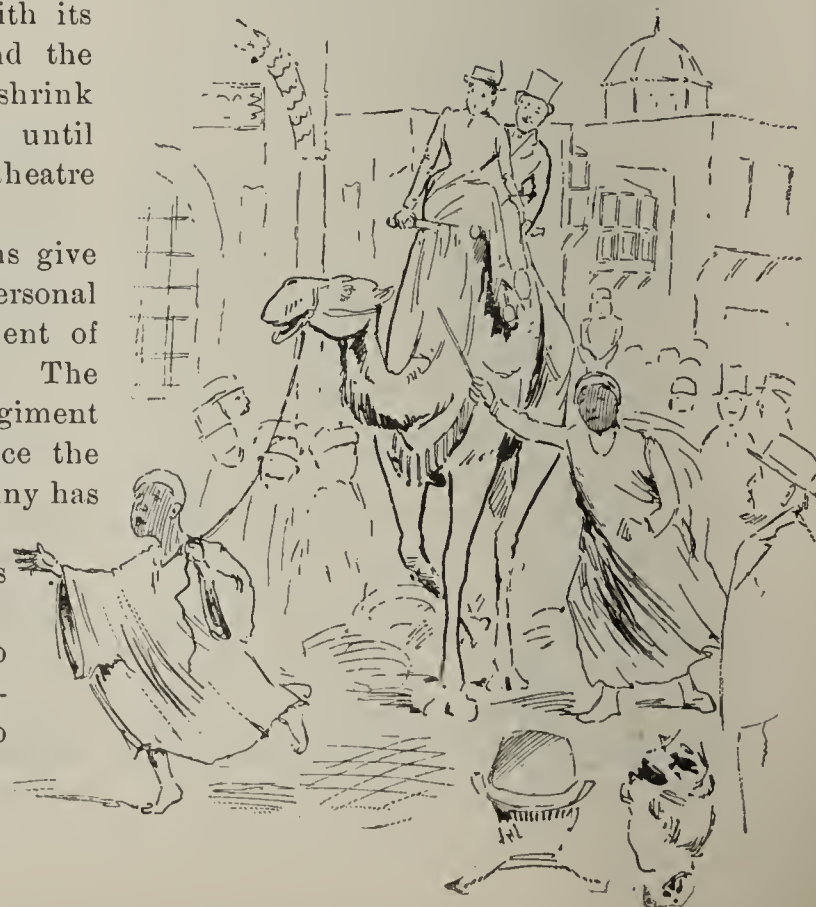
Henceforth, any reference to the American Commercial traveler will set turbaned heads to bobbing. One son of the Prophet

at least will return to his native sty with a wholesome fear if not respect for our Knight of the Grip. This is the story.

As high bunkumgoluk over a little stock of scented wood, beads and white metal, he was waxing rich in shekels. Business was rushing and a little Arabian (?) girl properly accredited was employed to assist. Her courtesy and cleverness strengthened the silver stream to her master's purse. Four days and the rush over, she was excused. This morning she sought her pay—fifty cents per day. Shylock brings a counter bill for admission tickets—fifty cents per day. (Employes passes issued free to him by the Fair.) Square, see! Her tearful pleading is in vain. He coarsely sends her away. A guard listens to her story, grasps her hand in his big Irish fist and strides down upon the Saracen, like his ancestral crusading Knights of old. \* \* \* A blue cloud obscures the contest between the Crescent and the Cross. The cloud lifts, and the lacerated remains of two languages are on their way to the hospital. Shylock sullenly dusts his beads and pipes. The guard's warning finger promises trouble; and the little girl's execrations turn to despairing sobs.

A stoutly built, bronze faced gentleman saunters leisurely along. His ear catches the sound of distress; to hear is to investigate, and a kind tone brings the story. Explanation is sought. Shylock resents such foreign interference "mit hees beesness."

"Sir, such business as this is my business and you shall pay to this little girl the money justly due her," says the stranger.





"I dond gare, go summon me."

"I shall not summon you, but she shall have her money just the same,"



and the stranger stepped aside and consulted a moment with the guard. Returning he opens his folding chair places it out in front of Shylock's booth. The Arab girl is seated and in her lap he places her little cap. He then quietly addresses the growing crowd, briefly stating the circumstances and asks that every gentleman respecting woman and fair play drop a contribution toward the payment of Shylock's bill, each contribution, regardless of amount, only counting as one cent. As the bill is two dollars it will require two hundred offerings to close the account.

Well, the idea was caught at once, and the novelty and sentiment of it was irresistible. The stream of silver began. The ladies regretting their exclusion, offer kind words of sympathy for the little girl, who, by this, was almost paralyzed with astonishment at the course her trouble had taken. The story flies from lip to lip, and from group to group until it spreads over the grounds like a ripple on a pond. Shylock looked on in bewilderment. The idea had not soaked into his skull as yet. He sells not a penny's worth; his blandishments being met by words and looks of contempt. His neighbors chuckle and rake in a stream of sheckels over their counters. Now! a thought strikes him. He rushes out after the guard, and demands that he disperse that crowd, but the guard paces his beat in blind silence. In despair he rushes

back and beckons to the stranger, "Here dake dese two doller and go away, you ruin my beesness."

"No, you don't owe me anything, your business is with the girl," replied the stranger.

With dark mutterings, Shylock pushes his way through the throng and flings the money on the ground at her feet.

"Stop! you rascal," calls the stranger, "we don't pay bills that way in America, just pick up those pieces and place them respectfully in her hand."

He did so, and was roundly applauded as he retired in helpless rage.

The money is counted, neatly and safely tied up in the girl's handkerchief and she is bade good luck and good-bye.

"What name please?" asked one with note book in hand.

"No name, sir, I only represent the



A. C. T. A," the stranger replied as he disappeared in the human stream.

C. M. TUTTLE.

### BRICKMAKING ON THE HUDSON.

#### THE FUEL QUESTION—FROM WOOD TO COAL.

THE fuel used in burning brick is of several kinds. Each has its advocates and no doubt all have been used successfully. Wood stands first, naturally, as when brickmaking was in its infancy it could be easily and cheaply procured and today it still holds its own, for in all probability it is the fuel used on the majority of yards in the States.

#### COMPETITION.

The large output has been the result of a very unsettled market, with low

prices, so that if it is possible brick must be made cheaper. How to do it, is the question. Will a change of fuel do it? Oil has been tried with fair success, the reduced expense did not recommend its extended use as the cost of fixtures was considerable. Natural gas we have none—individual gas plenty and to spare, but it will not do for fuel to burn in a kiln of brick. We still have coal, used extensively in the form of dust. As a direct fuel to a very limited extent, it has many advocates and some who have been using it for several years and are satisfied. Ask nine out of ten manufacturers, "Why do you not burn with coal?" and the reply will be, "I do not know how," he will also add, "See what a time Mr. C. had, and D.'s burn was worse yet." Should that condemn the method? He admits that he does not know how. There are men who do know how and who can be procured to burn a kiln, or more, until he or his foreman have sufficient knowledge to handle a kiln. What if he does not burn "all perfect." When he commenced he had to learn to burn with wood; just so with coal, and in time he would improve.

Praise should be given to anyone who tries to keep up with the times. Wood has had its day, if coal is to take its place it would seem that it should have a fair trial, and the old saying of try, try again, should be put in force. The two yards that tried coal last fall did not make a pronounced success and could not be expected to. On one of the yards two arches were set in with the rest of the kiln that was burned with wood, of the two arches, one was an outside arch, and the man who burned it knew nothing about burning with coal. On the other yard there were four arches set in and burned with other brick that were burned with wood, and if not a decided success was far from a failure. It was the means of causing others to see that it was not such a difficult problem, and if in the hands of one who had used coal would be satisfactory.

#### AN EXPERIMENTAL BURN.

Mr. Charles Walsh, of Hackensack, one of our most progressive brickmakers, concluded that he would give coal a fair trial. He burns his own brick and with a personal knowledge of the cost and labor of attending the burning he was satisfied that coal was the coming fuel.

He did not make the mistake that the others did. When he heard that



Mr. Charles Sutton, of Kingston, N. Y., was burning a kiln with coal at Haverstraw, he went there and saw the kiln in operation. He went on the Excelsior yard where Mr. Sutton had burned a kiln with good result. He, like the careful captain who engages a pilot when he enters a strange port, engaged Mr. Sutton to burn a kiln for him. On his return home, he commenced the erection of a kiln to be burned with coal, mention of which was made my last letter.

Charlie believes in doing things right. Before the first burn was finished he had an arch up for the second—why not wait till the first was opened and so see what had been accomplished—he had started to try coal and he was going to give it a fair show, he would remedy any defects that had been made in the first. When one is experimenting, they generally use the best. Not so in this case, one outside and the next arch was washed brick, and, not to improve the matter, he did not have room to put up sand works at the end of kiln.

#### PREPARING KILN.

It was set in benches of fours, with outside of twos. The bottom was set four high, the first three courses tight, the fourth loose, and filled in with coal dust, the arch then carried up the usual height. In the middle of the hole for the ash pit a space of about three feet was filled in with ashes. The bars rested on the third course of the bottom brick, which brought the bars even with the top of the fourth course. The bars were  $\frac{5}{8}$  square iron the rest were of cast iron. Ordinary arch iron or caps were used and set in the wall; under the iron he put a piece of  $\frac{1}{2}$  iron five inches wide and 18 inches long and extended outside the wall about two inches, so that when he fired up he slid the door one side instead of lifting it up and down. The doors of the arch pits were of sheet iron. Kilns walled and daubed as in a kiln of the old style.

#### BURNING.

As the kiln stood several days after being ready to set fire and being something new it caused some curiosity, and many were the remarks as to how it was to be started and heated up. As all things have an end, so in this case. Along came Mr. Sutton about eleven o'clock on Wednesday to relieve their curiosity. He just shoved over wood to the middle from both sides, two sticks side by side, put the kindlings in the mouth and set fire. As the wood burned down and

formed coals he threw on coal, as it burned up he kept throwing on coal over and back till he had the fires across or together, and did not heat it up with coal as was expected. This stage was the most laborious part of it, as it was necessary to get the fire together without spots and showed that knowledge was power, as the heat developed was in excess of drying off with wood and one not accustomed to it would think that he was drying too fast. When the arches were hot enough to suit him he daubed her up, spreading a light layer of coal over from the middle, and in the mouth a small shovel or two. Setting the door on tight till the fire broke through then daubing tight, firing from the other side, setting the door off about four inches and the ash pit down three. Was he going to get draft enough, was the question asked. He soon set that question at rest, by setting the door on tight and opening the ash pit door. It surprised those who were looking on. How fast the heat increased, he could melt it down, turning every six hours. Fifty-six hours after starting fire, your scribe had the curiosity to go to the top of kiln to see if there was any settle—settle in 56 hours! I certainly did not expect to see any but this was something new, and I was not going to be surprised at anything. After looking in the arch and seeing such a nice steady fire, not a rush of cold air in the arch as by the old method of wood. On looking over the top of the kiln there was a clean start from head to head as uniform as if one had pushed it down. When I came down I mentioned the fact to one of the oldest of the craft, one who has burned many million, his remark was that he had in the past, in Haverstraw, dried off in that length of time. Verily what a change. Now was it a settle in that short time, or was it "swelled" in the bottom and "light" on top? I next visited it on Sunday afternoon. On looking on top of kiln no holes were to be seen, the platting was as white as any one could wish for, as an indication of hard brick, with only a small spot over the middle of the outside and second arch of washed brick. Where, as I said before, no sand had been put up. Mr. Sutton was firing on the spot with wood as he had used all of his coal. He let the kiln go Sunday night, or in four and a half days. By the old way it would have gone on from Sunday night to the next Monday. Well, she is burned—

what is in her, is the question.

#### THE RESULT.

When opened, which was at the end where the washed brick were, they were found to be well burned. When the smooth brick was reached and some of them shipped they were No. 1, burned out from head to head a good color, and strong, a very satisfactory kiln—and completely silenced some of the "old brokers" who kept saying: "The idea of a man coming here and expecting to burn brick in that manner." Well, he did burn them and burned them well, and deserved great credit for it, as he had never seen the stuff, or knew how they were made, as he had never been in Hackensack until he came to burn the kiln in question.

In arch brick there may be a trifle more waste than by burning with wood, the two courses that are in line with the fire are clinkered and of no account. The two courses below the closing course I may say were honey combed so that when handled dropped in pieces. The rest of the arch brick would compare with wood burned. In the future some of that waste can be obviated so that the loss in arch brick will be no larger than heretofore.

Egg coal was the size and one car load of 18 tons was the quantity and five dollars per ton alongside the kiln was the price.

In the kiln were six arches, amount of coal used 18 tons at a cost of \$90, or \$15 per arch for fuel. Wood, at least six cords to the arch would be used, and probably more, at a cost of five dollars per cord or thirty dollars per arch. On a yard the size of this one, on which it was burned, the output per year is almost five million or one hundred and twenty-five arches, at a reduction in cost of fifteen dollars per arch, a snug sum. The item of labor would be another thing to be considered.

For the six arches the cost of outfit, that is, iron for grates and rests and ash doors, was under one hundred dollars. The door and arch iron was on hand.

The second kiln is nearing completion and will be the last kiln to be burned on the yard this fall. Another of our brickmakers talks of putting up a kiln and have Mr. Sutton burn it. Verily, we are progressing, friend Crary, and not by the upside down process either, but by the good old way of making the heat ascend.

#### PROSPECTS FOR FALL.

For the rest of the season the good



ship brick is waiting a favorable slant of prices that will pay to ship. My, what a fleet will be bound for the market, if the barometer indicates a five dollar per M price. Before the middle of October all kilns will be burned, yards cleaned of broken brick and saddles and sheds battened up and all made secure.

With the gradual stopping of yards the past month has taken the large surplus that was lying at the docks from day to day off the market. The market is like a candle burning at both ends, as fast as the supply drops off the consumption does likewise, so that with less shipments there is an over abundance on the market all the time. The good weather during the summer has filled the sheds with good smooth brick, so that the fancy brands are "in the soup" with the rest, if a poor cargo is shipped. The agent has his job picked out to find a customer and the price will be so low that the other fellow will growl that he sold them for that price when he thought he was doing well to get any one to buy.

There is nothing to indicate an improved market. From the first of January to the first of September the number of permits for new buildings in Brooklyn is 60 per cent. below the same period for 1892. In New York for the same length of time the number of permits is 24 per cent. below last year. The dealers are not stocking any brick as they are trusting to an open winter to secure what stock they may need. In the face of these facts and figures there are some still moulding who say they would not be surprised to see good brick go below four dollars per M. Faith to continue to make an article and sell at present figures, which is below cost, and continue to make with the expectation of selling still lower, is faith rarely found these days.

A. N. OLDTIMER.

Written for the CLAY-WORKER.

#### HINTS FOR AMATEUR CLAY-WORKERS.

##### Fourth Paper.

THE young fellow who is artistically inclined may think his ability above dabbling his tools into clay to undertake to make a warty toad, and the artistic moulder won't deign to touch his nibs, or the temperate young man undertake to intoxicate the reptile, while the bumptious young man has neither time or "Bourbon"

to waste in such endeavours.

It is very hard work to master all branches, but it is an absolute necessity in these days to at least have a practical

knowledge all the way down, from the clay bank to the finished burn, from the first location of a clay deposit, where a certain knowledge of geology is required to determine the deposit, its extent and its possible changes of formation. Then there is the applied chemistry, which has very judiciously been placed before you in the CLAY-WORKER to make it interesting to you to follow up.

The old time brickmaker who grew rich out of squatting on the border of some village or town and made brick out of clay, and sweat and grew rich by waking up one morning to find his brickyard situated in the centre of some rising city—his time is over, never to come back. The bricks of the future are to be made with clay tempered with brains, designed with skill, burned with science.

Young man wake up to the times! They are going at a faster rate than they used to. It is not so very long ago that the whole dispute of making brick was between hand vs. a soft mud machine. To-day the race is open, and a dozen Richmonds in the field. The old hand mould has no place, and the soft mud machine is away out of sight; and entered for the fray, equipped to perfection, stand and move the gilded dry and semi-dry, the gigantic stiff mud, the porous process harnessed to steam with others waiting to be coupled to electricity, while coming up to dawn on you, in all its grandeur, is the hot process, where the clay runs like molten metal, is poured into its mould to cool down into the perfection of vitrified ware, into the fashion you may wish to shape it. All the grand and glorious achievements have been the outcome of less than a century, and, like valuable horses, ruin their owners, by not running fast enough to win. The equipment is complete, but alas! they are all in want of a rider; they are all in the want of a groom to properly care and feed them. Their business managers do their part, and do it well, but the rest is left to strong arms with thick heads. What a golden opportunity for cultivated brains and intelligence to step in and take the reins, and by right win the remuneration well deserved, and which will be liberally given.

##### PRACTICE VS. THEORY.

The day of gigantic schemes on paper is over, never to return. The capitalist of to-day would sooner invest with the solid man of experience and judgment, who can show what he can do, than to sink his means in some wild cat scheme done up on gilt-edged paper.

Our infant—the clay business—has out-grown his clothes; he is no longer a boy; he is not the youth that was forever to goad a kicking mule around its beaten path. The boy has kicked clean over the traces, and the old mule is dead. The one I saw harnessed up in a brick shed the other day was a 150 horse power, double, compound automatic cut-off. The progressive Superintendent said, "It would do until some Edison gives us something better. At present we burn coal to obtain steam, which is transmitted into mechanical energy, and then into electricity. Before the energy of the coal reaches the dynamo, six-sevenths of its power is lost, even under the very best conditions, and afterwards one-tenth of the remainder."

Here is food for reflection, coming from a brickyard point of view. Away with your shafting and pulleys; transmit your power by a wire. Young fellow, do you think you know it all? Is your way the best? Have you nothing left to learn? Is all that is new to our business to be developed outside of the yard? Are there no brains in the business? Is there any required? The wheel-barrow, pick and shovel do it all. You have good, cheap wood, the best of clay. You do the rest with the help of the mule, and spend your evenings brooding over the bad market and times, that make labor cheap or price of brick poor. You deign to take hold where experience is gained. You look over the CLAY-WORKER, read an essay on Chemistry, and decide that that belongs to the other fellow; you are not in it. You look over some other writings and think how much you know, and how little the fellow knew who wrote such stuff. The "ads." you saw, but you were not buying, so you did not pay much attention, and you rest yourself with contentment of your own ability, and patiently wait for something to turn up; it never struck you to turn it up, Mr. Micawber.

##### ONE WAY TO GET INFORMATION.

The way to turn it up, I would suggest, would be to read the CLAY-WORKER, advertisements and all. Open up a correspondence with a manufacturer of an engine and boiler or a machine in a condensed form. He will give you all its possibilities and some of its impossibilities. You need not take umbrage at his way of writing. If he tells you he beats all on top of earth, never forget you are after information and he is after sales. In this way you will learn something of machinery and a great deal





about business and its methods. The letter department is not to be overlooked, as you will be a purchaser yet. If it was only to post yourself on the relative advantages of patent kilns, it would take considerable of your spare cash for postage stamps (including stamp for both ways).

There is a mint of knowledge to be learned from such sources, but knowledge is not wealth unless applied, so you may despise to start away down with his Nibs and me. My poor, humble little friend, who has been waiting for centuries buried in a coal seam, "feeding on the vapors of a dungeon," but now he is out and quite lively hopping up. Still you are loath to take hold of him. It is sufficient for you to read what other people do, but to take hold and do likewise is not your intention. You presume to satisfy yourself with the theory. "Practice is your beaten path." Trundle your barrow, shovel your clay, toss your brick, fire on your fuel, ten hours a day is a day's pay, earn it and take it, and pass your existence in the rut you have cut for yourself.

#### A PROMISING JOURNEY.

"Little acorns grow big oaks," "Little endeavors mighty obstacles overcome." Join me my young friend, come along with his Nibs and me; we're going to make clay into dust; we're going to try him, his Nibs, in stiff and plastic, dry and semi-dry. We propose to imprison him inside a brick. Those who wish to possess him must be like Michael Angelo, who said of a block of marble, "There is imprisoned here an angel, I am going to release her." We propose to go with his Nibs into the very kiln, watch his very shrinkage and change of color, find out what we have, and how we got it, and, like power, if you only have it based on practical science, all you have to do is multiply. If it requires capital, capital is waiting for the practical man that has gone through all his theories and has his knowledge from the hard school of practice, tempered by prudence, developed by perseverance.

It does not lay in everybody's power to enter a practical school of science burdened with a polished education, to make himself conversant with clays, with an elaborate laboratory of hydraulic presses, and highly scientific combustion apparatus, with professors to mark every degree in the temperature, and elaborately explain away every knotty point, and analyze to the minutest particle of a molecule.

This young man comes forth to seek gold and honor in some more promising field than poor clay, but for us, that is in the mud. Let us turn every suggestion to practice, with what we have of education, perseverance will be rewarded with knowledge. Practical experiments will lure us on to noble achievements.

We don't know yet what is not possible, so get your coat off and come along with his Nibs and me, away into the dry and hot molted process, and let us glaze

and finish our work; make up our own fret and do it all on a small scale first.  
M. JAY.



### WHAT SHALL THE HARVEST BE?

#### PERTINENT SUGGESTIONS AS TO THE MAKE-UP OF THE PROGRAMME FOR THE EIGHTH ANNUAL CONVENTION

To Be Held in Chicago in January 1894.

THE following correspondence is given to our readers with the hope that an interest may be awakened among the general membership of the N. B. M. A. The Executive Committee will be pleased to receive any suggestions or ideas relative to the programme for the coming Convention that any member of the association may care to offer. Craftsman desiring information upon any branch or detail of the work of brickmaking are requested to communicate with the Secretary, who will endeavor to arrange for the full discussion of the topic or question:

OFFICE OF COR. SEC'Y NATIONAL  
BRICK MFRS. ASS'N., INDIANAPOLIS.

To the Executive Committee:

The time is near at hand when we must begin active preparation for the 8th Annual Convention to be held in Chicago in January. In taking up the work of arranging a programme, I am mindful of the fact that there have been some suggestions by leading members to the effect that the deliberations of the body ought to be directed to brickmaking alone. That is, no formal paper or address should be arranged for, except on subjects bearing directly upon the manufacture or sale of brick. All of the principle features of the business have been considered at former conventions, making it rather difficult to arrange for a series of formal papers on the same old themes. "Threshing over old straw" is not pleasing to many, and is thought by some to be unprofitable, and yet if we observe the expressed wish of some of our most active members, we must direct our attention and restrict our discussions to the plain, practical, everyday experiences about the yard or factory. If it is the wish of a majority of the members to arrange a programme after this idea, I will, of course, undertake to do so.

It strikes me, though, that if such a course is followed, it would be best to assign certain features or divisions of the work to different sessions and arrange with some one of experience in the particular line to be considered to lead in the discussion of the subject. That is, say for the First Session, we could have the usual reports of Officers and a general discussion of "The Lessons of the Year," to be led by.....

Then the Second Session might be given up to the consideration of the Various Methods of Digging or Mining and Conveying Clay from Bank to Machine. The Third Session to the Preparation of Clays. First for the Soft Clay Process; second, for the Stiff or Plastic Clay Process, and third, for the Dry Press Process. The fourth Session, Drying by the Various Methods and Processes, and the Fifth and Last Session to the Burning of Brick and the most Effective Methods of Marketing the Finished Product. Such a programme would preclude the idea of formal papers upon special topics and so deprive us of what has been the leading and it seems to me the most pleasing feature heretofore, but might result in a greater amount of general discussion.

Would this, do you think, be advantageous? Is not the discussion held under such conditions very apt to take on the character of commonplace reminiscence, of which we are always sure to get a goodly quantity in the discussions following the papers, if the former method of conducting the Convention prevails? Now, you know you are on the programme committee and it, therefore, behooves you to give the matter thoughtful consideration. After repairing to your closet and determining in your own mind the best course to pursue, please write me fully.

Do you think we had better try the experiment suggested, or stick to the old method and make up the best programme we can? I have endeavored in the past to provide a few (2 or 3) good papers on side issues, thinking to lift the craftsmen out of the rut of commonplace shop-talk. Of course, success has not always attended these efforts, but I think some of the best papers that we have ever had, have been of this order. If you are in favor of such a programme as outlined in the first section of this letter, what changes, if any, would you suggest, and who do you think would be the best ones to lead in the discussions of the divisions in which you are most interested? If on the other hand, you think the old plan of preparing a programme is best, on what subjects would you like to have papers prepared, and who do you think among our membership is best qualified to do the work? I would like very much to have suggestions from you on these points.

In the "Button-hole talks" at former meetings you have no doubt found that some of the members who have nothing at all to say on the floor of the Convention are really well informed and instructive talkers.

If we can get these fellows to commit their ideas to writing, the entire craft may be benefited. Heretofore we have aimed to get as much "new blood" on the programme as possible. That is, choose speakers from among those who have not previously been on the programme; at least so far as the preparation of former papers is concerned. Is there any available "new blood" in your vicinity?

T. A. RANDALL, COR. SEC'Y.

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LIFE ITSELF A REPETITION.

T. A. Randall, Cor. Sec'y. N. B. M. A.

DEAR RANDALL:—I have read your letter to the members of the Executive Committee carefully. A strict interpretation of what is meant in the name of our Association, would, I judge, confine our operations exclusively to the sale and manufacture of brick. But all associations, so far as my observation extends, are more liberal in their infamy than later on when they feel themselves strong and powerful. This subject, however, is a proper one for our careful consideration, and upon which some one of our members who take a deep interest might be invited to prepare and read a paper for consideration and discussion at our next Convention.

In the arrangement of the programme, the



course pursued in former years would be entirely satisfactory to me. It is true we are each year, in a measure, going over the same ground, and very naturally and properly, too, I think. In this connection, I am reminded of the familiar lines that were so often repeated by President Lincoln:

\* \* \* \* \*

To repeat the same tale that has often been told—

For we are the same that our fathers have been;  
We see the same sights that our fathers have seen,

We drink the same stream and view the same sun,

And run the same course that our fathers have run.

The thoughts we are thinking our fathers would think;

From the death we are shrinking from, they, too, would shrink;

From the life we are clinging to, they, too, would cling,

But it speeds from the earth like a bird on the wing. \* \* \* \* \*

"Threshing over old straw" is not, in itself, a sufficient argument against former methods. To admit this, would be an argument against our own existence, since life is itself a constant, never-ceasing repetition, and yet it is claimed by those who are best able to judge that there is a constant improvement going on, from generation to generation, as the centuries pass into history. And while we may follow former methods in our Annual Conventions, we shall hope to become more perfect in the knowledge of our profession.

It is the "Button-hole talks" that so frequently take place on the floor of the Convention during recess, and in the hotel lobbies and corridors that we should endeavor to bring out in open session and secure as a part of our published proceedings. And in order to do this, we must, to some extent, encourage "rambling talk," since most of those who engage in these "Button-hole talks" are necessarily not parliamentarians, and the thought of being held down to Cushing or Barclay would be tantamount to muzzling them. We must adopt a means that will induce them to take the floor, and speak their minds without feeling that they are in a straight jacket.

ANTHONY ITTNER, PRESIDENT N. B. M. A.  
St. Louis, Mo.

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AN ADVOCATE OF THE QUESTION BOX.

T. A. Randall, Cor. Sec'y. N. B. M. A.

DEAR SIR:—Your circular letter addressed to members of the Executive Committee reached me in due season, and I have endeavored to frame a reply in my mind before putting my pen to paper for that purpose.

I dislike to have a programme that shall bar out of our discussions such members as Fiske, Gates and others who have developed so much time and talent to improving generally the art of manipulating and burning clay, and who, by their efforts, have raised the standard of brickmaking. Hence, I doubt if the new departure would be of as much lasting benefit as to continue in the old beaten bath.

I have little time for a long reply, but will simply make one suggestion, which, it seems to me, if properly carried out, would necessarily make our next Convention practical and unusually interesting.

We all agree that the Question Box of late years has fallen into a condition of innocuous desuetude. The questions are usually read just previous to adjournment, and are often conundrums, requiring time and thought to guess properly. More frequently, they are flippant and nonsensical and unworthy the attention of a deliberative body. Would it not be a good idea to have the members of the

Association send to the Secretary, at least six weeks previous to the meeting of the Convention, such questions as they are seeking to solve. Then let the Executive Committee go through these questions and select such as are practical. Then divide them up among the different sessions and publish them as a part of the programme. This would give those who were qualified to reply, and those who thought they were, time to prepare a five minutes answer, which, if they were unable to present in person, could be read to the Convention.

I am like Mark Twain, I never could make an extemporaneous speech without time for preparation, and I can call to mind several questions that have come out of the Convention Question Box which, with a few minutes time to think, I could have partially replied to. Before my wits were gathered together, the next question was proposed, and the Convention was, of course, the loser (or gainer). I realize that it is not quite fair to assume that all the members of the Convention are as dull and slow as myself, but I know some of them are, for they have admitted it to me.

Elaborate this idea a little and propose it through the CLAY-WORKER and see if it does not strike a responsive cord.

I apprehend that the most important question asked will be, "Why brickmaking in 1893 was unprofitable?" And I have no doubt some of the answers would be unique, if not strictly truthful.

D. V. PURINGTON, EX-PRES. N. B. M. A.  
Chicago, Ill.

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SIDE ISSUES VS. OLD RUTS.

T. A. Randall, Cor. Sec'y. N. B. M. A.

DEAR RANDALL:—I would very seriously urge as to our next programme, an effort at a much better use of the Question Box, which can only be successful through general effort among the members, but would then be of vital interest.

Beyond this, I would suggest that, especially as our own straw is getting pretty well threshed, we have some papers from parties who might be considered as outside. In looking back, I can very readily see that a very large growth of the use of burnt clay has come from the intelligent efforts of the manufacturer and architect, and I think the acquaintance cannot be too close, and would suggest a rousing paper from a good architect on "Burnt Clay as a Roofing Material." Meeting in such intercourse may give to each of us new ideas and lead to the achievement of results that none of us have dreamed of, just as the past few years have revolutionized the use of our material in building.

Pardon my breaking in on the quiet and gentle way I have been trying to fulfill the accepted duties of my office.

WM. D. GATES, SECOND V. P., N. B. M. A.  
Chicago, Ill.

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FAVORS SHORT PAPERS AND MORE OF THEM.

T. A. Randall, Cor. Sec'y. N. B. M. A.

MY DEAR SIR:—On returning home this morning I found your letter to the Executive Committee at hand.

While I am not fully prepared to offer an opinion in reference to the suggestion you make concerning the programme for the coming National Brick Manufacturers' Convention, yet I will venture a few thoughts.

We all very much desire to have as profitable and interesting a Convention as possible, and we understand, to do this, we must have as many people interested in the work directly, of the Convention, as possible.

Another point not to be lost sight of is this, our method of printing the proceedings of the Convention enables the Association to reach many excellent men who do not attend regularly; these men must, therefore, judge of the

work of the Convention by its written proceedings. Now if these printed proceedings take the form of common-place talks, which will no doubt, often repeat themselves, I am afraid that the Convention work will not, in many instances, be received very favorably.

I do not believe it possible to keep the work of the Convention on as high a plane by the use of general discussions as by the use of set papers on leading subjects. I think, however, that the Convention work, considered purely as a Convention and for the time of the Convention only, could be made more interesting by a general discussion of topics such as you suggest; but mature thought, perpetuated in our printed proceedings, is the only thing that will keep up the standard of the Association. It is impossible to get as great a per cent. of mature thought in unprepared, promiscuous discussion as can be had from well studied papers, prepared after months of thought.

It strikes me, if we could get a greater number of papers, limited in time, space, etc., with short discussions thereafter, that we would, in all probability, strike the happy medium. I have often thought that many of our papers were too long. Could we not have the papers short, spicy and to the point, and have more of them, and in this way reach a greater variety of subjects?

No doubt your experience in Convention work has taught you by this time the impossibility of pleasing every one. Let us not try so much to please every one in the Convention as to do the best thing for the Association, the thing that will tend to perpetuate and make the work done of lasting good to the craft.

We have two general classes of men (speaking especially with reference to the proceedings of the Convention,) who attend the Conventions. One class comes for the purpose of listening to and taking a part in the discussions of any and all subjects pertaining to the business, while there is another class,—and not small by any means,—that attends for the purpose of learning, if possible, some definite thing in reference to some particular branch of the clay manufacturing industry. For instance, at Louisville we had a large number of men who wanted to know something about drying and drying only. We had another class who wanted to know something about burning, and they did not care about any other part of the business.

We could say the same thing of the manufacturing of dry press, stiff mud, etc. Some of these, not being able to get the desired information, may find fault with the set papers and the discussion of general topics, in a general way. Many of these men could be reached and satisfied through the Question Box if they could only be brought to take advantage of it. By the way, I do not believe that we have heretofore given the Question Box as prominent a place as we should.

Our programmes have always been full, and we have been rushed for time and have put off the Question Box until the hour was too late to give it proper attention.

Do you not think it advisable to arrange a greater number of topics and have short, well prepared papers on each, so that when the Convention is over we will have some mature thoughts to report in the proceedings? If you remember, we have, at most of our Conventions, heretofore, assigned certain topics with certain persons to lead in discussion and have almost always failed. These persons assigned to lead in the discussion very seldom make any special preparation, and nine times out ten they have not done so. What we want is special preparation so as to get the very best that the members of our Association are able to produce.

I believe we could interest a much greater number by assigning to one member a subject say, "Drying." Let the person assigned take



not to exceed 10 minutes with a paper on the general topic "Drying," then divide the subject so as to assign to several others 5 or 10 minute papers, say to one, "Steam drying," to another "Hot Air Drying," to another "The Pallet and Rack System," to another, "Drying Floors," etc., and let it be understood that each one is to give a well prepared paper on the particular branch of the subject assigned to him. In this way we could easily enough put 50 to 100 men on the programme and secure good, ripe thoughts upon each subject, such that the members of the Association in after years can be proud of.

We could take up the subject of the different varieties of clays, the different methods of mining clay, the different methods of manufacture and so on in the same way.

I believe if we could have it understood that every member of the Association was expected to come to the Convention with a 5 or 10 minutes speech, well prepared, well thought out, on some particular topic of his own selection, coming, of course, within the rules, we would be greatly benefited. Let each person who has made such preparation, notify the Chairman in writing some time during the Convention that he would like to be heard 5 or 10 minutes on this particular topic, so that when the discussion of this particular branch of the business is under way he can readily get the floor and in this way give the Convention a few well-selected thoughts. The trouble is that so many of us try to talk on any and all subjects without having first given to each the necessary thought.

I shall be satisfied with the programme, let it take whatever course it may, so long as the spirit of the Convention tends to a higher rather than a lower plane.

No doubt in our next Convention we will hear a great deal about hard times. Let each one have his say, but make it short.

W. A. EUDALY, EX-PRES. N. B. M. A.  
Cincinnati, Ohio.

#### RATHER HIGH.

THE colored man was before a Kentucky judge for the statutory offense of stealing chickens.

"Not guilty," pleaded the prisoner.

"This makes the third time you have been here, doesn't it?" said his honor.

"Yas, boss."

"Well, what are you here for again?"

"Jis' fer de same ting, boss."

"I believe I let you off the last time, didn't I?"

"Yas, boss. Thank you."

"Well, this time I'll fine you \$10 and costs."

The prisoner gasped.

"Fo' do Lawd, boss," he exclaimed, "ain't dat a heap to pay fer one lean ole hen?"  
—*Detroit Free Press.*

#### AN ENDORSEMENT.

EBONY HUGHES.—Don't yo' want a boy fo' to bait yo' hook?

LUCKLESS ANGLER.—Yes; if you'll guarantee that I'll catch some fish.

EBONY HUGHES.—I done helped a man las' week, an' he's got turned out ob de church fo' tellin' de truft about de fish he caught.—*Luck.*



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### Kiln Building.

*Editor Clay-Worker:*

The September CLAY-WORKER contains an article from Mr. D. W. Stookey, of Cedar Rapids, Iowa, in reply to a letter from Mr. Jos. Marxer of Millstadt, Illinois, on the above subject.

I do not see that Mr. Marxer is, in the least, relieved from his embarrassment. It is impossible to diagonalize a case without seeing the patient and I shall not attempt to do so. A few observations may, however, be timely and profitable to some of your readers if not to Mr. Marxer. Mr. Marxer omits several very important conditions besides those mentioned by Mr. Stookey. He does not give the size of the stack. It is, of course, to be presumed that it is larger than the main flue which is just the size I used 25 years ago for a kiln 16 feet diameter and 7 feet to the skew back. This was used for burning sewer pipe and was successful, having a stack 50 feet high and 3 feet diameter. This kiln could be set, burned and emptied every week. But how much more compact, and therefore more difficult to burn by the down draft process, is this kiln of brick to a kiln of sewer pipe.

The height of Mr. Marxer's kiln—18 feet to the crown—is remarkable for a down draft kiln. From seven to eight feet from floor to skew back is the common height of down draft kilns for burning vitrified ware. It is evident that the brick should be set well apart, and that the floor flue should not be less than 28 x 28.

Mr. Marxer does not state what kind of brick he is making, a dry press, soft or stiff clay. From what has been said in our Brickmakers' Convention, 12 days is not a long time to burn dry press brick. Mr. Marxer is painfully conscious of the fact that he did not get his kiln hot enough, and he wants to know if it is advisable to burn them again under the same conditions. My opinion is that he can never burn them satisfactorily with the main flue in his kiln only 20 x 20 inches. Increasing the height of the stock would be a partial remedy for a too small flue in the floor and in the stack. But I confess my imprudence in making the suggestion. I once, in a

Michigan Convention, spoke in favor of high stacks to kilns for burning drain tile, and had scarcely taken my seat before a brother said he had burned good tile with a stack only 40 feet. Another said that he had one 30 feet, and another said he had as good tile as were ever burned with a stack only 20 feet high, and one said that he did not think that the height of the stack cut much figure, that a few chimneys here and there answered every purpose. I could not help but retort that, "I pitied a man who had come there to gain information."

I have a friend who has a stack 110 feet high, for five down draft kilns, and he says, "There's not a foot of it for sale;" that he knows, almost to an hour, how long it will take him to burn a kiln whatever the weather may be. In good weather, the stack gives him more draft than he requires and he partially closes his dampers. He can regulate his kiln to a nicety. Where an up and down draft process is used, a short stack or a few chimneys, in good weather, may answer, for after the kiln becomes hot, it requires but little draft to change the current upward or downward.

Many fail to recognize the fact that kiln building is an art based upon science. "Guess work does not pay." If a new beginner in brick and tilemaking wishes to build his own kiln he should follow exactly the pattern of a kiln which he knows has been successful in burning the same class of goods. Any departure is liable to cause serious loss. It is impossible, even for an expert, to give reliable information in a case like that of Mr. Marxer's without drawings and specifications of the kiln and a knowledge of the kind of ware to be burned.

GEO. S. TIFFANY.

### Down vs. Up Draft Kilns.

*Editor Clay-Worker:*

A few thoughts expressed in answer to a burning question. After reading J. W. Cray, Sr.'s, article, on brick burning and setting, in last number of the CLAY-WORKER, I shall take up my pen, and try to enlighten Mr. Cray as regards some things that he seems to be in the dark about, in reference to down draft kilns. And as a basis of my few thoughts, I shall quote a few of Mr. Cray's words verbatim as found on page 253 of the September number of the CLAY-WORKER, which are as follows:

"The only true criterion for a well burned (up draft) brick kiln is the ap-



pearance of the heat on top of it, and efflorescence of the oxydized minerals or salts in the clay; when a kiln of brick is well burned the platting on top will show a sulphuret, characteristic of the mineral salts in the clay and the heat under the platting will be about the same in appearance as the heat in the arches. Now how all this is to be seen in a down draft kiln I am at a loss to explain, and would be glad to get instructions."

Now in answer to the above: In the first place, as we have no platting on a down draft kiln, we cannot see the sulphuret, which he speaks of; but that is about the only thing that we cannot see in a down draft kiln, that he can see in an up draft. I just want to make it plain to Mr. Crary that a burner of a down draft kiln is no more in the dark as regards the condition of his ware at any period of burning, than is the burner of an up draft the ware in his kiln. Mr. Crary says that in a well burned (up draft) kiln the heat is the same on the top under the platting as in the arches. Now for a down draft kiln I will just invert his statement, and say that one of the true criterions for a well burned (down draft) kiln is when the heat in the bottom is the same as the heat on top of kiln. I say one of the true criterions, as you will notice further along in this article, that a burner of a down draft kiln can go by something that is probably more sure than the color of the heat, especially in new clays or clays that he has never burned before. When a down draft kiln is built there is generally a small square opening built in the wall in size from two to four inches square; in round down draft kilns two to three openings are generally left, and in square down draft kilns one opening is generally made at each side of the door, at each end of the kiln, and when ware is set in kiln there is a small opening left running parallel through the ware, to the opening in the wall, and also one running through the center of kiln near the bottom to the door, through which kiln is filled and drawn, and when door is walled up, an opening is left in the scoving opposite or corresponding to the opening in ware. Now then, while kiln is being set we cut up one or two brick in pieces 3 or 4 inches long, one-half inch wide and make a small hole in the same at one end so as to be able to draw them out of kiln while burning. Now we put some of the pieces, commonly called trials, near

the top of the kiln in one of the openings in the ware and some in the bottom openings, then when kiln is closed out we build scoving at door and are ready to burn.

Of burning I shall not say much, as I just want to show that it is not necessary for a burner of a down draft kiln to be any more in the dark, in reference to the condition of the heat in his kiln, than a burner of an up draft, so I will just say that when the kiln is nearing a finish, the burner of a down draft can see the top or hottest part of his kiln by looking through the top opening, or he can go on the crown of kiln and push a cover off one of the cooling holes and look on the extreme top, and if he wishes he can take a brick out through one of these holes with a pair of tongs with handles made long, especially for that purpose, that will tell him just in what condition the kiln is in, in the hottest place in the kiln. Then he can take a long piece of quarter in. round or square iron, and bend a short hook on one end, then insert his rod in one of the openings and pull out a trial from both top and bottom openings, then he can compare top trial with bottom trial, and then he knows to a nicety just how the heat in top compares with the heat in the bottom, and can tell by the trials to a certainty just when his kiln is done. He can also go by the settle, as with an iron rod, he can through the cooling holes in the crown of kiln, get the amount of inches the kiln has settled.

In my opinion it does not require any more vigilant, skilled attention, than an ordinary up draft, as I think it requires vigilant and skilled attention to make a good burn in either up or down draft kilns. I have set brick in both up and down draft kilns, and I heartily endorse Mr. Crary's views as given in August number of CLAY-WORKER on setting in up draft kilns, and will also say that in a good many cases a little more common sense logic or scientific knowledge displayed in setting down draft kilns would tend to turn out better burns, better ware, and go a great way toward making down draft kilns a great deal more successful than they are now. I will say, however, that I think that the day is not far distant when down draft and continuous kilns will supersede the up drafts in all yards where clay is in abundance enough to warrant the cost to erect the same, except in small towns where the trade would not warrant so great an outlay of money, and before I

close I want to say that there are good and bad down draft kilns, as in all things else. Even we mortals are not perfect.

In my judgment a great many good kilns are made expensive by being half built in the first start. Now, for instance, take a yard that intends to manufacture all fine pressed ware; the kilns are built to be permanent and generally the floor of kilns are in good condition the first time. They are set nice and level, as they should be, but after one or two burns we find they are becoming unlevel; so after 3 or 4 burns they must be refloored, or the ware is being damaged by setting on an unlevel floor. As a rule the floors are put in without any prepared foundation, while, if in putting in the floors the ground had been thrown out one or two feet deeper, and that filled in with refuse, old bricks and bats, and grouted with cement, and then the floor laid on this foundation with good, non-shrinking fire brick, in thin mortar joints, the probability is that the floor would be level for years. The old adage says: "An ounce of prevention is worth a pound of cure."

Well, I must stop or my few thoughts will become many, and, methinks, the waste basket is not far away.

GEO. D. HERROLD.

#### The Business Condition of the Country. *Editor Clay-Worker:*

If a man in ordinary health is suddenly seized with convulsions which threaten his life, the first duty of those interested in him is to render such help as will afford immediate relief. In most cases this will consist merely in giving the patient plenty of fresh air and such vigorous chafing as will restore the normal circulation of the vital forces. Of course a physician should be called, but when he comes, unless he knows with reasonable certainty the immediate cause of the attack he can do little better than has already been done; hence, after applying remedies for immediate relief he will direct his diagnosis to ascertaining the immediate and remote causes, and prescribe to remove these, while seeking to repair the system in the present case.

The business of our country is badly deranged. To say that we are barely surviving a most violent period of financial convulsion, with only the least, possible improvement to date is to state the exact situation. Immediate health and vigor are not to be expected, and



permanent health can not be restored without the removal of the cause or causes, hence every prescription should have an eye to more than temporary relief.

No twelve-month in our national history has ever witnessed such a transition from exceptional prosperity in all lines of business to the very border of universal bankruptcy. A year ago factories and forges and farms were all astir with profitable industry, and the masses were enjoying a prosperity never surpassed before, but almost simultaneously the whole fabric of the commercial and productive industries of the country were in financial convulsions. Why all this? In the hypothetical case of convulsions we have introduced, the first question the wise physician asks is: "What has he been eating? How has he been living?" He knows there must be a cause for this sudden derangement of the system.

Would it not be well for our body politic to ask on what meat our Cæsar has been feeding that he has suddenly grown so sick? Whatever part the fear of a disturbance of values by the repeal of the tariff may play, or whatever the arbitrary purchase and coinage of a given amount of silver per month may have to do with the panic, congress, now in session, may furnish temporary relief; but is there not a cause back of these which sustains to the condition of affairs the relation which a miasmatic atmosphere does to the ague, rendering these economic measures the occasion, not the cause of the disturbance?

Space will not permit a lengthy discussion of the influences which have contributed to the social and commercial condition of the country which has caused these business convulsions. It is enough to say that no governmental policy, actual or threatened, could have brought about the financial condition which has obtained these six months, if the nation's system had not been prepared for it by methods of business and of living that are in violation of wholesome laws of commercial life. The eating of a ripe apple, itself not merely harmless but healthful, has often caused convulsions, but the system had been previously debilitated by a disregard of the known laws of health. The apple may have been the occasion but it was not the cause of the trouble.

More than once the CLAY-WORKER has referred to dangers lurking in the system of trusts and combines under

which every profitable industry is now conducted. Individualism in any line of business which yields good revenues is now unknown. Not only have the big railroads absorbed all the little roads into great "systems," but the several "systems" have combined in traffic associations to regulate rates and otherwise to make the most out of their capital at the expense of the millions. In the same line the employes of railroads have their combines. The switchmen have their unions and the brakemen theirs, and the firemen and engineers and conductors all have theirs, and then these are "amalgamated" into one, so that the head can tie up any railroad, a thousand miles away, for causes not affecting a hundred men except through "sympathy." The sugar which sweetens the poor man's coffee and the whiskey which makes men poor; the shoes the poor man wears and the doctor that feels his pulse when sick, and the books and papers he reads, as well as the house he lives in are all under the control of combines, and yet not over seven per cent. of the consumers of the outputs of these monopolies belong to these un-American organizations. They are not even allowed to engage in any of the industries they control if they want to. There is no longer any individualism in any of the profitable industries of the country. It is only a question of time, therefore, when such a combination of interests must result in just such a condition as is now confronting us, and we suggest this as the underlying cause of our present financial troubles, at least as a chief cause.

Does the reader ask what I propose to do about it? I ask in return, what can we do? Perhaps nothing more than the old fashioned doctors used to say of the ague: "Let it run its course." If men will live in miasmatic districts they must shake periodically with the ague, but the ague grows less annoying as the swamps are drained, but the experience of wearing out the miasm is not to be coveted. The present indications are that at least this cause for the condition of trade that breeds panic is near its end. A few factories are reopening, but they are all to be uncontrolled by combines, and all at greatly reduced expenses, so that their products are likely to reach consumers at prices that will enable the uncombined to purchase and use them. As we write, the news comes that the great Carnegie works in and near Pittsburgh are again closed,

with a notice that they will not be opened again until they can be independent of all combinations.

Meanwhile, Mr. Editor, let me have a confidential word with the readers of the CLAY-WORKER. Keep in good heart. The sun will be as bright next season as ever it was, and seed time and harvest will continue, and there will still be a demand for brick at remunerative prices. Advertise freely, use the most approved machinery, take the CLAY-WORKER, and consult its pages, to know what it is and where it is to be found, and at the next election and all subsequent elections, vote your sentiments, after studying the issues involved, but vote so that you may be counted, voting with your neighbors, and not going in a gang by yourselves on some private crotchet; read good books, go to church, pay your taxes and you may be sure that this country is not going head foremost into destruction, whether congress repeals this law or that, or repeals nothing.

TIMOTHY TODWIN.

#### Philadelphia News.

*Editor Clay-Worker:*

The brick manufacturers in and about Philadelphia, have pursued a creditable and courageous policy during the past few months of financial and commercial depression, by keeping their yards going. They have not been crowding work, but have kept at work, accumulating stock, in anticipation of a change. This has been of advantage to the workers, who otherwise would have been thrown into idleness. The prospects just at this time are not very flattering, but it is the intention of several manufacturers to keep in part operation, at least, and accumulate brick for future demand.

Building operations for the past few months have been retarded somewhat by unfavorable conditions, and even at this time there is a hesitancy displayed about entering upon large operations even where well backed with capital.

William Conway is running his large yard full time, and intends to increase, rather than decrease his production.

Thos. B. McAvoy, who has two large yards, with a capacity of 30,000,000 brick per year, has already sold and delivered over 20,000,000, and has the remainder sold to good parties.

Murell Dobbins, one of the largest individual brick manufacturers in the country, has sold his entire stock, and has but few brick to offer to the trade.



He has several large capacity brick machines and is operating them full time. He has been elected to the presidency of the Master Builders' Exchange, has control of four of the largest brick-yards around this city. He is a busy man, being director of several financial institutions, and his name is occasionally whispered in political circles, in connection with office holding; but he has no tastes that way.

President Webster, of the Jarden Brick Company, takes a hopeful view of the situation, and thinks there will be very little brick carried over to another season,—that is, stock of a good quality.

As regards the amount of brick made and laid in this city, our historian, William Smith, of the Bricklayers' Company, estimates that the bricklayers of Philadelphia lay 525,000,000 brick annually. This does not, of course, include the large cargoes and carloads of brick shipped to the South, and to foreign parts.

Railroads, steam and sailing vessels are doing a largely increased business in transporting brick. Our trade with foreign countries, in pressed, mottled and other fine brick, is on the increase.

Charters have been issued at Harrisburg, to the Inter-State Vitrified Brick & Paving Company, of Philadelphia; capital stock, \$10,000; and to the Sandy Ridge Fire Brick Company, of Altoona; capital \$50,000.

The meeting of the pottery manufacturers, before the Ways and Means Committee, at Washington, was a very agreeable affair, but the outcome may not be so agreeable. The Committee heard the manufacturers patiently, asked a good many questions, and appeared to entertain no special hostility to that industry.

Allen B. Rorke secured the contract for the Bourse Building, which is to cost \$1,300,000. The contract will be broken up among sub-contractors, as soon as possible. The brick manufacturers are expecting to receive their slice, inside of a month. There will be 25,000,000 brick in the building.

One of the finest and most attractive exhibits at the Master Builders' Exchange, in this city, is that of the Eastern Hydraulic Pressed Brick Company, which consists of a choice collection of brick, variously shaped and colored. The styles shown are now being largely used for ornamental purposes. The company has branch offices scattered all over the country. The total produc-

tion per annum is 288,000,000 brick. The Eastern Pressed Brick Company, of Winslow, N. J., is also coming forward. Its production is a high grade of ornamental brick in buff, gray, Pompeian and mottled; the output is at present 10,000,000 brick per annum.

#### VITRIFIED PAVING BRICK—A LUSTY INFANT INDUSTRY.

The manufacture of what is known as paving brick, has within a few years become a distinct industry. It has grown to large proportions, requiring millions of dollars of capital. Chemical discoveries; supplemented by improvements in machinery and methods of burning, have made it possible to produce, from some kinds of clay, brick which rival granite in hardness, and yet the industry is in its infancy. The advance has been very rapid, and the industry has a great future. The brick made ten years ago, withstood a pressure of from 500 to 4,000 pounds per square inch. Paving brick are now turned out which are capable of sustaining a pressure of 22,000 pounds per square inch. The chemical combination is of such a nature as to develop this enormous capacity for resistance. ANON.

#### The Enameling Problem.

*Editor Clay-Worker:*

I notice in the September number of the CLAY-WORKER an article on "Enameled Brick," written by "I. H.," in which he mentions a certain "feeling of disappointment" over the absence of adverse criticism on former articles.

I think his point well taken and consequently propose to allay that feeling of disappointment to the best of my ability, so far as the present series is concerned and in the same friendly spirit in which his challenge is given, and shall also expect to receive some friendly blows in return.

We may also stir up some new champion who will enter the lists to conquer, or be conquered.

I notice that a certain New Jersey infant is casually mentioned. I am not acquainted with his nibs from Jersey, but I once met his brother over here in Pennsylvania. He was born and died several years ago. He was a promising youth but unfortunately we did not exactly understand the proper method of caring for him, and he died a violent death before he had fairly opened his eyes on the world.

The method of enameling the white hard brick and also burning biscuit and

gloss I will pass. I have made brick in that way but I do not wish to expose my ignorance by saying too much about them.

The "new dip" process is in the same boat and I would not consider it at all a safe method to adopt as it introduces another coating on the face of the brick, thereby increasing the tendency to peel under the action of the weather.

If the face of the brick is properly prepared it will be smooth enough for all practical purposes without introducing this extra element of danger.

That portion of the article in which he refers to "the crock glaze theory, and the frit glaze craze," etc., should be committed to memory by all intending enameled brick manufacturers for he says truly, "The proper enamel for brick will not flow or run at all, no matter what position it may have in the kiln, or how hard it may be burned."

So far "I. H.," and I have gotten along very well together but we will hope for better luck next time. OPAKE.

#### Ohio Valley News.

*Editor Clay-Worker:*

Business, both in the sewer pipe and fire brick lines, has improved considerably since my last letter. There is now not an idle plant in the valley, while a month ago fully two-thirds of them were closed down. These works are of course not all running to their full capacity; but all are making and shipping some ware. The workmen have all accepted a reduction of from ten to fifteen per cent. Nothing would be as beneficial to the clay industry of this valley at present as a rise in the Ohio of seven or eight feet. Many of the works depend largely on the river as a means of transportation, and when the river is navigable they can sell their products with a good profit in southern markets; while if they are required to ship by rail the high freight rates exclude them. No business has shown its soundness better than the brick and sewer pipe industry; during the financial stringency all in this valley have safely weathered the storm.

Mr. J. M. McClave, receiver of The Toronto Pottery Co., Toronto, Ohio, has submitted the following statement of the affairs of that concern. "On August 1893, the undersigned was duly appointed and qualified as the receiver of the Toronto Pottery Co., and is under bond of \$50,000. After having completed a careful inventory of the



property of the company makes the following statement of its assets and liabilities:

| ASSETS.                                 |            |
|-----------------------------------------|------------|
| Pottery plant and real estate..\$       | 77,181.40  |
| Blocks, cases, molds, saggars, etc..... | 15,757.36  |
| Accounts receivable.....                | 26,853.74  |
| Merchandise.....                        | 42,974.11  |
| Total.....                              | 162,766.64 |
| LIABILITIES.                            |            |
| Bills payable.....                      | 76,509.93  |
| Accounts payable .....                  | 15,757.36  |
| Pay roll July 29.....                   | 562.02     |
| Bonds outstanding .....                 | 6,500.00   |
| Total .....                             | 89,277.96  |

The Court ordered that the receiver should proceed at once to finish all ware and material in process of manufacture and convert same together with stock of manufactured ware on hands into cash as rapidly as the business would permit, collect all outstanding debts and pay the liabilities of the company. Pursuant to the above order the receiver will do all in his power to bring about a speedy settlement.

The works of the Vulcan Fire Clay Co., of Wellsville, Ohio are running to their full capacity. They are furnishing paving brick for an immense contract at Norwalk, Ohio.

E. A. Freshwater the well-known paving contractor of New Cumberland, W. Va., has just completed a large paving contract in Braddock, Pa. Mr. Freshwater is one of the few paving contractors who makes his own brick. He consumes almost the entire product of his Lone Star Brick Works at Andersons, W. Va.

The Pioneer Pottery Co.'s plant at Wellsville, Ohio, has resumed operations in full being managed by the receiver. The receiver has made a peculiar arrangement with the men regarding their compensation for their labor. Instead of accepting the reduction proposed by the receiver, they agree to work one week free, which in a certain time will be equivalent to the reduction demanded. They also permit the receiver to retain forty per cent. of their earnings at each pay day for the next thirty days. There is every prospect of a long and steady run.

The city of Bellaire, Ohio, has just let the contract for 800,000 repressed paving brick, to the Barnard Brick and Tile Co., of that city.

The much talked of patent continuous brick kiln, built by the Jno. Porter Co., at their Clifton works in New Cumberland, W. Va., is rapidly nearing completion. It is a gigantic affair; over 2,000,000 brick being consumed in its construction, and costing over \$20,000. Some of the walls are 13 feet thick—three of brick on each side, and the space between filled with clay. The capacity of the same is 500,000. It will be three-fourths filled before the kiln is fired, and then the firing will be continuous from the manner of its construction it may be fired, filled and drawn without cessation. If it is a success, and this is almost assured, it will be an immense fuel and time saver.

BUCKEYE.

#### IN THE COURTS.

A Tiffin, Ohio, special to the *Cleveland Plaindealer*, of September 27th, has the following: "Judge John McCauley and John M. Beckley have enjoined the city council of Tiffin, Ohio, from using the Mack block in paving North Washington street, and their petition charges that corrupt methods were employed by the John Porter company, manufacturers of the Mack block, to secure its adoption. M. L. Albright, member of the city council and proprietor of a grocery store, states that the Porter company's representative, Thomas McConville, offered him \$1,000 to vote for and secure the passage of a resolution adopting the Mack block. Judge Schaulfelberger has granted a temporary injunction and it is expected that interesting developments will be made if the case is ever heard on its merits. G. B. Boren, manager of the John Porter works after his attention was called to the publication, said that he had already telegraphed to the company's attorney in Tiffin to bring suit for \$10,000 damages against Schaulfelberger.

#### A NEW CATALOGUE.

Mess. C. & A. Potts & Co., Indianapolis have out a new and handsome catalogue of brickmaking machinery, including their well-known Horizontal Stock Brick Machine, Mould Sanders, Disintegrators and a new line of stiff clay machinery. Also a family of pug mills, together with the most approved conveyors, dump cars, tile trucks, brick moulds and trucks—in short, a complete line of brickyard supplies. Write them for a copy.

#### A BRICK ANTIQUE.

On a preceding page we give an excellent illustration of an old brick castle, which is one of the historic monuments of France; which means that it is practically under the control of the government. For while it may be owned and occupied as a private residence, or a public museum, or something of that kind, the structure itself is controlled by the French government. Say, for instance, a private individual wished to make an addition on the blank wall shown in the center of the picture, the government would say, no. If this same individual wished to make a change in the roof, he would be met with the same sort of opposition. If he desired to remove the little chapel, which is shown as a part of the structure on the right, the government would not heed his demands. It must be preserved exactly as it stands, and as it has stood for over four hundred years. On the other hand, he must not allow it to fall into decay. If the owner chooses not to occupy it, he dare not neglect it. If there is a decay in the stone work in any part, he must remove that piece and put new stone in place of the old. However, he must preserve the same form and design that belong to that part of the original structure. If a bit of the ceiling falls into decay, a ceiling of the same design as the old must take its place. Thus the historic monuments of France are preserved. They are under the general charge of a commission who have visited various structures, churches, chapels, cathedrals, public and private buildings of all kinds, which belong to the earlier period, and say whether or not they shall come under care of the government. It may be unfortunate for the individual in some instances that this is true, but it is a great kindness, and shows great consideration for the rest of the world. The Count of Paris who owns a chateau at Amboise was recently ordered by the government to make extensive repairs to that great structure, such as will cost several thousand dollars. Notwithstanding this distinguished gentleman is an exile from France now living in England, he must go on with the work though he cannot oversee it, indeed is denied all privileges in connection therewith excepting the payment of the bills. This is an interesting feature of French government as contrasted with that of our own "free for all."



**THE CLAY-WORKER.**OFFICIAL ORGAN OF THE NATIONAL BRICK  
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T. A. RANDALL &amp; CO.,

81 MASSACHUSETTS AVE., INDIANAPOLIS.

**THE WORK HABIT.**

In another column we announce the sad news of the death of our friend and co-worker, Mr. Charles P. Merwin. A doctor would doubtless give a specific name for the immediate cause of his demise, but we fear that, in truth, he died of over work. He poured himself into his business, the business was the better for it, but it furnished him nothing adequate in place of the strength which he gave it. Business receives, in this way, but it gives nothing out.

Mr. Merwin had great energy and a full brain to contribute to it. He sought the chance to work, the chance to do business. This was his natural impulse. It finally became a fixed habit, the work habit, and a continuous draining process. We have the results of the business work on one hand, and the death of a man at forty-six on the other.

There is a lesson in this. He was a man capable of great enjoyment outside of his business, but this habit controlled him. He was a man intemperate only in work, in the display of business energy. Those of our readers who are following in the same path should take heed, lest this American work habit shortens their days of usefulness. Do not be afraid to trust subordinates with a part of the responsibilities and so relieve yourself of excessive work and worry. Better let the business suffer a

little than to weaken your own vitality by the work habit. The sacrifice is too great.

**TRADE SCHOOLS.**

At the Philadelphia Exposition in 1876, Germany discovered that she was behind other great powers in manufacturing. One of her commissioners, who first sent this word home, was rebuked. He insisted on this point, said "Come to the Exposition yourselves; see what America, France and England are doing. The comparison will not be favorable to ourselves." The influence of this commissioner was finally such that great trade schools were organized. Special incentive was given to technical work, and the result has been that Germany has stepped ahead of Great Britain, has excelled France in some respects, and has added greatly to her revenue during recent years. She has done more than this which has benefited the government in a general way. She has furnished highly skillful mechanics and trades people to other countries. Many of the best merchants and manufacturers of the world are the product of these German polytechnic schools. There is a lesson in this. There is one which comes home to the brickmaker. We have made great advances in mechanical ways. We have not, however, formulated our knowledge. That remains to be done. There has always been more or less of agitation on this subject through this journal and the National Association. As countries grow older, as competition increases and profits less, trade schools and organization in that way become imperative. Thousands of dollars can be saved to the brickmakers through work of this character.

**THE PERFECT BRICK.**

A correspondent who, no doubt, has been pouring over the letter which appeared on page 259 of September CLAY-WORKER, under the above head, asks us to define "*The perfect brick.*"

Brick that are uniform in size and color, of a hard, even texture and with sharp angles are, to all intents and purposes, perfect, and yet literally may be far from it.

The hand or the mind has never reached that state of development necessary to the production of a perfect thing. The world is not organized on that principle. When there is an end of progress

and improvement, the world will become very uninteresting. As to a brick, it may be beautiful as to color, homogeneous as to structure, and meet our present ideals as to form. Practically, it may suit all of the present requirements, but that is not perfection. We cannot describe the perfect brick. We cannot describe that which the mind cannot grasp. The word *perfect* is an ideal expression. There is nothing practical with which to illustrate it.

**DANGER TO LOCAL ORGANIZATIONS.**

Competition is naturally most severe in dull times. At the time when organization could do the most good, it is most in jeopardy. It takes more stamina to stand up to one's promises and to do the right thing when business is dull and trade is slack, than it does at other times when money and business are easier. Local trade organizations, builders' exchanges, and associations of like character, have a more difficult time to keep their members in line at such a time as this than during other more prosperous periods. What is most needed now is "sand," and plenty of it, and reliance in one another. Build together for mutual benefit. Remember an injury to one is an injury to all. So stand together and the business will be more pleasant and PROFITABLE.

**INVENTION OR BUSINESS.**

There is nothing which the Columbian Exposition illustrates more clearly than that business sagacity and organization take the place over and above the faculty of invention. It is popular and pleasant for us to give the inventor the great credit and hope that he will have a great profit; while, in truth, there is really very little invention, or very little of complete invention, by one man. The locomotive exhibit at Chicago shows that. There had been a great many people working on a locomotive before Stephenson's success. Stephenson took ideas which he was able to find, put them together in good form, and made a substantial business success. There was little of invention in his work; it was largely the work of accumulation. He had the shrewdness and the business genius which enabled him to distinguish good ideas from bad ones. Whether they were his own or not, he successfully put them together and made a substantial business success. The development of brick machinery is a good deal along



the same lines. A great many people have each done a little, so that at this time we have many successful machines, many of them embodying the same general ideas and constructed more or less successfully. It is the organization of ideas, their proper culmination, their arrangement in business form, the organization of plants to make these machines, that counts. Splendid ideas have been declared worthless because they did not have the business push behind them. There are men in this country who have the reputation of being inventors who in truth have very few mechanical ideas, certainly none which are distinctively their own. They have the organizing quality which enables them to look around, gather together that which is good, put it in form that it will sell and bring good results for other people.

#### BRICK MEASUREMENT.

An article in September CLAY-WORKER showed as clearly as possible the confusion and differences which exist in the matter of measurement of brick work; not that there was confusion in the article itself or in the method of expression, but rather an indication of confusion in the methods of measuring. The plan, as therein outlined, does not appear to be particularly advantageous. The method in use in this section is clearly different from that, and it may be that it is personal prejudice alone and a familiarity with the use of our methods in this section which leads us to think that it is one of the best ways of measuring brick.

With us, the calculations are all made on the basis of surface feet, and calculating seven and one-half brick to each foot square and four inches, or each course, in thickness. A twelve-inch wall would contain three layers of brick. Hence the surface foot would be estimated as having twenty-two and one-half brick, a nine-inch wall as having fifteen brick, an eighteen-inch wall as having thirty. Thus, for each course in thickness, seven and one-half brick per superficial foot makes an easy calculation. All one has to do is to get the surface feet and then to make the multiplication according to the formula as above indicated. This saves the trouble of throwing the wall into cubic feet, and we believe in that way reduces the liability to error at least one-third, in that the operations in the calculations are, to that extent, less numerous.

On the other hand, we see no particular reason why the method of measuring brick should be uniform, or, as far as we know, why any of the methods previously outlined need be changed. When a certain section has assumed a habit, people all understand it and the effort of bringing about a change is troublesome and annoying, and brings very little satisfaction to any one. There are some of us, however, who like to be reforming and agitating at all times. There is more satisfaction in the act itself than there is in the desire to do something which really needs to be done. Our methods of measuring brick where it relates to the counting corners double, the girthing of chimneys and projections, the figuring in of certain size openings, and all that, are satisfactory because every one understands them and appreciates why the measuring is done just in that way. There are those who would favor calculations by kiln count. This would be manifestly unfair and would make a difference in the price of laying brick under different circumstances, while at present the methods of measurement are so adjusted that the same price per thousand may be used throughout the entire building, except where there is a radical difference in the character of the brick, or a radical difference in the material used. However, the system of measurement applies under any circumstances, and because it is well known and thoroughly understood no one cares to change it.

#### OUR PICTURE GALLERY.

On a preceding page we present to our readers an excellent portrait of Mr. P. L. Simpson, President of the Simpson Brick Press Co., Chicago. Mr. Simpson is well and favorably known to the brickmaking craft throughout the land. He is a pioneer in the manufacture of dry press brickmaking machinery, having started in Minneapolis in 1885. At first, as is apt to be the case, he met with many difficulties that would have discouraged one of less determined and hopeful nature. Steady, untiring effort finally resulted in success, and the Simpson Press is now recognized by the trade as one of the best of its kind, and its brave inventor is on the broad highway of prosperity. He says that there are now more money-making dry press plants using the Simpson than any other press, which is saying a great deal. Mr. Simpson has achieved a notable and praiseworthy success.

#### EDITORIAL NOTES and CLIPPINGS.

No matter what it may have cost,  
A trade neglected is soon lost.  
—Fame.

Belmont (Ohio) Brick and Tile Works are running again.

Cole & Barnum are still making brick at Peekskill, N. Y.,

The Trojan Brick Works at Vance, Kan., has resumed operations.

Law & Deveny, brick manufacturers at Chester, Pa., has resumed work.

The Liberty Brick Manufacturing Co., Savannah, Ga., has been incorporated.

The Orangeburgh (S. C.) Brick and Tile Co., have commenced work again.

J. E. Kennedy, Caledonia, Mich., wants to purchase a horse power tile machine.

J. C. Davis, Benton Harbor, Mich., is in the market for flower pot machinery.

A tile factory will be established at Landowne, Ind. C. B. Reed is interested.

A company will be organized at Mansfield, Ohio, for the manufacture of brick from shale.

The Elizabeth, (N. J.) Pottery works has resumed operations with a full force of employees.

Thos. L. Frederick, a well known potter of East Liverpool dropped dead on the street the 22nd ult.

C. Glimpse contemplates moving his brick plant from Kappa, to Carlock, Ill., and enlarging same.

Criswell & Sons, Moundsville, W. Va., will equip their brick works with the latest improved machinery.

The Pioneer Pottery, Wellsville, Ohio, has commenced running their works again with a full force of hands.

M. T. Patten has sold his interest in the Rantoul Brick and Tile Works at Bloomington, Ill., to J. B. Menley.

The Mackey Brick Works at Calaveras, Texas, that has been closed nearly all summer, has resumed operations.

The Stanley M'fg. Co., of Chippewa Falls, Wis., has been organized for the manufacture of brick. Capital stock \$50,000.

Curry & Peoples' brick and tile works at Aurora, Ill., were partly destroyed by fire on the 21st ult. They will rebuild at once.

Mr. Grayson employed at the Vitriified Brick & Tile Co., at Rich Hill, Mo., was quite seriously injured by being caught

*Continued on Page 370.*



# THE OLD SWIMMIN' HOLE

BY  
JAMES  
WHITCOMB  
RILEY



Oh! the old swimmin'-hole! where the crick so still and deep  
Looked like a baby-river that was layin' half asleep,  
And the gurgle of worter round the drift jest below  
Sounded like the laugh of something we one't ust to know  
Before we could remember anything but the eyes  
Of the angels lookin' out as we left Paradise;  
But the merry days of youth is beyond our control,  
And it's hard to part ferever with the old swimmin'-hole.

Oh! the old swimmin'-hole! In the happy days of yore,  
When I ust to lean above it on the old sickamore,  
Oh! it showed me a face in its warm sunny tide  
That gazed back at me so gay and glorified,  
It made me love myself, as I leaped to caress  
My shadder smilin' up at me with sech tenderness.  
But them days is past and gone, and old Time's tuck his toll  
From the old man come back to the old swimmin'-hole.

Oh! the old swimmin'-hole! In the long, lazy days  
When the hum-drum of school made so many run-a-ways,  
How plesant was the jurney down the old dusty lane,  
Where the tracks of our bare feet was all printed so plain  
You could tell by the dent of the heel and the sole  
They was lots of fun on hands at the old swimmin'-hole.  
But the lost joys is past! Let your tears in sorrow roll  
Like the rain that ust to dapple up the old swimmin'-hole.

Thare the bullrushes growed, and the eat-tails so tall,  
And the sunshine and shadder fell over it all;  
And it mottled the worter with amber and gold  
Till the glad lilies roeked in the ripples that rolled;  
And the snake-feeder's four gauzy wings fluttered by  
Like the ghost of a daisy dropped out of the sky,  
Or a wonderful apple-blossom in the breeze's control,  
As it eut aerost some orchard to'rds the old swimmin'-hole.

Oh! the old swimmin'-hole! When I last saw the plaee,  
The scenes was all changed, like the change in my faee;  
The bridge of the railroad now crosses the spot  
Where the old divin'-log lays sunk and fergot.  
And I stray down the banks where the trees ust to be—  
But never again will their shade shelter me!  
And I wish in my sorrow I could strip to the soul,  
And dive off in my grave like the old swimmin'-hole.

## THE FARMER'S RESOLVE.

I SEEN an advertisement in a city magazine  
Of some new patent medicine—they called it Tiredine—  
An said a quart—ten doses—was the surest kind o'cure  
For them whose inelinations for work was rather poor.

It seems to me that that's the stuff for me to go an' buy  
For that young son o' mine to take an' sort o' make him spry;  
He needs a thurer braein' up when hay time comes around,  
Ulthough when fish is runnin' good he's pretty slied an' sound.

I dun'no' why it is that boy kin take a heavy gun  
An' walk from ten to twenty miles an' think he's havin' fun;  
But when there's suthin' for to do that's in the ploughin' line  
He doesn't even seem to have the symptoms of a spine.

He'll take in all the pienies an' he'll work like all possessed  
At pushin' scups for country girls, but never has no ehest  
When't comes to tossin' up the hay or gatherin' in the wheat—  
The very idea of that seems to knock him off his feet.

An' so I think I'll go to town an' sample that there stuff,  
An' mebbe buy a lot for Tom—one bottle ain't enough,  
Ten doses may suffice to put an average man in trim,  
But Tom—I think I'll hafter get a dozen quarts for him.

—Harper's Bazar.

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“TABLE OF ANALYSES OF CLAYS,”

Alfred Crossley, \$1.00

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Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.



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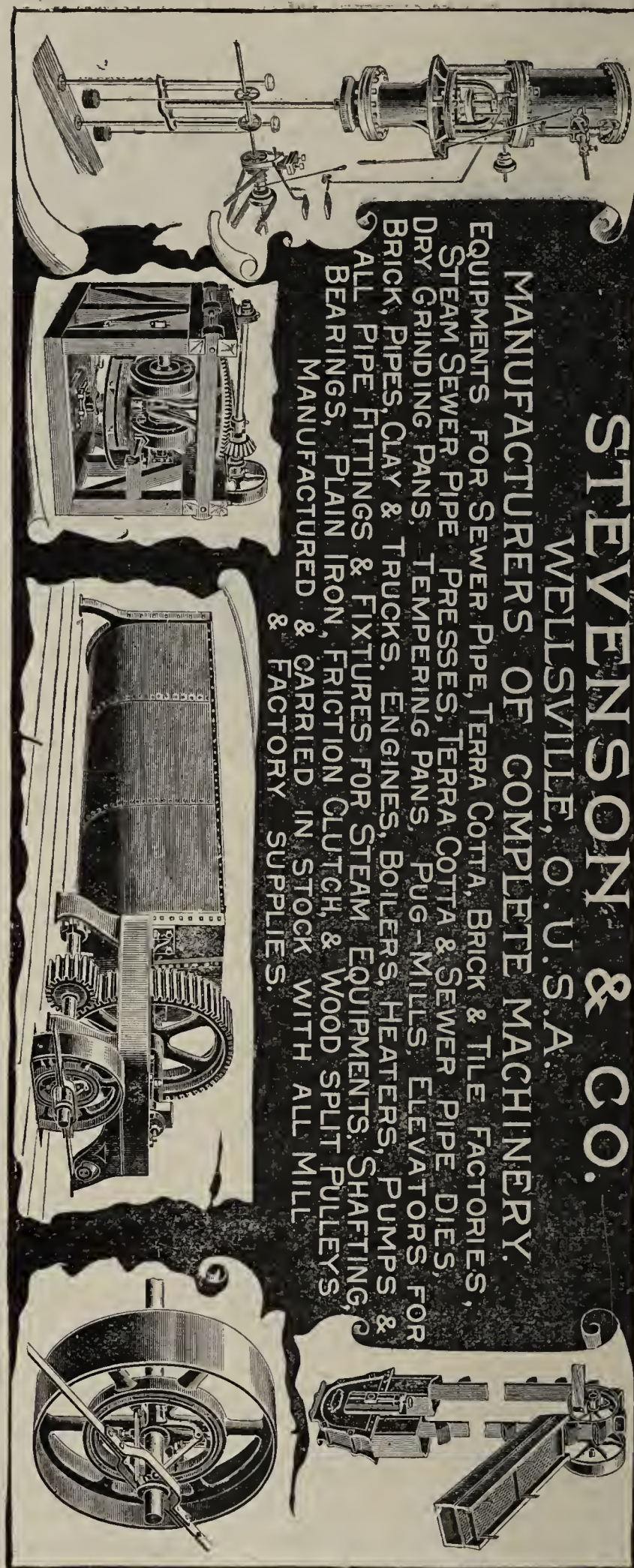
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**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR BRICK, PIPES, CLAY & TRUCKS, ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS, MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.



THE LARGEST LINE AND GREATEST VARIETY OF  
RE-PRESSES IN THE WORLD.

## The Columbian Re-press.

Its Record is Its Recommendation.

**READ!**

C. W. RAYMOND & CO.

DEAR SIR:—

Enclosed you will please  
find order for repairs. You will ship by freight  
soon as you can and oblige.

Yours truly,  
JAMES FLOREY.

P. S. This is my first order for repairs. I  
have run your Press two years and pressed  
about 2,000,000 bricks. The machine has not  
cost me one cent for repairs. Would not be  
without it, no matter what the cost would be.

Yours truly,  
JAMES FLOREY.

These repairs amounted to \$27.50.

• S E N D •  
• F O R •  
• C A T A L O G U E •

• S E N D •  
• F O R •  
• C A T A L O G U E •

The No. 1 Perfection,  
The No. 2 Perfection,  
The No. 3 Perfection,



The Columbian,  
The Columbian Special,  
The Columbian Grand.

C. W. RAYMOND & CO., Dayton, Ohio.



## Editorial Notes and Clippings.

*Continued from Page 366.*

in the elevator. Mr. Grayson is well along in years and it is feared the accident will prove fatal.

Welch, Othara & Co., are making preparations to manufacture brick at Guthrie, Oklahoma Territory.

The Mexico Fire Brick works, Mexico, Mo., have commenced work again. They have the largest works of the kind in the state.

E. E. McKnight, manager of the Real Estate Co., Dayton, Ohio, has organized a company to establish a common and pressed brick plant near that city.

A. B. Fritz has purchased a tract of land at Quarryville, Pa., and is erecting a brickyard thereon. He hopes to have his first kiln ready in the near future.

The pottery owned and operated by Cartwright & Green, at Leetonia, Ohio, was totally destroyed by fire. The loss is estimated between \$10,000 and \$12,000.

W. E. Sidney has accepted the superintendency of the brick works at Ottawa, Ill., and will make improvements in same during the winter, preparatory to starting next spring.

The Niles Fire Brick Co., Niles, Ohio, are getting things in readiness to rebuild their works, which were recently destroyed by fire. They will construct the factory of brick.

Some fine red and white clay has been found at Stonington, Miss. A company will be organized there for the purpose of manufacturing brick in the not far distant future.

Wm. Doran, a brick manufacturer of Fairmont, Conn., was stricken with paralysis on the 25th ult. An examination proved that he had a tumor on the left side of the brain.

The Wonser & Cramer Brick and Tile Co., Clifton, Ill., has been incorporated. The incorporators are William W. Wonser, Bertie M. Wonser and William H. Cramer. Capital stock \$11,800.

Mr. David Gore, street paving contractor died at Oil City, Ohio, on the 4th inst. Mr. Gore was a pioneer in brick paving, having put down the first brick street laid in Wheeling, W. Va.

The brick and tile works of Robt. Goodwin, Jefferson, Iowa, was totally destroyed by fire on the 23rd ult. Everything, including engine room, kiln and drying sheds and all the machinery

were burned. The machinery was new having been in use only three days, and valued at \$2,000. The total loss is about double that amount. No insurance. Fire was caused by an explosion of the boiler.

The Lindenwood Pressed Brick Co., has been incorporated at St. Louis, Mo., with \$30,000 capital. D. McAlister, W. H. Hardy, D. B. Drummond, Wm. A. Miller and Geo. E. Geesler are incorporators.

\*The Alliance Paving Block Co., Alliance, Ohio, has been organized for the manufacture of a patent paving block. Incorporators are Major W. W. Cantine, George Blaine, Dr. J. H. Tressel, C. Y. Kay and J. H. Johnson.

The Potomac Brick & Tile Co., Washington, D. C., have purchased sixty-four acres of land ten miles west of Georgetown, Md. They are putting up a plant on same and expect to be in running order in time for their spring trade.

S. Linderoth of the American Ceramic Works, Eola, Ill., writes that they are building an enameled brick plant near Aurora, Ill. They are making their own brick for the factory, which they hope to complete before the snow flies.

Cards announcing the advent of Miss Julia Margerite Penfield into the home of Mr. and Mrs. Raymond Penfield, of Willoughby, Ohio, have been received. The happy event occurred Sept. 19th. We wish the proud parents many happy returns.

Both the Galesburgh Paving Brick plant and the St. Louis Paving Brick plant at Galesburgh, Ill., which have been closed down for nearly a month, resumed work the last week in Sept. They each give employment to about 200 men.

The Enterprise Sanitary Pottery Works, at Trenton, N. J., with a large stock of molds, was recently destroyed by fire; loss over \$50,000. The establishment has just received several large orders, and was about starting up for steady work.

Fred and Henry Kespohl of Hannibal, Mo., who have been manufacturing brick under the firm name of Kespohl Bros., have dissolved partnership. Fred Kespohl will continue the old business, but Henry Kespohl will probably start a new yard in the same vicinity.

The display made by Great Britain and Colonies at the Midwinter Exposition at San Francisco, Cali., will be ex-

tremely interesting and contain many novel features. The Englishmen are taking great interest in the Fair. Sir Edmund Elton, Bart. the famous potter is designing some china, especially for the display, and Arups of London, is at work on some terra-cotta ware, which will astonish the people of the Pacific Coast.

The Pennsylvania Sewer Pipe Co., Huntingdon, Pa., have been making experiments in the manufacture of vitrified paving brick, which have proven so successful that they contemplate enlarging their plant and manufacturing vitrified paving brick, as well as sewer pipe.

The Ohio Machine Co., Middleport, Ohio, ask special attention to their "Ajax" stiff clay brick machine, which is a decided departure from the common or old style machine, as our readers may see by glancing at the illustration of same on page 376. They also offer the craft a repress for which many advantages are claimed.

M. E. Donohue, of Ivesdale, Ill., writes that on the 19th of September he made 6,550 as nice six inch tile as was ever run through a machine. The run was made on a No. 3 Adrain Machine. Mr. D. asks: "WHO CAN BEAT IT? If any of your readers can equal this run I would like to know it." He neglected to state the number of hours worked.

Something new is illustrated on page 397 of this issue. A new dry press brick machine. With this addition to their already large line of clayworking machinery, Messrs. J. W. Penfield & Son have encompassed the entire field, and can now furnish the craft with almost any and everything necessary for the manufacture of brick by all modern processes.

## NEW INVENTIONS.

The following is a list of patents appertaining to brick, tile, terra cotta, sewer pipe, pottery, etc., and the machinery used in their manufacture, issued since our last number:

- 504,364. Brick or Tile Cutter—Horace A. Riggs, Plymouth, Ohio.
- 504,781. Brick or Tile Machine—Wm. S. Hight, Bucyrus, Ohio.
- 504,998. Reversible Draft Brick Kiln—A. L. Platters, Wm. F. Rankin, J. M. Wolfe, Rankin, Mo.
- 505,285. Brick Machine—Wm. Acton, Chicago, Ill.
- 505,678. Brick Cutting Machinery—John C. Schroeder, Onkama, Mich.
- 505,975. Brick or Tile Machine—John D. Fate, Plymouth, Ohio.



# STIFF MUD BRICK MACHINES.



Moulds any size from  $8\frac{1}{2} \times 4$  to  $9\frac{1}{2} \times 4\frac{3}{4}$  inches, and 2 to 3 inches in depth.

CAPACITY, 30,000 BRICK PER DAY.

## POWER RE-PRESSES,

15,000 PER DAY.

For particulars address

**CENTRAL MACHINE WORKS,**

Cleveland, Ohio.

# FIRE BRICK.

Below are analyses of the **PLATT BRICK & FIRE PROOFING CO.'S** Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

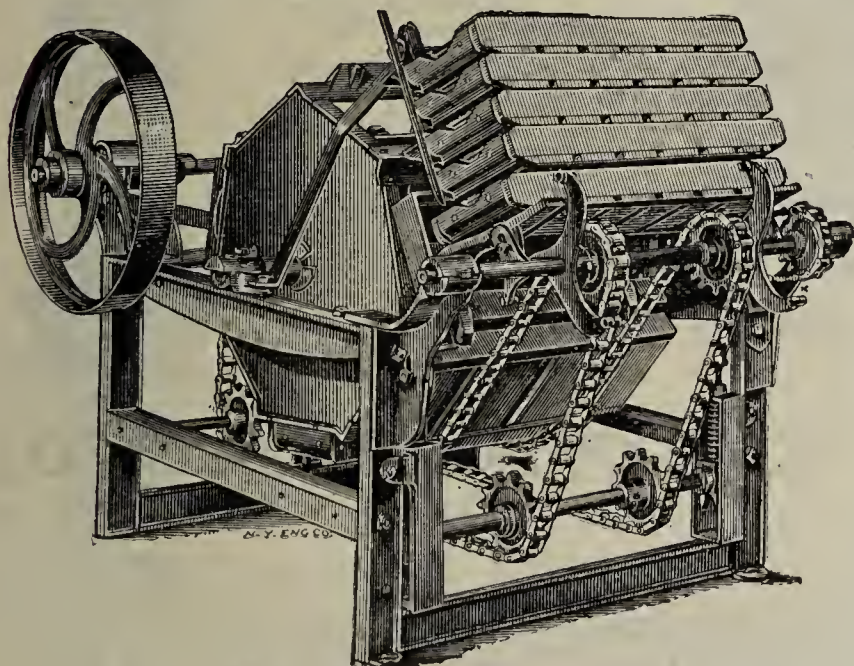
Analyses by W. S. Robinson, Chemist, Omaha, Neb.

Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick. Address

**PLATT BRICK & FIRE PROOFING CO.,**  
706 Youngerman Block, Des Moines, Iowa.

## J. A. BUCK'S NEW CHAMPION BRICK MOULD

### SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letter patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one. Address all communications to

**J. A. BUCK, No. 76 Oneida St., COHOES, N.Y.**

[Mention the Clay-Worker.]

## ANTI-RUST PREPARATION.

A good preparation for preventing tools from rusting is made by the slow melting together of six or eight parts of lard to one of resin, stirring till cool. This remains semi-fluid, ready for use, the resin preventing rancidity and supplying an air-tight film. Rubbed on a bright surface ever so thinly it protects and preserves the polish effectually, and it can be wiped off nearly clean, if ever desired, as from a knife blade; or it may be thinned with coal oil or benzine.—

Power.

MORE THAN WAS BARGAINED FOR.

(Copy)

**FLOOD BROS.,**

Manufacturer of

**MACHINE AND HAND-MADE BRICKS.**

Main Yard: Old Front St. and Nicetown Lane.

PHILADELPHIA, PA., Oct. 6th, 1893.

Huyett & Smith Mfg. Co.,  
Detroit, Mich.

GENTLEMEN:

We are much pleased with the Fan and the Dryer. Not one brick has been cracked in the process of drying, while in its operation we find the Fan and Heater easily managed.

When we have added the other boiler required, we expect to get 40 and likely 50 M daily from it. Very truly,

FLOOD BROS.

For more of this same sort of testimony, those interested in brick dryers, will please address

**THE HUYETT & SMITH M'FG CO.,**

[See "Ad." page 331.] Detroit, Mich.

**WANTED.** A party who will take an interest in a small brick plant and manage same. Plenty of clay, shale, coal and wood at the door. Address, **CONTRACTORS.** P. O. Box 183, New Phila., O.

**FOR SALE.** Two Edinburgh Soft Mud Brick Machines. Cheap. Address, **J. D. HOLDENER & SON,** Centralia, Ill.

**WANTED.** A working foreman, thoroughly posted in dry press (Simpson) process, setting and handling, etc. Address with references **THE RATHBUN CO.,** Deseronto, Ontario, Canada.

**WANTED.** Position as manager of brickyard, by a practical brickmaker and burner. Can also construct kilns for either soft mud or dry press bricks. Or can fill first-class burner's place. Address, **CHARLIE MAN,** care "Clay-Worker."

**WANTED.** Situation as foreman of fire brick and fire proofing factory. Many years of experience and the very best of reference as to sobriety, ability, etc. Would prefer to locate in the far West. Address, **F. P.,** care "Clay-Worker."

## Recipes for Enameling Bricks.

W. Clayton is now prepared to sell a full line of enamel recipes for bricks, suitable for all kinds of clays, including bricks made from shale rock and slate refuse. The above embrace about 12 colors and shades, including white, lilac, turquoise, yellow, buff, chocolate, and others.

The enamels are prepared for, and put on the "green" brick, so that the whole is done with one burning.

The "white" is especially adapted for sinks, and bath tubs, for which there is such demand just now. Correspondence solicited. **CLAYTON,** 6. tf. d. Hamilton Ave., Trenton, N. I.



## FOR SALE, WANTED, ETC.

**Advertising rates in this column** 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**FOR SALE.** One 5-mould Lion Brick Press, one 4-mould Eureka Brick Press, in perfect good order, with double set of molds, very cheap. **TOWER GROVE BRICK WORKS,** St. Louis, Mo.  
10 1 d.

**WANTED.** Competent gentlemen with \$10,000 capital, to take interest and management of old established brick plant. Will pay good salary to right man. Address, **N. PIERCE,** Milwaukee, Wis.  
10 1 e.

**WANTED.** A first-class American superintendent, thoroughly practical as to the manufacture of paving brick, buff building brick, common brick, etc. One who has made money and understands the business. Address, **S. H. W.,** care "Clay-Worker."  
10 1 d.

**FOR SALE.** A controlling interest in a pressed and stiff mud brick plant. Also make drain tile. Our pressed brick are very fine and are red buff, and buff with iron spots. Trade good. Have our own coal. Reasons for selling: Am a professional man and can not give this business my attention. Address, **J. N. KUNE, M. D.,** Ft. Dodge, Ia.  
10 1 d.

**FOR RENT.** The plant and fire clay mines of the **The D. F. B. Mfg. Co.,** Denver, Colo. The plant has been completely overhauled and is in complete running order. Capacity 15 M per day. "Apex" fire brick and fire clay standard, and best reputation in this country. Address, **WM. C. MILLER, Pres.,** P. O. Box 3, Denver, Col.  
10 1 e.

**FOR SALE.** One Grand Automatic Brick Machine, only used two years, just as good as new. One Porter portable engine and boiler, 20 horse-power steel boiler, five off-bearing trucks, five mud wheelbarrows and 18,000 pallets and racks for same. Am retiring from business and will sell cheap. For further information write to **AUG. H. NUMAN,** No. 2628 So. 13th St., St. Louis, Mo.  
10 4 e.

**WANTED.** Party with experience and some capital to take an interest in paving brick plant. Only one in city of 30,000 people. Address, **W. R. UPDEGRAFF,** Station A, Springfield, Mo.  
9 2 cm.

**WANTED.** Position by a man thoroughly practical in every detail of the manufacture of paving and building brick, competent to superintend erection of plants, good burner, best references. Address, **PRACTICE,** care "Clay-Worker."  
9 1 1p.

**WANTED.** A situation as foreman or superintendent of brick works. Thoroughly competent to take entire charge. Understands various methods of manufacture, but would prefer a dry press plant. The best of reference as to character, ability, etc. Address, **J. W., Box 7,** Care "Clay-Worker."  
8 1 d.

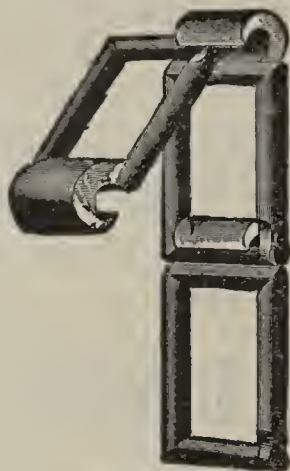
**FOR SALE.** A nice, small brickyard containing 13 nice acres of best clay, without stones; now in operation. A 26 year established business—100 yards from a switch and station of P. S. & L. E. R. R. Natural gas for fuel. Price of brick made here, \$8 per M. Reasons for sale, old age and failing of eye sight. Address, **A. STOLZ,** Meadville, Pa.  
9 3 c. m.

**WANTED.** Party with capital of \$12,000 to \$15,000, or part of above amount, to join advertiser in a lease of a brick plant, now erected and in splendid location, excellent shale and clay mixed. Will answer for street pavers or fine grade of front brick. Shipping facilities either by water or rail, first-class. With slight change in machinery this can be made a money making investment. Particulars from **"W,"** care "Clay-Worker."  
9 3 k.

**SECOND-HAND MACHINES MUST GO.**  
1 Aeme Brick and Tile Machine.  
1 Wallace Brick and Tile Machine.  
1 Centennial Brick and Tile Machine.  
1 Penfield No. 7 Special Tile Mill.  
1 Ohio Brick and Tile Machine.  
1 New Departure Brick and Tile Machine.  
1 Hoosier Brick and Tile Machine.  
Write for particulars. **H. J. VOTAW,** Decatur, Ill.  
8. 1 d.

## ELEVATORS

**..FOR..**  
Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.



## JEFFREY CHAIN BELTING,

—ALSO—  
Malleable, Steel, Cable and Special Chains,  
DESIGNED FOR.....  
Elevators, Conveyors, Drive Belts,  
FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc,  
Send for REDUCED PRICE LIST. Address  
**THE JEFFREY M'F'G CO.,**

New York Branch: 163 Washington Street.

Columbus, Ohio.



## NEW DISCOVERY KILN.

It Heads the Procession!

Patented April 13, 1866.  
Nov. 17, 1801.

The New Discovery is THE KILN you are looking for if you want THE BEST KILN EXTANT for burning ALL KINDS of clay products.

ITS SUPERIOR WORK is due to a systematic construction and PECULIAR FEATURES which are patented. I believe it embodies the BEST PRINCIPLES AND SYSTEM IN USE. Those who are using it, and they are many, THINK so too.

If you will investigate and learn what the NEW DISCOVERY CAN DO you will be WITH US.

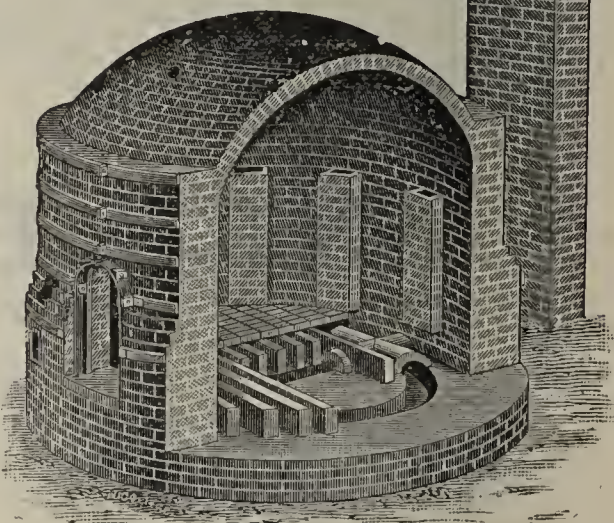
This is an AGE OF PROGRESS. The BEST of yesterday may not be the BEST of to-day. The New Discovery has PROGRESSED and is still at it.

I don't KNOW IT ALL but I do know that IT WILL PAY you to investigate the NEW DISCOVERY KILN if you want THE BEST.

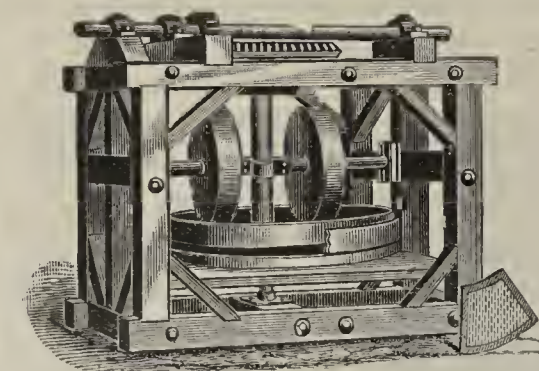
It can be built any desired capacity up to 100,000. I SHALL PROTECT MY PATENTS FROM ALL INFRINGEMENTS.

For circulars, address,

**E. M. PIKE, Chenoa, Ills.**

EAGLE IRON WORKS,  
DES MOINES, IOWA.

FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

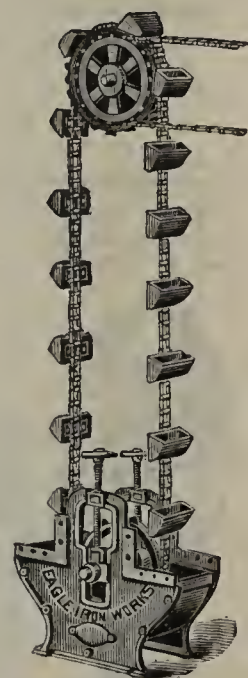


DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



## IMPORTANT!

Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.



# ROOFING. VULCANIZED RUBBER ROOFING,



LIGHT, DURABLE  
and CHEAP.....

MUNCIE ROOFING WORKS,

Just the thing for—

MUNCIE, - - - INDIANA.

FACTORY BUILDINGS

F. W. SILKMAN, 231 Pearl Street,  
NEW YORK.

IMPORTER AND DEALER IN

## CHEMICALS, MINERALS, CLAYS AND COLORS,

For Potters, Terra Cotta and Enamelled Brick  
Manufacturers.

Correspondence invited. ....

### ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and  
Belleville, Ill.

ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity.

Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER,

Telephone Building, ST. LOUIS, MO.

WANTED. Situation as superintendent or manager. Experienced in manufacture of all kinds of brick, tile, blocks, terra cotta, pipes, retorts, paving, etc., up, down and continuous kilns. "H."  
10 1 c. Care "Clay-Worker."

FOR SALE. The best clay bed and brick plant in western New York, in full operation. Steam power. Patent permanent kilns. Burn with coal. For tile, paving or building brick. Capacity 25,000 per day. Terms easy. Address,  
GENEVA BRICK CO.,  
31 Geneva St., Geneva, N. Y.  
10 1 c.

WANTED. Situation as superintendent or burner. Twenty years experience in the manufacture of building brick by mud and dry process. Practical in burning of same in updraft, downdraft, and continuous kilns. Good reference. Address,  
H. SEEKAMP,  
1121 Autumn St., St. Louis, Mo.  
10 1 d.

WANTED. A practical brickmaker to take charge of a brick and tile factory in central Iowa. Habits and references must be good. Address,  
BURNHAM BROS.,  
Milwaukee, Wis.  
10 1 d.

WANTED. A situation as superintendent of fire brick, glass retorts, or sewer pipe works. Thoroughly competent to take entire charge. 25 years experience. Understand construction of works. Best of references. Address, C. C.,  
10 1 c. care "Clay-Worker."

FOR SALE. Sewer pipe works in one of the best localities on the Pacific coast. Contains all requisite machinery, power press, three large kilns. Everything complete and in best working order. Reasons for selling, other interests demand attention of owner. None but principals need apply. Address,  
S. C. C.,  
10 3 c. care "Clay-Worker."

CLAY LANDS. For sale near New York City, fire brick clay lands, sewer pipe, paving brick, and red brick property. Water and rail.  
F. ROWLAND,  
171 Broadway, New York City.  
8. 3. c.

TILE FACTORY FOR SALE. With two kilns. Shed room for eight kilns. Forty horse-power engine. Good Auger Mill. Machinery all in good condition. This property must and will be sold. If you want a bargain, address  
F. W. BEARDSLEY, Assignee,  
83 d. m. Gibson City, Ill.

FOR SALE—One Brewer Stone Extracting Clay Crusher, one Drake repress and a lot of wooden pallets. Address  
CENTRAL CITY BRICK AND TILE CO.,  
7 tf d Peoria, Ill.

WANTED. Agents to handle a full line of dry press brick machinery. Address  
5-tf-1 Howe, Care Clay-Worker.

FOR SALE OR LEASE. The Norfolk Brick and Tile Company's plant. For particulars, enquire of  
DR. F. VERGES,  
1. tf. 2p Norfolk, Neb.

FOR SALE CHEAP. A "Chief" Soft Mud Brick Machine. Has been run one season and is in good running order. Address,  
J. M. CRABILL,  
3 tf l Clarinda, Ia

FOR SALE CHEAP.—A Chief, soft mud brick machine. It is as good as new, having been used but little and is a good machine. Reasons for selling—going out of business. For full particulars address,  
OLD MANN,  
6. tf. d. Care Clay-Worker.

I HAVE For Sale at Dunbar, Pa. One soft clay Brick Machine, manufactured by Nolan, Madden & Co., of Rushville, Ind. The machine has never run two days. Reasons for selling same will be given by addressing  
J. F. SCANLAN, Receiver,  
7 tf d Rushville, Ind.

I HAVE For Sale one soft clay Brick Machine, steam power with 18 molds, manufactured by Nolan, Madden & Co., Rushville, Ind. This machine is at Deshler, Ohio, and has never been used. For particulars address  
7 tf d J. F. SCANLAN, Receiver, Rushville, Ind.

FOR SALE. One three-mold Andrews dry press Latest, heaviest pattern. In good order. Apply to MISSOULA BRICK AND SEWER PIPE Wks.,  
5-tf-d Missoula, Mont.

WANTED. To meet or correspond with a good party interested in silica brick and the manufacture of same. B. F. F.  
6. tf. t. Care Clay-Worker.



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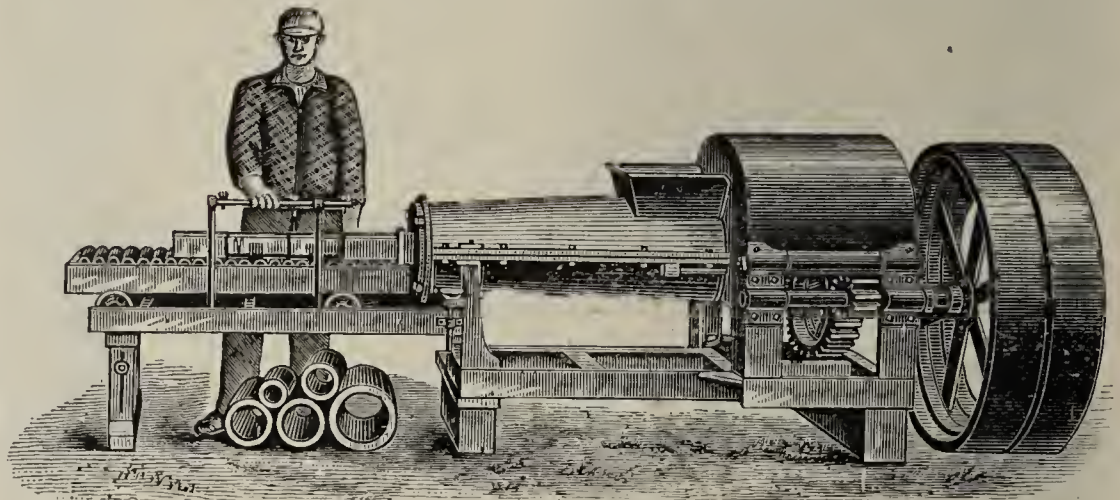
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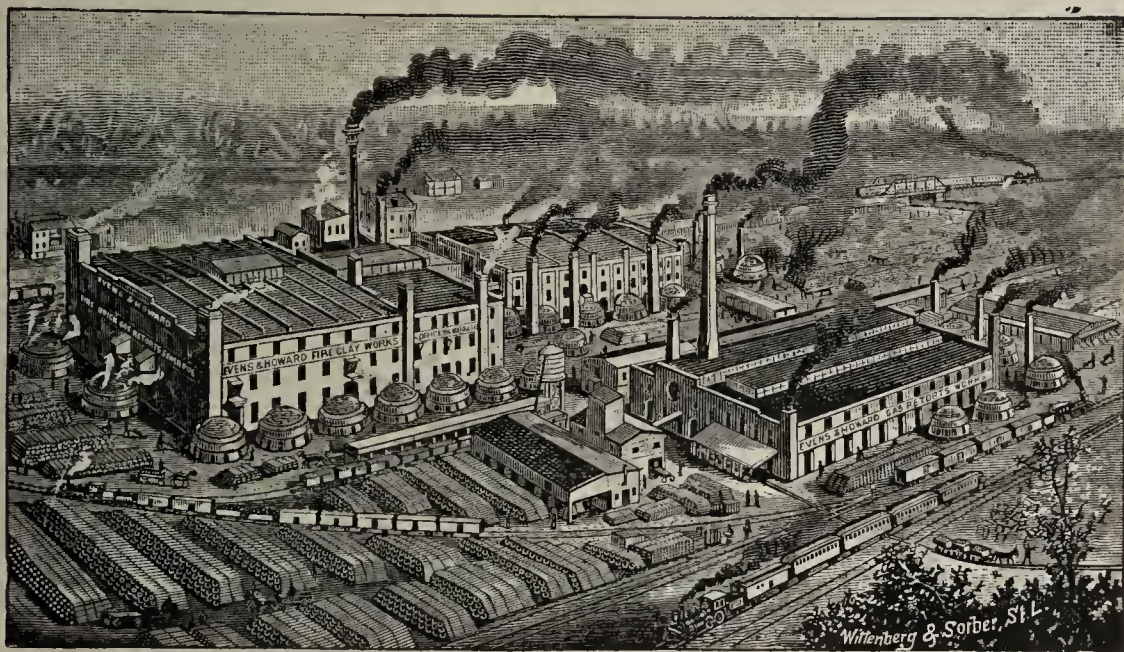




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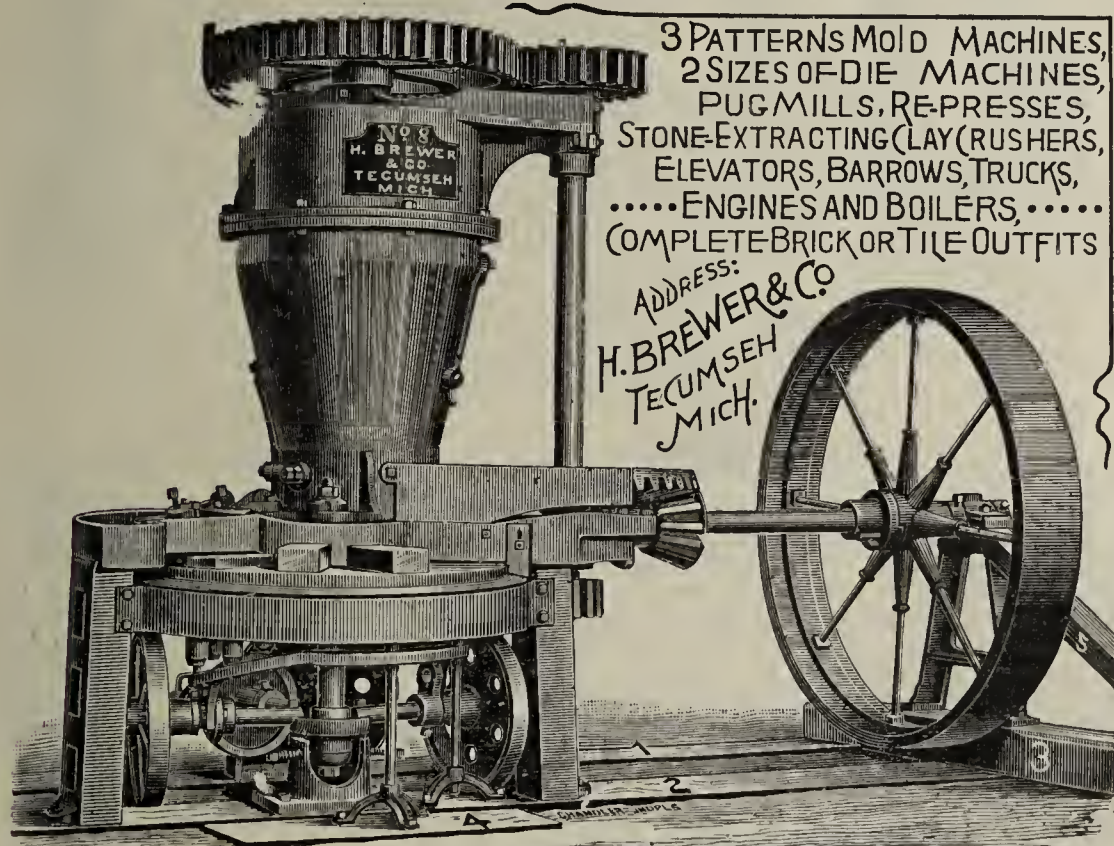


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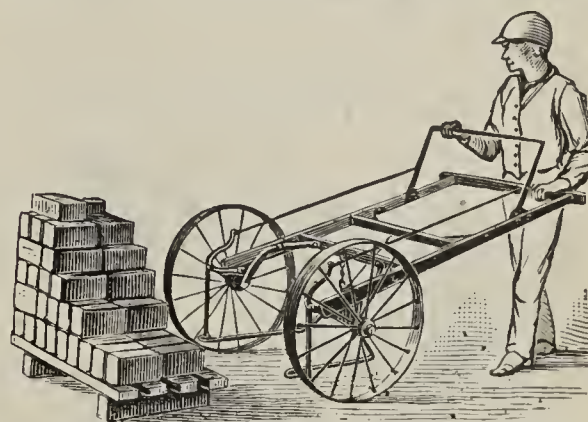
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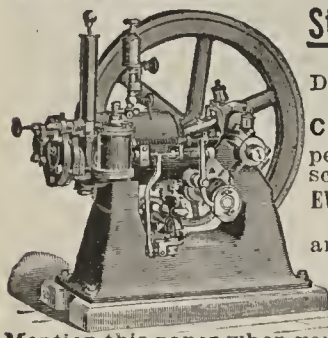


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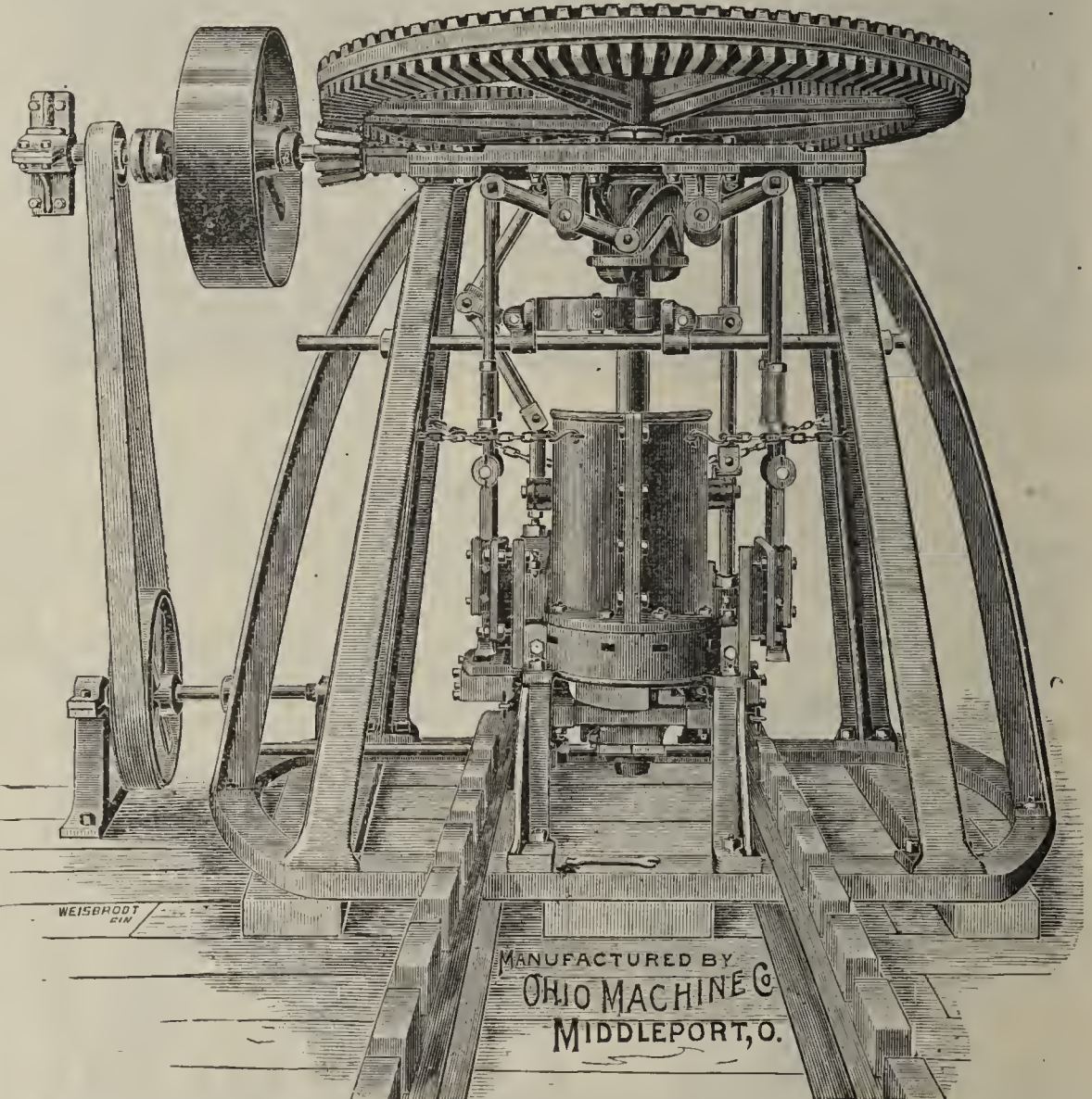
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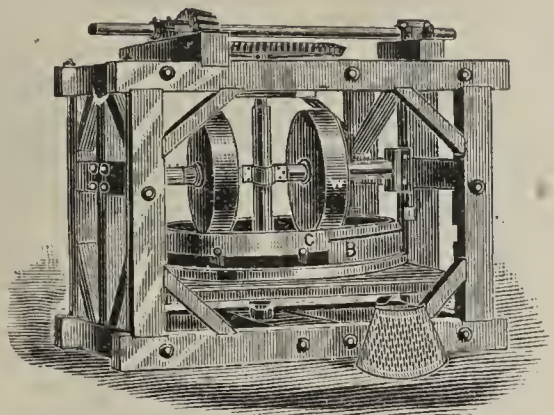
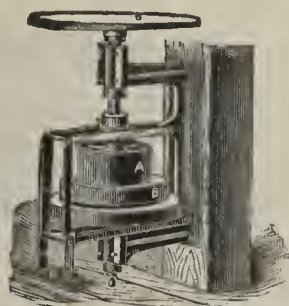
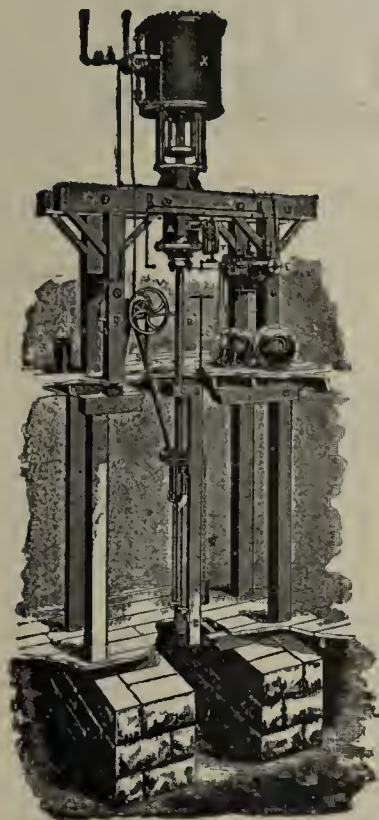


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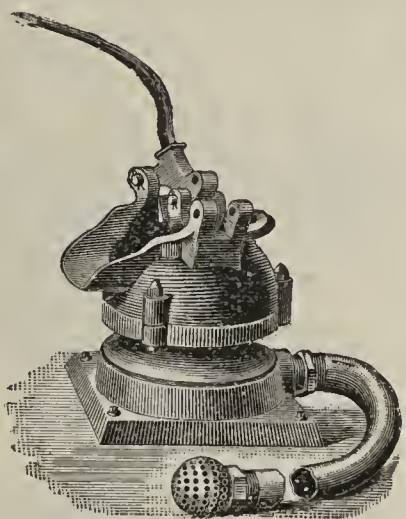
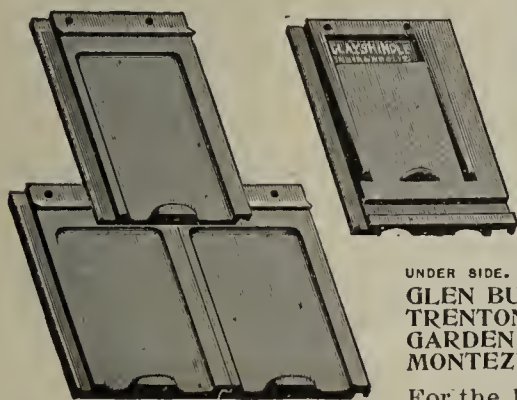
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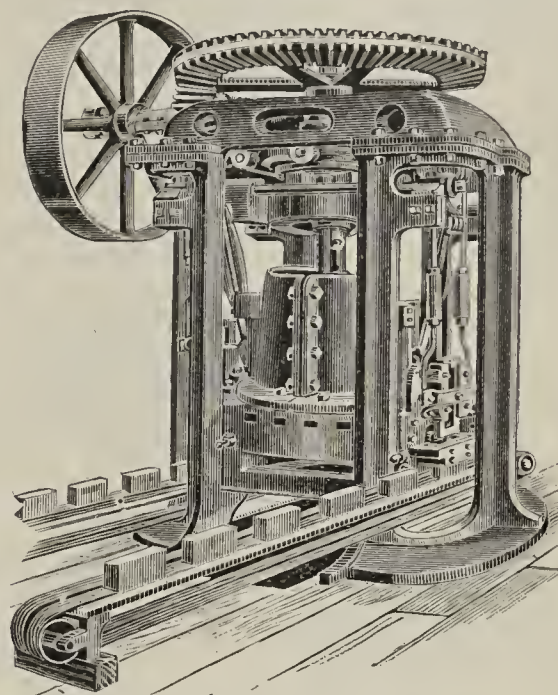
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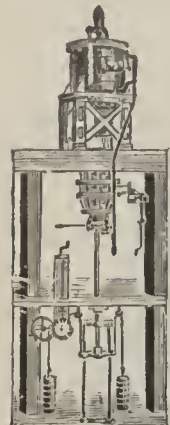
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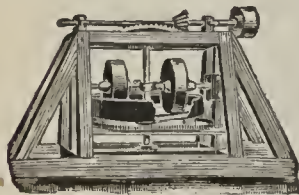
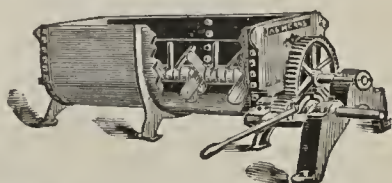
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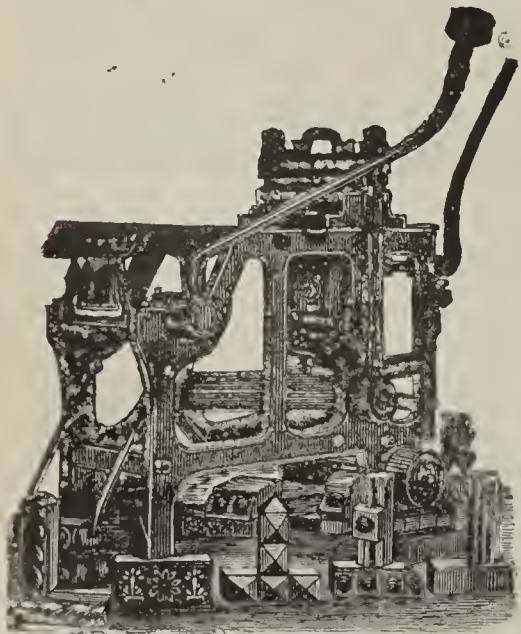
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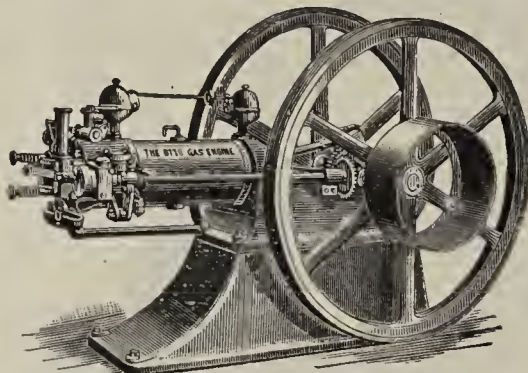
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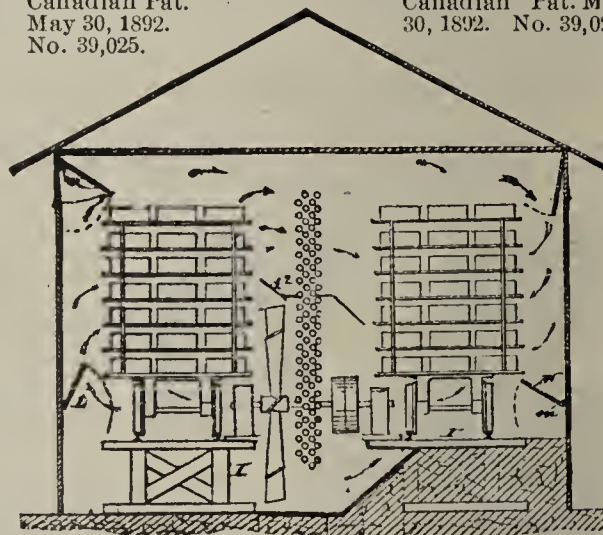
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May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.



U. S. Patent August 16, 1881. No. 245,742.

U. S. Patent March 31, 1891. No. 449,170.

U. S. Patent March 31, 1891. No. 449,231.

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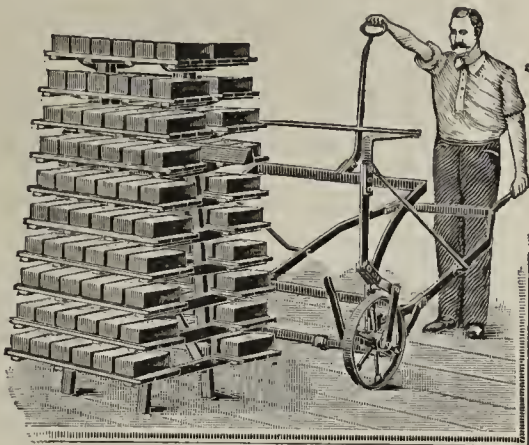
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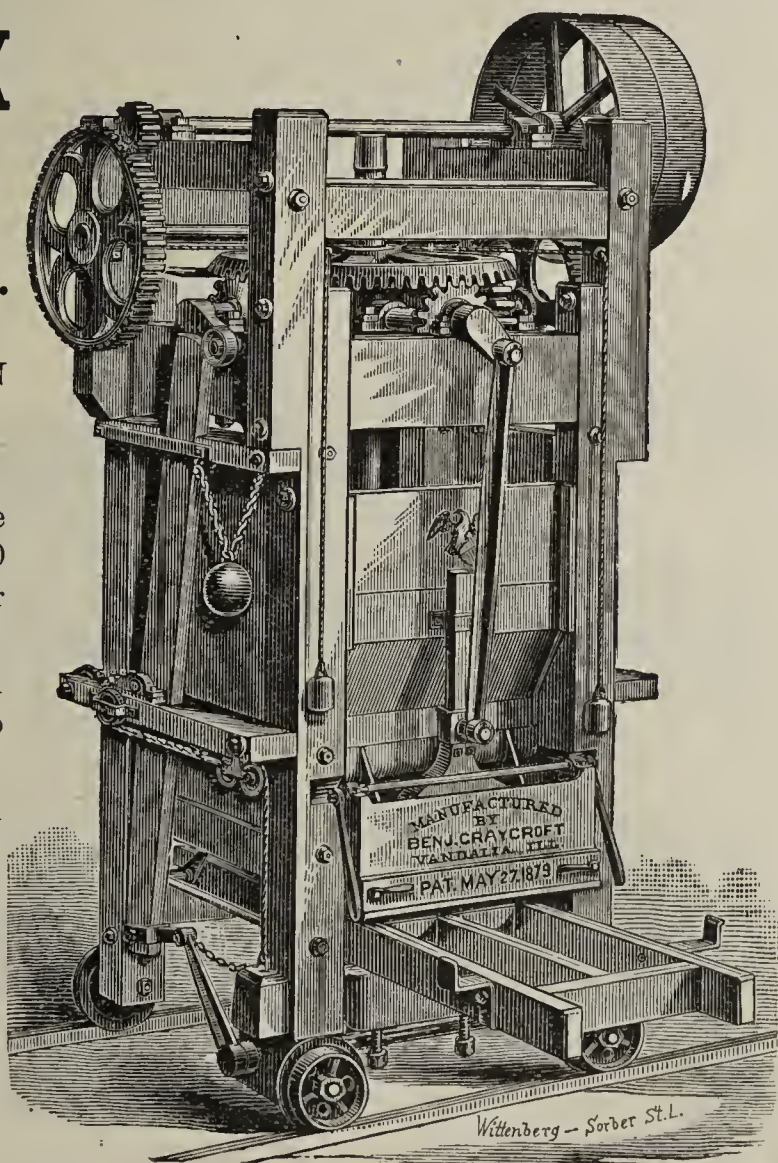
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anapolis and Chicago.  
Magnificent Pullman Sleeping and Parlor Cars  
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THE  
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Through Cars Line between DECATUR  
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Points in Kentucky, Tennessee, Alabama  
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Ask for tickets and see that they read via  
C.H. & D. On sale at all stations.

**H. J. RHEIN, General Agent.**

Indianapolis.

**W. G. GREENE,**

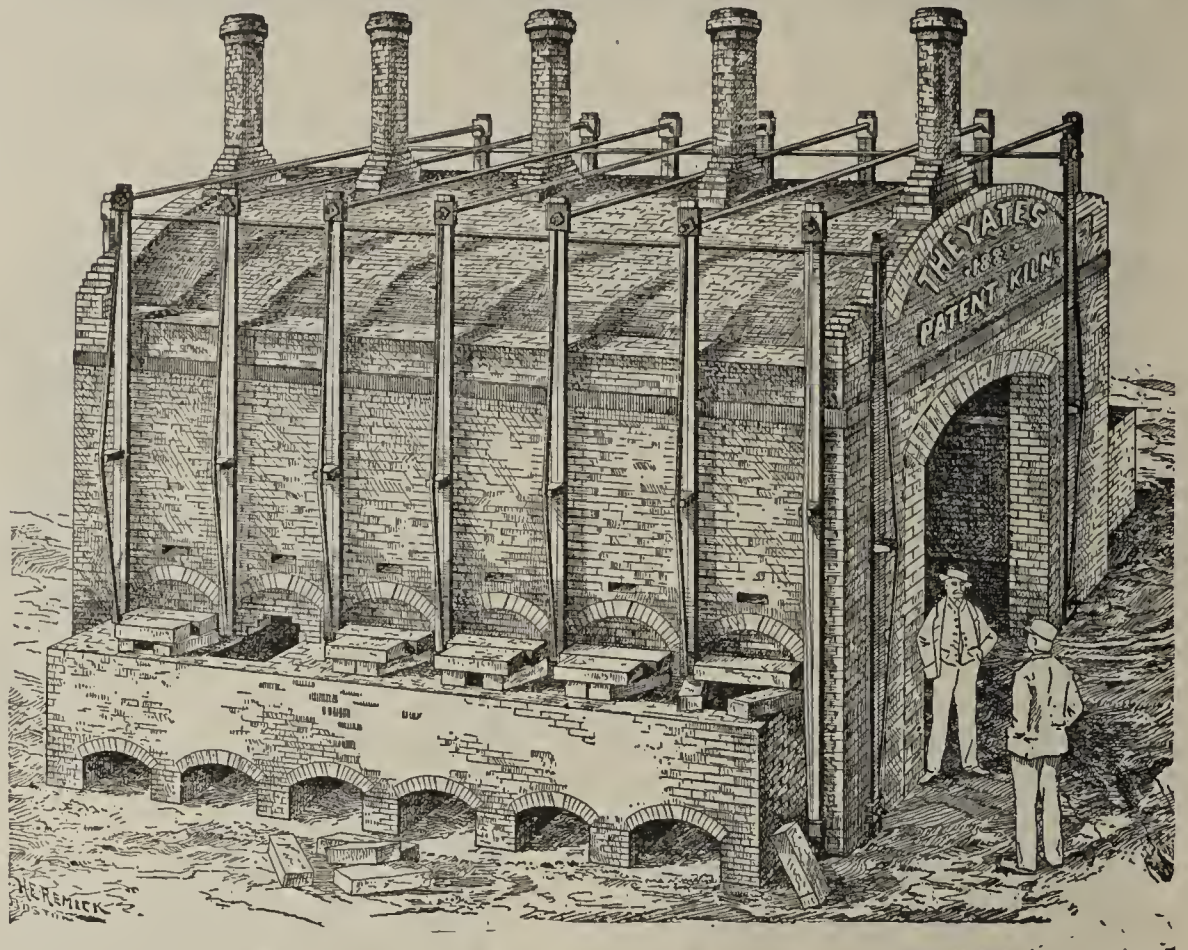
**D. G. EDWARDS,**

Gen'l Manager.

Gen. Pass. Agt.

Cincinnati, Ohio.

## THE YATES IMPROVED DOWN DRAFT KILN FOR BURNING BRICK OF ALL KINDS.

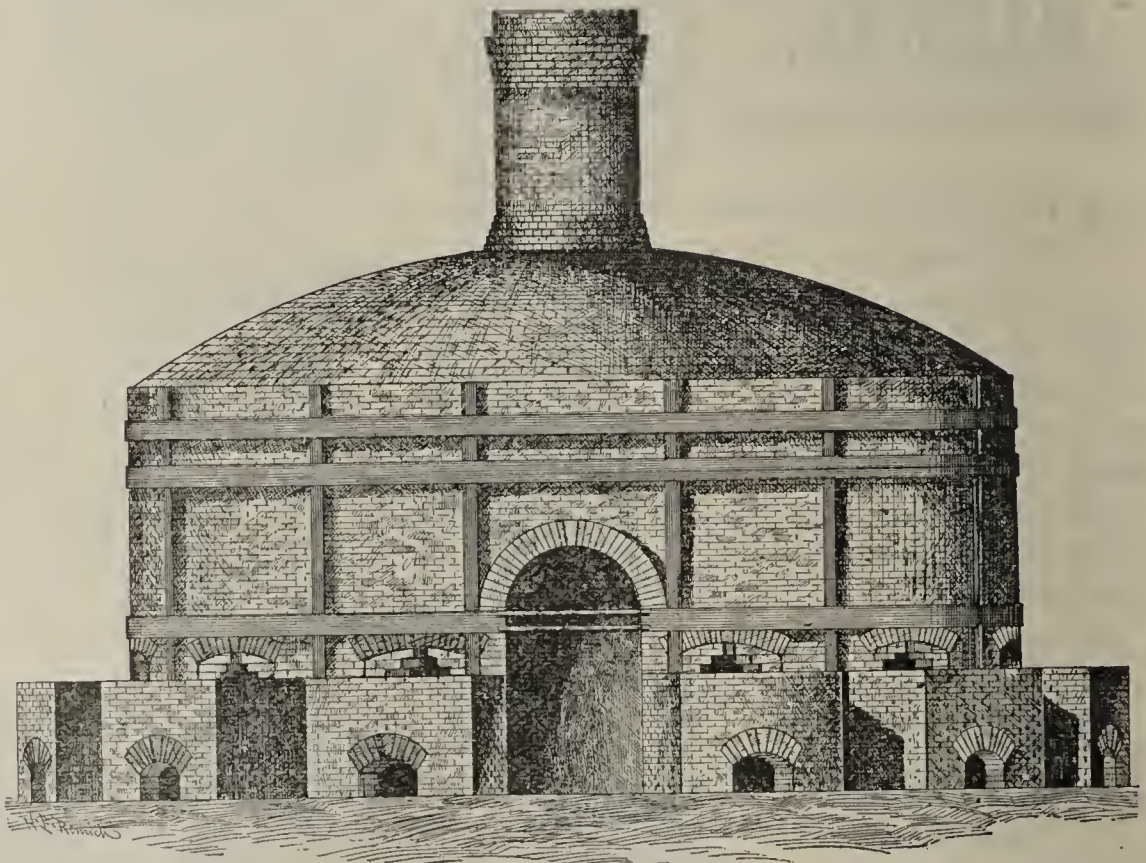


FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty. Waste heat utilized in watersmoking green kiln, and arranged to work continuous. Kilns built under guarantee at our own expense for responsible parties.

The YATES SAFETY and IMPROVED FURNACE HOT AIR DRYER in operation at the Anchor Tile and Clay Co., Sparta, Starke Co., Ohio.

❖ WE STAND ON OUR MERITS. ❖



**ALFRED YATES,**

Write for full description.

**NORTH CAMBRIDGE, MASS**

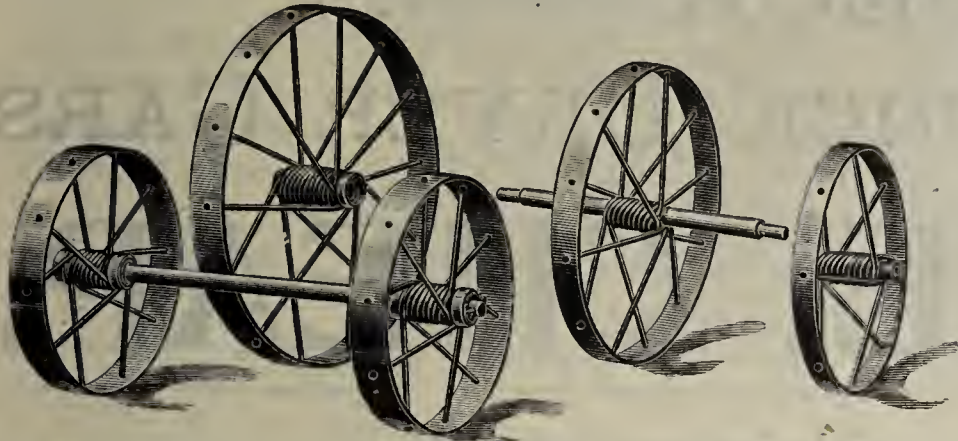


# THE MAN who put straw IN BRICKS

was an inventor. Were he living, I would procure a PATENT for him. As it is, I would be pleased to do your work. Write to me about your device and enclose stamp for reply.

EDWARD C. WEAVER,  
900 F. St., N. W., Washington, D. C.

## The -- Arnold -- Metal -- Wheel -- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,

THE ARNOLD METAL WHEEL CO., New London, O.

Headquarters for Brickyard Supplies in 1893 will be at the same place it was in 1892, at

New London, Ohio,

ADDRESS. D. J. C. Arnold.

Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

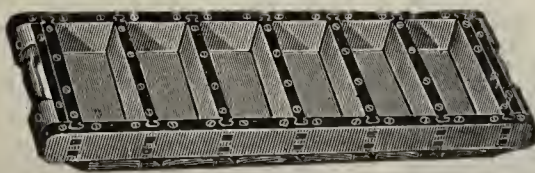
## MOULDS.



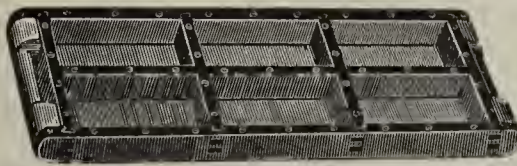
**See!** You can buy them for less money now than ever before. Prices reduced but the standard of quality is maintained. Order now for future delivery. Satisfaction guaranteed. Standard sizes carried in stock.

Some odd sizes at about half price. Send for list.

S. MACHINE MOULD.



S. B. HAND MOULD.



S. B. HAND MOULD.



MENTION THE CLAY WORKER

When writing to advertisers

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## To CAPITALISTS: AND OWNERS OF CLAY BEDS, Etc.

WILLIAM CLAYTON,

Potter's Chemist,

60 Butler Street, TRENTON, N. J.

GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

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H. W. FULLER, Gen'l Pass. Agent, CINCINNATI, OHIO.  
WASHINGTON, D. C.



## LOCAL TIME TABLE

In Effect April 15, 1893,  
Solid Train Between

Sandusky and Peoria

—AND—  
INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

### DEPART.

|                        |             |
|------------------------|-------------|
| No. 10 Passenger.....  | 7:15 a. m.  |
| *No. 12 Passenger..... | 1:20 p. m.  |
| No. 14 Passenger.....  | 7:00 p. m.  |
| †No. 16 Express.....   | 11:10 p. m. |

### ARRIVE.

|                       |             |
|-----------------------|-------------|
| *No. 9 Passenger..... | 10:30 a. m. |
| No. 11 Passenger..... | 2:50 p. m.  |
| No. 13 Passenger..... | 6:20 p. m.  |
| †No. 17 Express.....  | 3:20 a. m.  |

Trains not marked run daily except Sunday, \*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west. Trains Nos. 16 and 17 have elegant free reclining chair cars to all passenger making direct connection at Peru with the Wabash fast trains for Fort Wayne, Toledo, Detroit and Chicago.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass. Agt. Traffic Manager, Indianapolis, Ind.



## WHEELING MOLD AND FOUNDRY CO.,

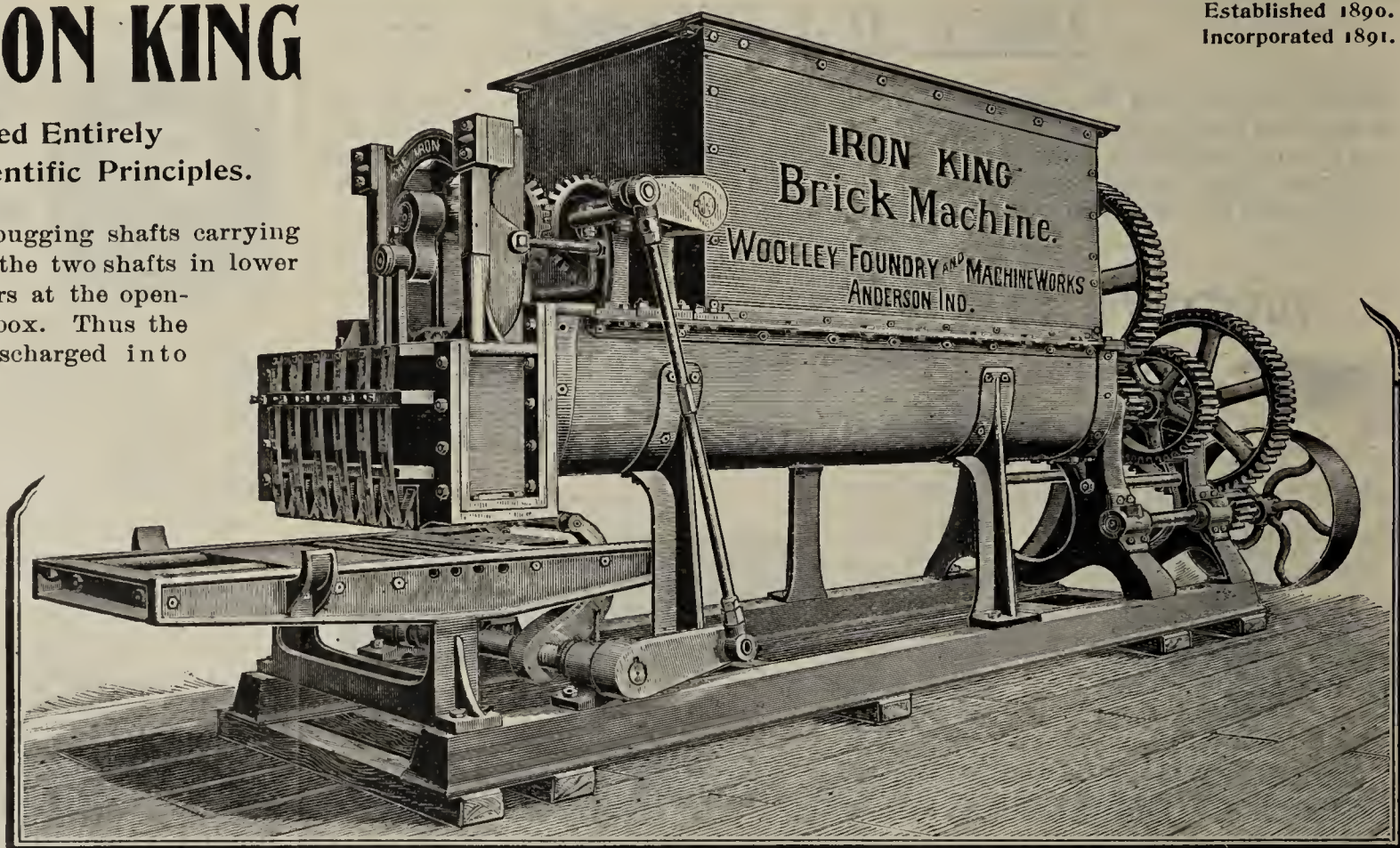
Dies of All Kinds  
and Glass House Molds.WHEELING, W. VA.,  
.....MANUFACTURERS OF.....Models for all kinds of Inventions  
of small machinery a specialty.**Brick Molds, Machinery Castings**  
*And Machinery From Specifications.***150 DOUBLE DECK  
BRICK DRYER CARS  
FOR SALE, CHEAP.**

•✚• Ready For Shipment. ✚•

**CLEVELAND WHEELBARROW & MFG. CO.,**  
*961-981 Hamilton St., - - - Cleveland, Ohio.***The IRON KING****Is Constructed Entirely  
On Scientific Principles.**

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and

positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

Established 1890.  
Incorporated 1891.**WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.**



## Frey's Re-press

Delivers and takes Brick on edge.

Less working parts than any other Re-press.

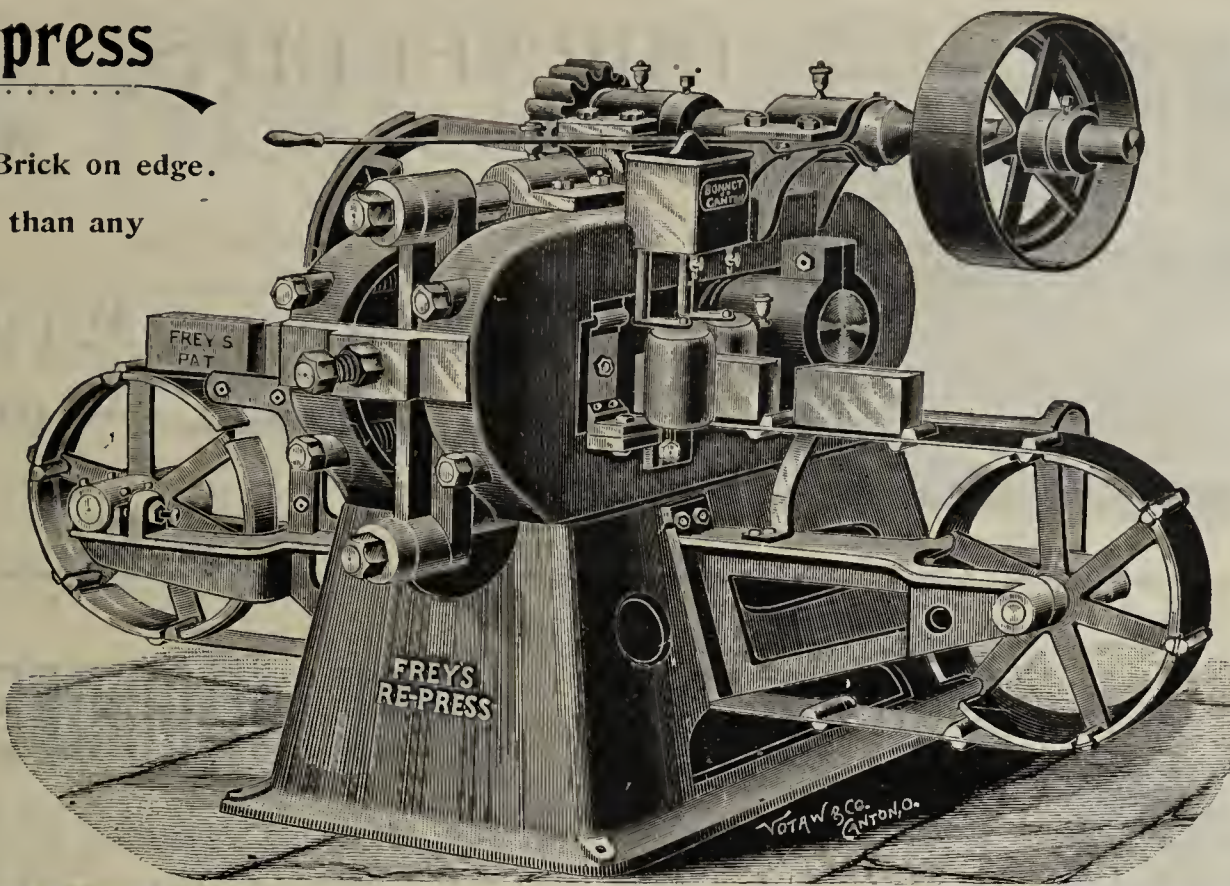
Takes Brick same size of die.

No working parts under the die for dirt to wear.

Send for Circular giving 12 Reasons Why this Re-press is the best, address

**F. E. Frey & Son,**

WILLOUGHBY, - OHIO.



**F. E. FREY & SON,**

MECHANICAL ENGINEERS.....

And Designers of

**Clayworking Machinery**

WILL.....

Take contracts for new Brick or Tile Factories.

Examine Clays and furnish plans for outfits.

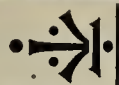
Over Thirty Years' Experience.....

## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



FISKE, HOMES & CO., Boston.

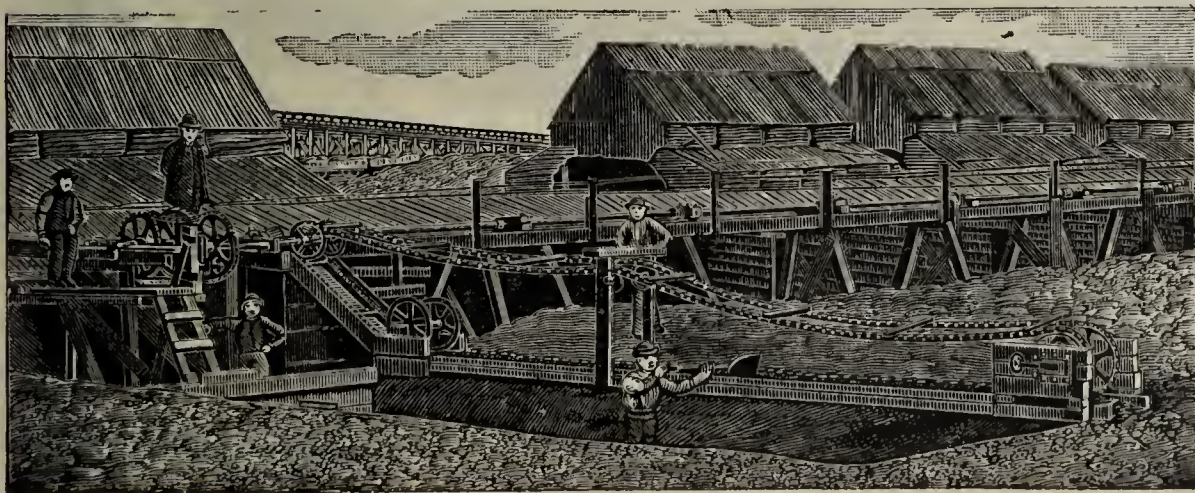
NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

**Elevating, Conveying & Transmission of Power**

64 to 68 Columbia St., BUFFALO, N. Y.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

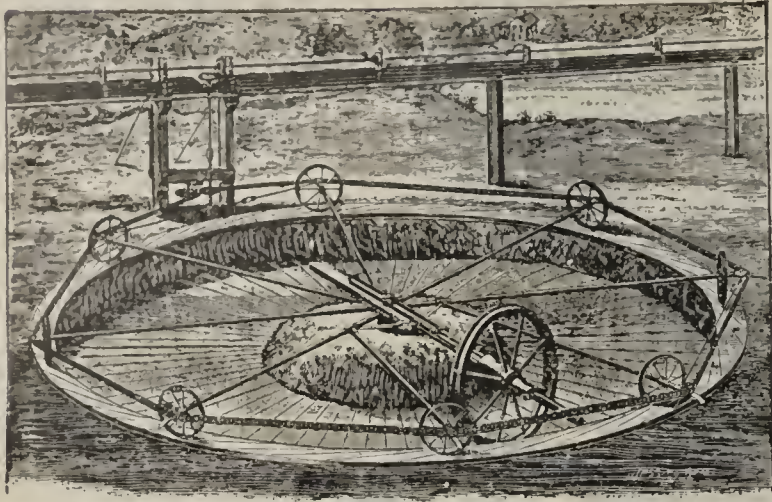
**Make Many More Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED PRICE LIST.







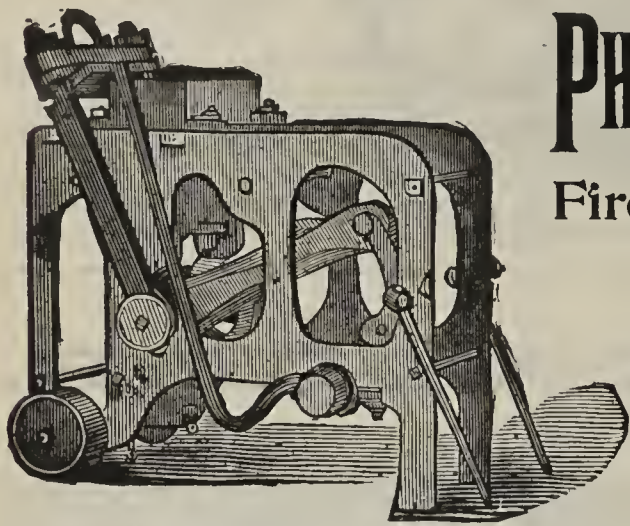
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

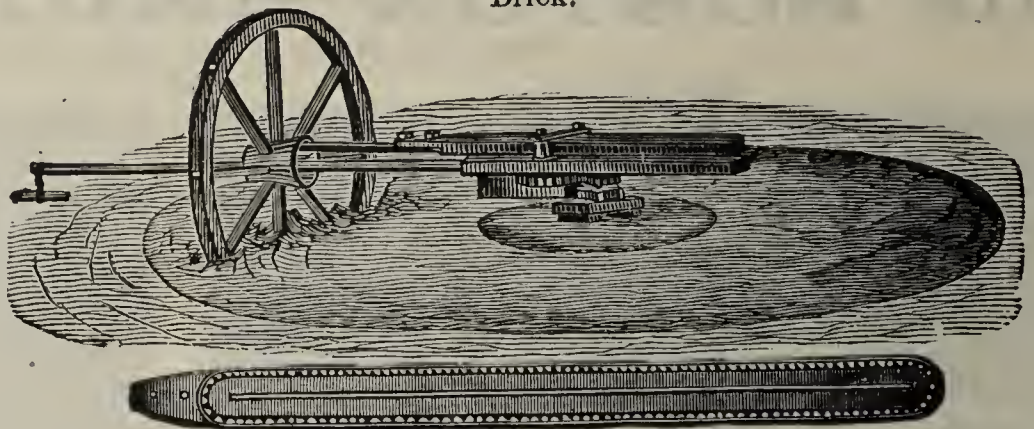
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

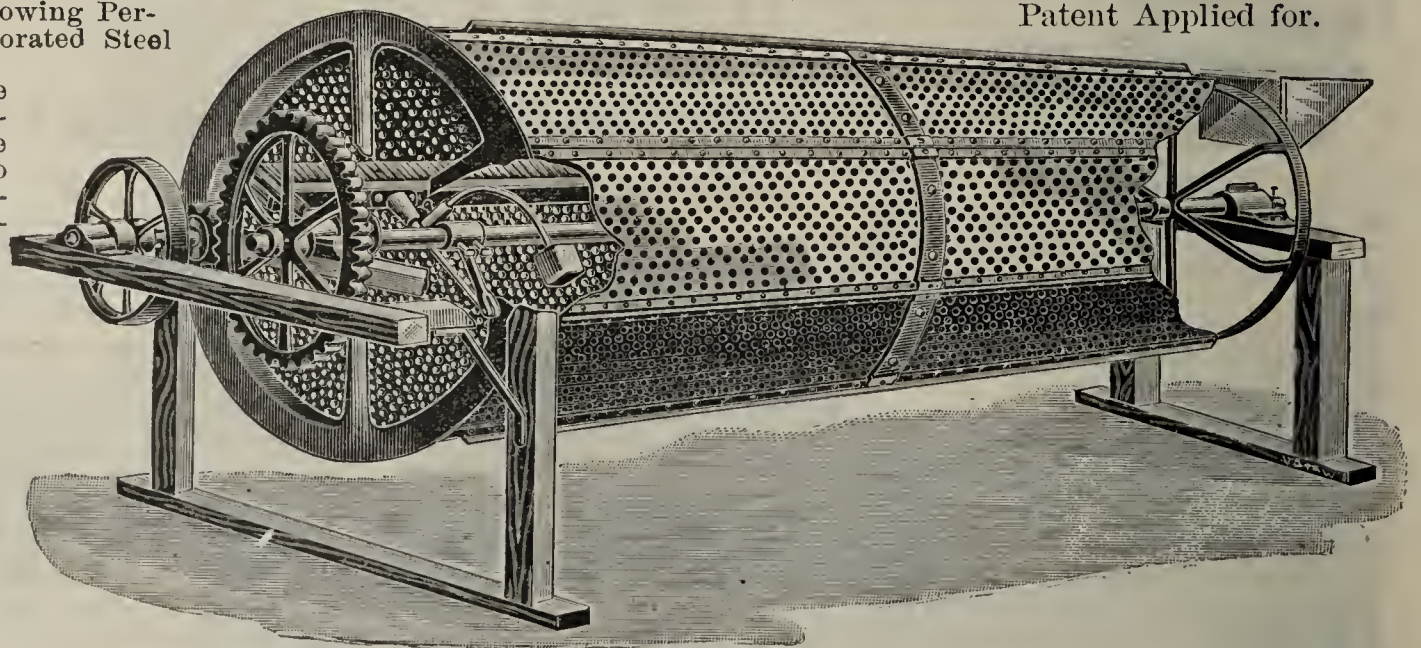
## REVOLVING SCREENS.

Interior View=== Showing Per-  
forated Steel

Sheets. The iron heads are turned perfectly true. The Sheets are supported on the outside by steel cross bars. The self-adjusting Brush requires no attention, being always in proper condition. A complete success.

MANY of the best plants are supplied with them. The Cleveland Brick Co., recently placed one of these Screens in their plant. They say: "We would not be without it for twice its cost."

Many others have the same opinion. They are sold on a broad guarantee. Have you seen illustration of Iron Frame Screen? Write for particulars.



Patent Applied for.

THE BONNOT CO., Canton, Ohio.



# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

48 Styles.

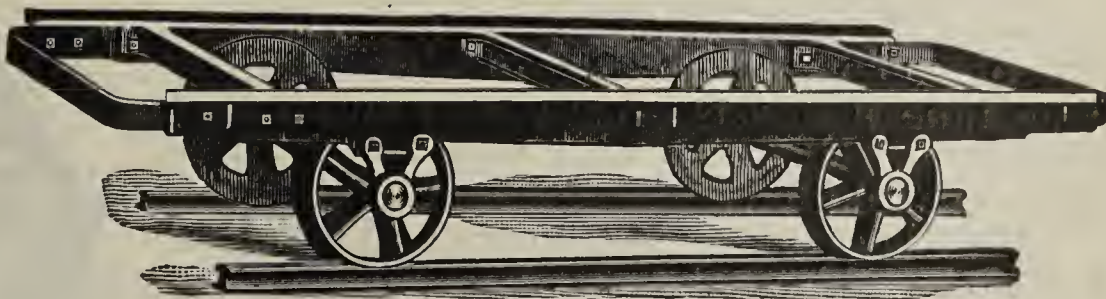


# CARS

Send For Price List.

Also

Turn Tables,  
Transfers,  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.

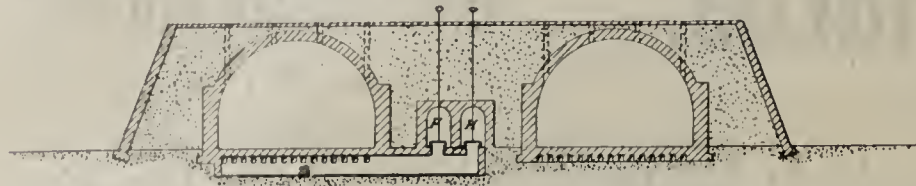


STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



## Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one mouth's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

**PETERSEN BRICK COMPANY,**  
MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E— downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,

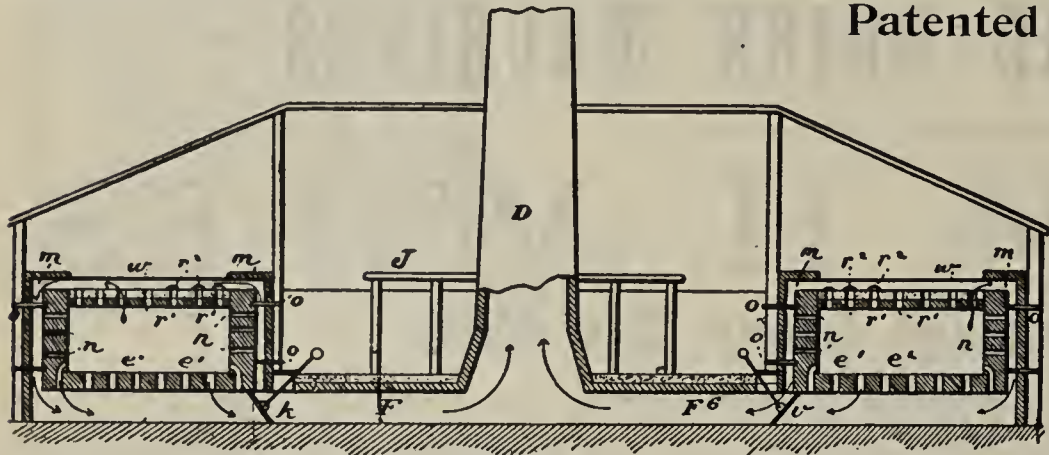
Per H. M. STAMMER, Superintendent.

For particulars address

**P. L. YOUNGREN, Oakland, Cal.**

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

Mention the Clay-Worker.]

**CARL F. KAUL, Madison, Neb.**

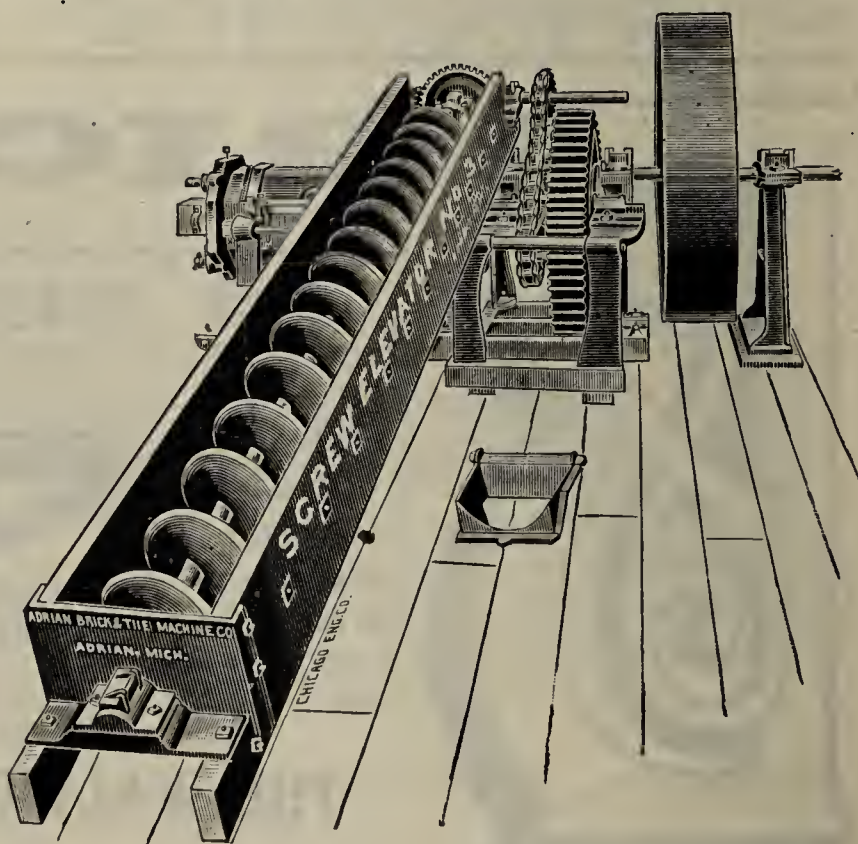
## A LONG FELT WANT SUPPLIED.

### A SCREW ELEVATOR FOR ELEVATING CLAY.

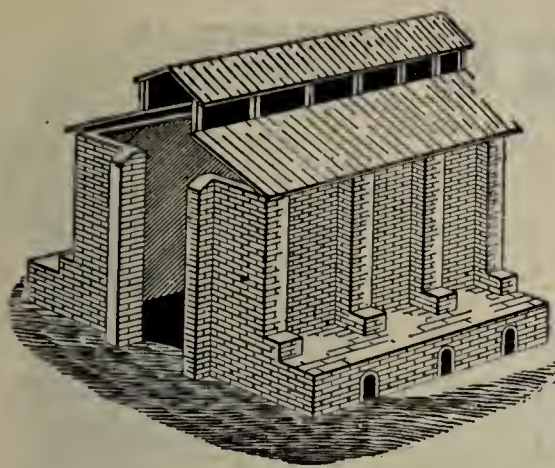
The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**  
ADRIAN, - - MICHIGAN.





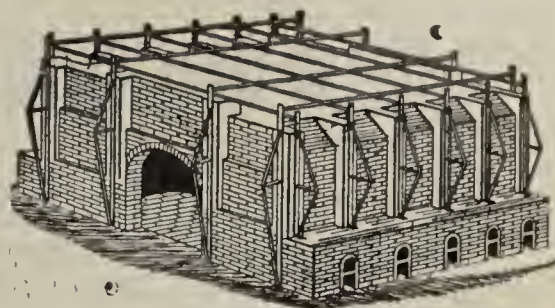


The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

## LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be **THE BEST KILN IN THE MARKET.**



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

**MOST DURABLE, COMPLETE AND EASILY MANAGED**

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ **VITRIFIED PAVING BRICK.** ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, MO., July 17, 1892. }

H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

Mr. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

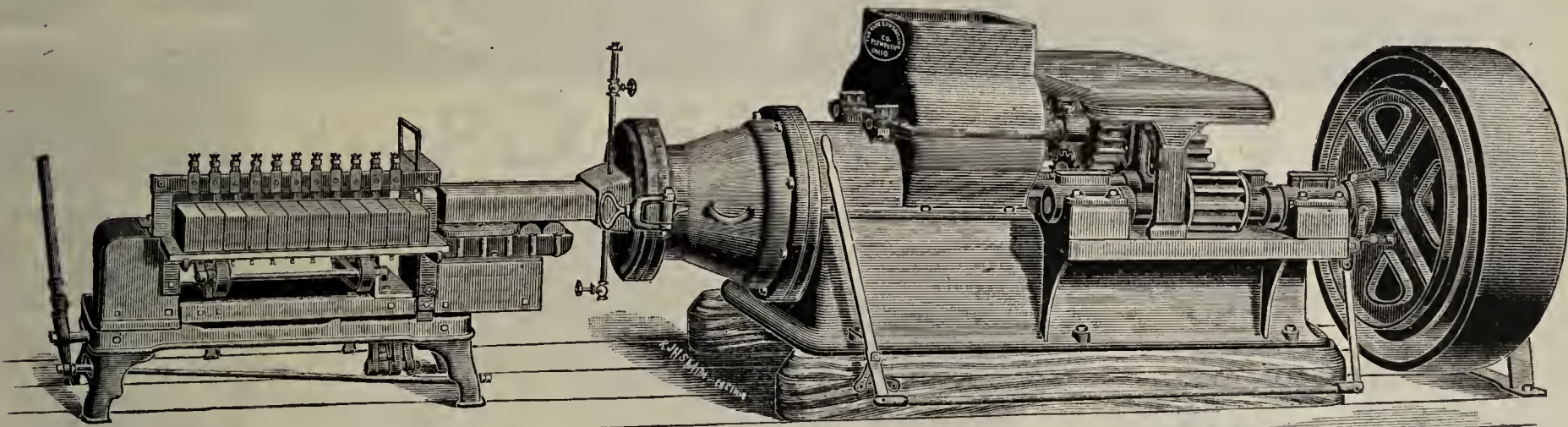
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

**LOUIS H. REPPPELL,**  
**1,913 Indiana Ave.**      **KANSAS CITY, MO.**

# The "Plymouth."

DURABLE,  
....STRONG.



Brick Machines, Pug Mills, and all brick and tile yard supplies.  
Write for catalogue and prices.

**THE FATE-GUNSAULLUS CO.,**  
RICHLAND COUNTY.      PLYMOUTH, OHIO.



If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** "It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

**Jonathan Creager's Sons,**

127 W. SECOND STREET,

**Cincinnati, Ohio.**

P. S. If you do not ask we cannot tell you of several very important improvements.

**J.H. & D. LAKE, CO.**  
**MASSILLON, O.**  
**U.S.A.**  
 MFRS. OF  
 FRICTION CLUTCH PULLEYS;  
 PLAIN OR SPLIT PULLEYS,  
 SHAFTING,  
 HANGERS, Etc.  
 ALSO  
 COUNTER SHAFTS  
 COMPLETE.  
 CUT-OFF COUPLINGS,  
 PLAIN OR SPLIT;  
 FORMERLY OF HORNELLSVILLE, N.Y.



# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

Messrs. Main Belting Co., Chicago:

February 28, 1890.

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa.  
120 Pearl Street, Boston, Mass.

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for

Leather, Rubber and Canvas Belting.

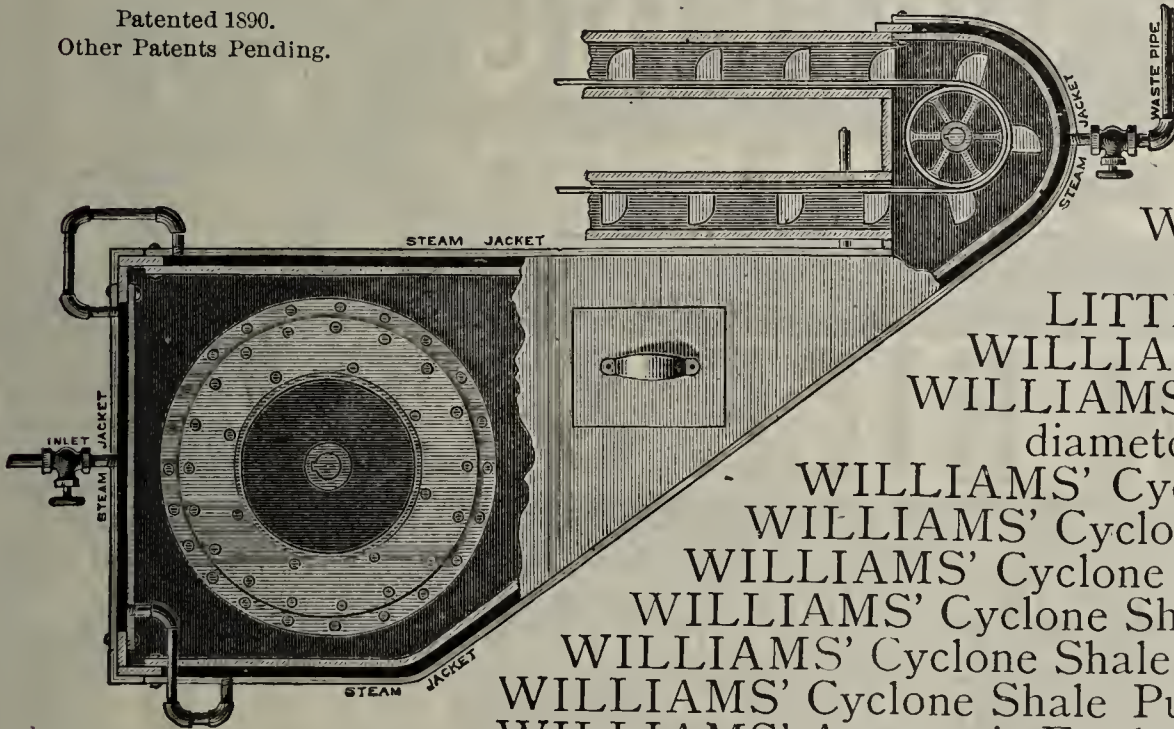
No user of Belting can afford to be without it.



the End.

# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

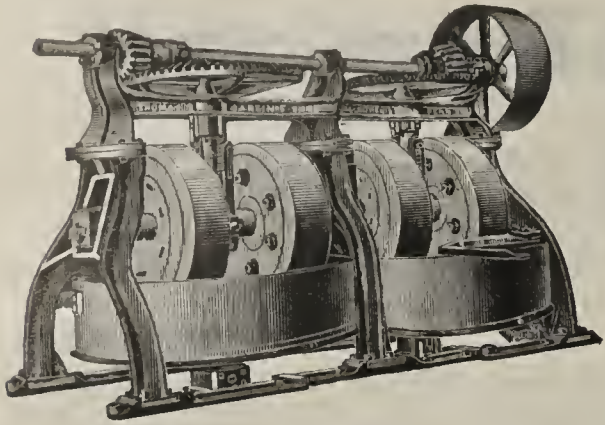
WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO

M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.





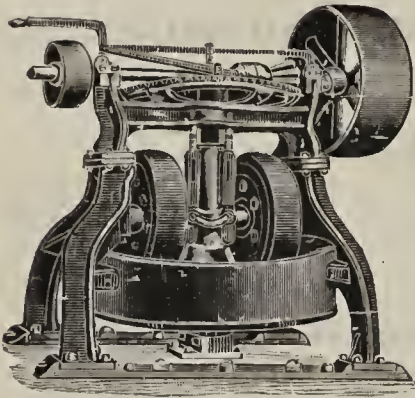
OUR SPECIALTY.

# GRINDING AND MIXING PANS

Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

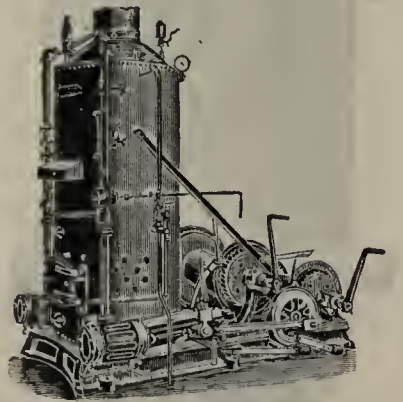
PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.

One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot guage Dump Cars.



MANUFACTURERS OF  
**IMPROVED**  
**CLAY WORKING**  
**MACHINERY**  
 OF EVERY DESCRIPTION  
**TAPLIN RICE & CO.**

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.  
**AKRON, OHIO, U.S.A.**

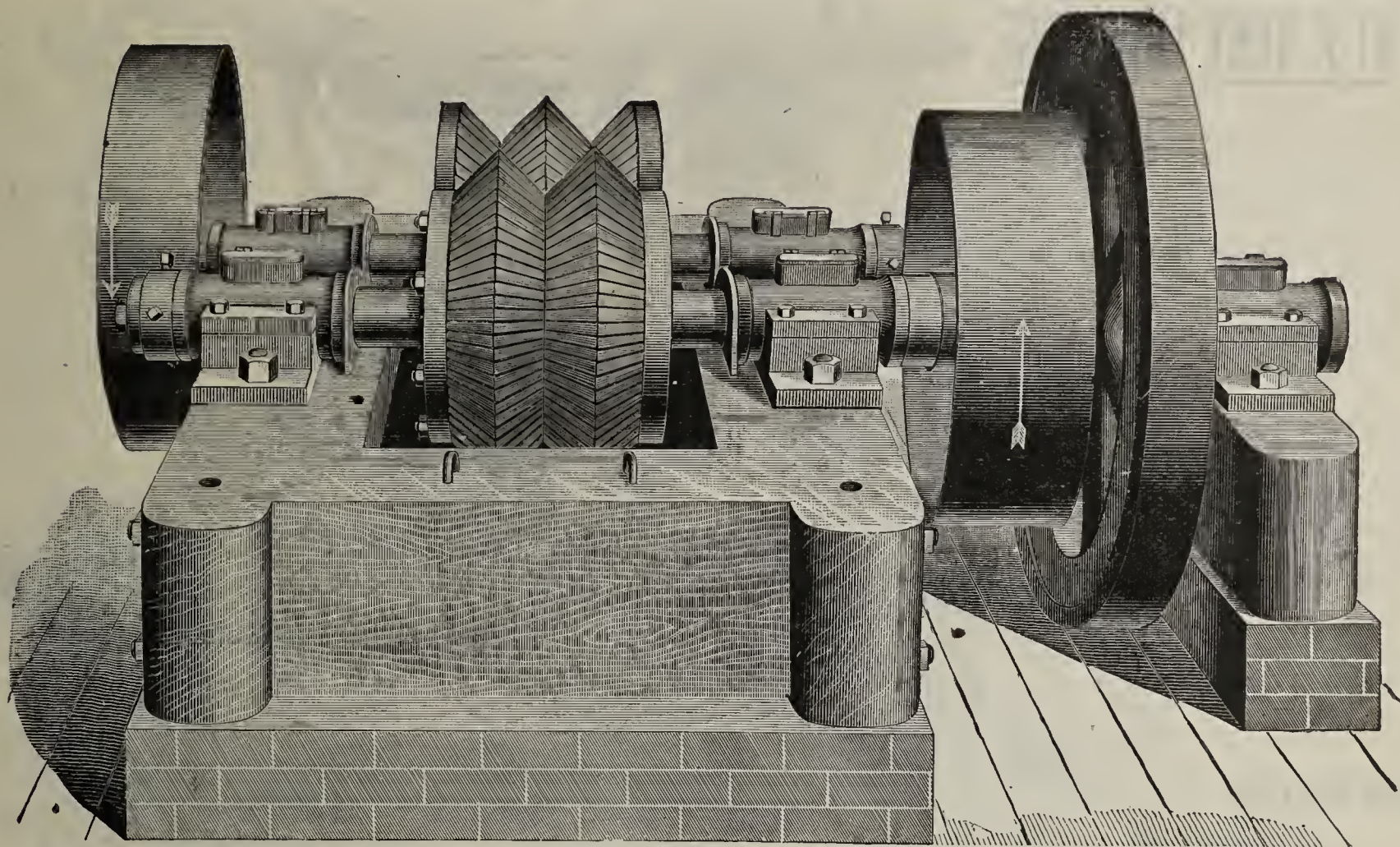
PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



# NEWELL IMPROVED CLAY PULVERIZER

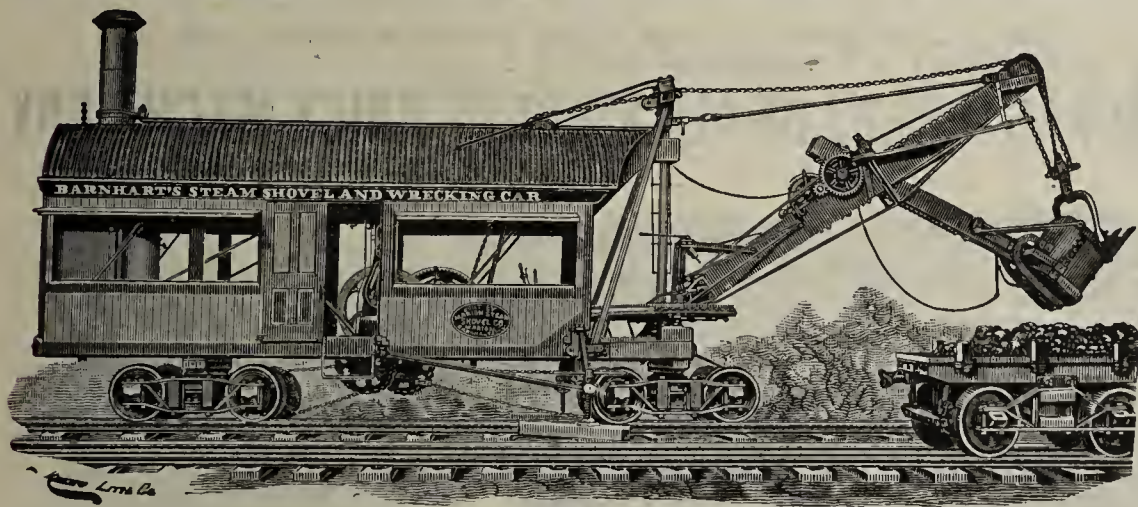
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeier Building, 26 Cortland and 21 Dey Streets, New York, U.S.A.

## STEAM SHOVELS FOR BRICKYARDS.

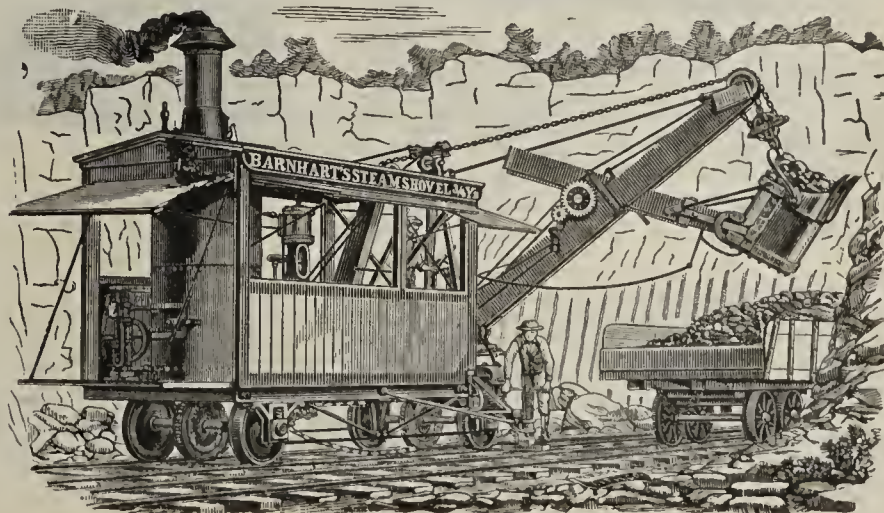


STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have many elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION, OHIO.**

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C—¾ YD



## A SMALL SIZED MACHINE

### AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With **Pug Mill** as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

SAFETY HINGED NOSE PIECE,

STEEL SHAFTS,

EXTRA LONG BEARINGS,

SOLID MAIN FRAME AND TUB

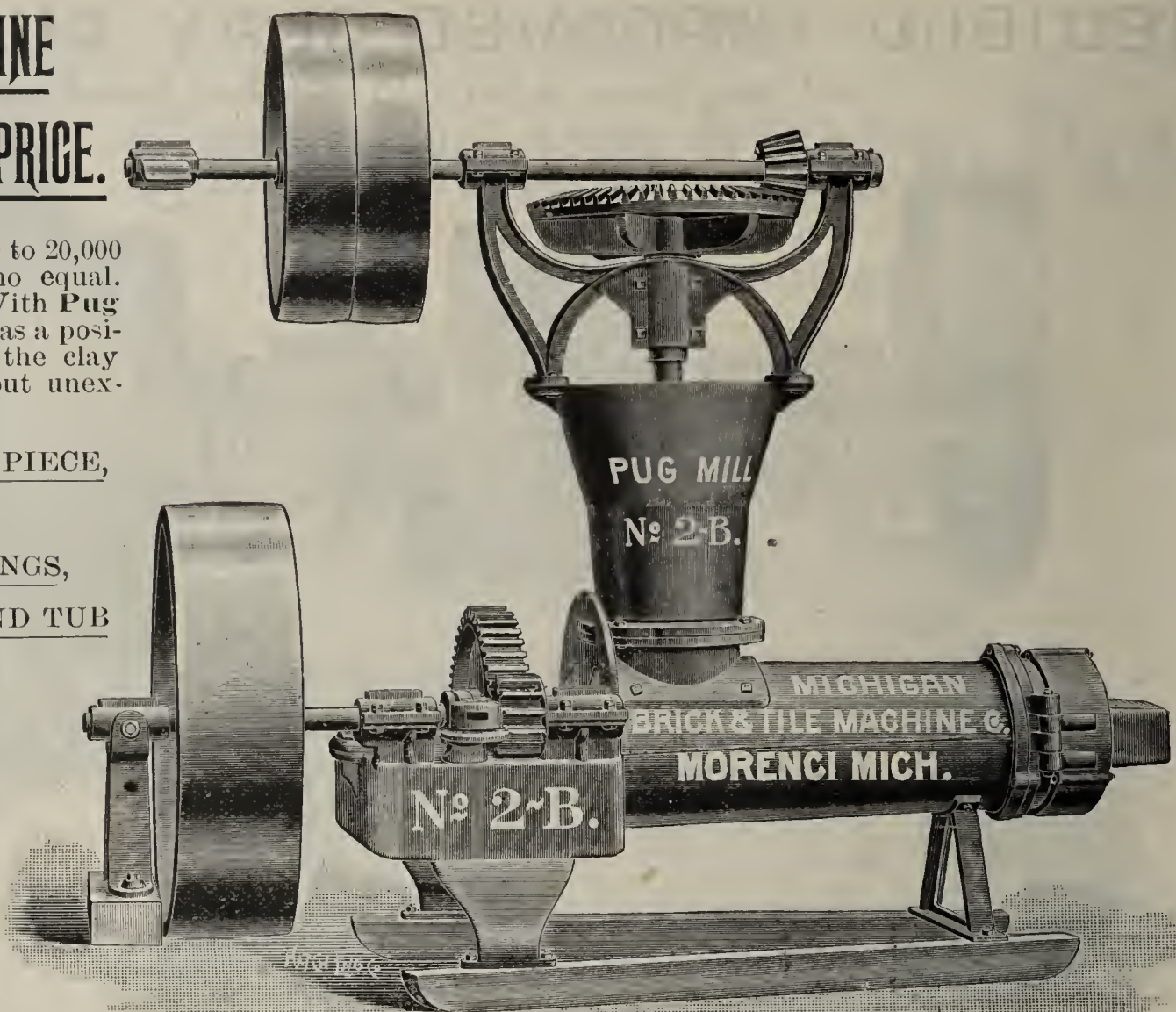
And many other important improvements it is a very desirable machine to have.

Circulars and VERY LOW PRICES quoted intending purchasers.

Address the Manufacturers

**MICHIGAN BRICK AND  
TILE MACHINE CO.,**

Morenci, Mich.

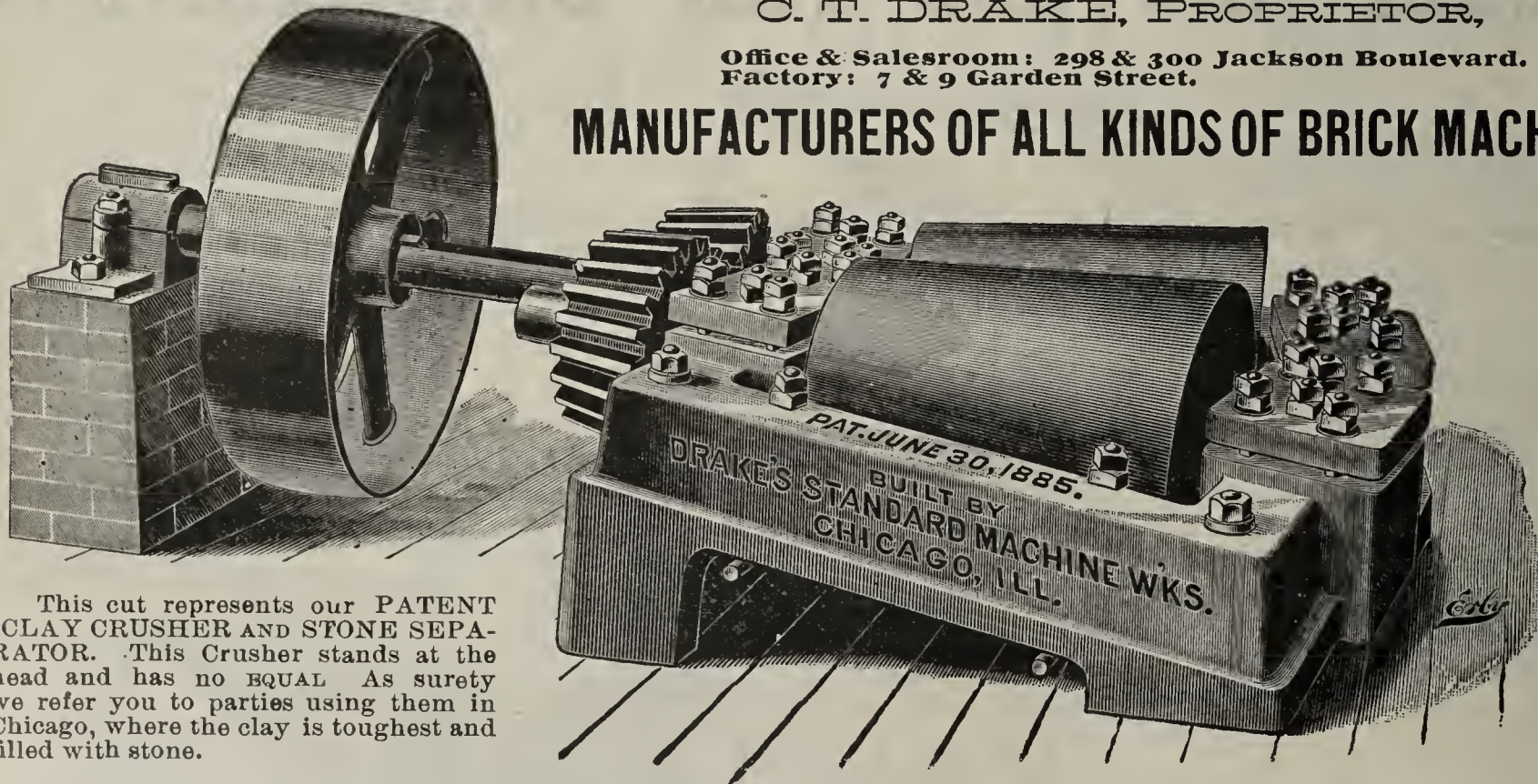


# DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.  
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY

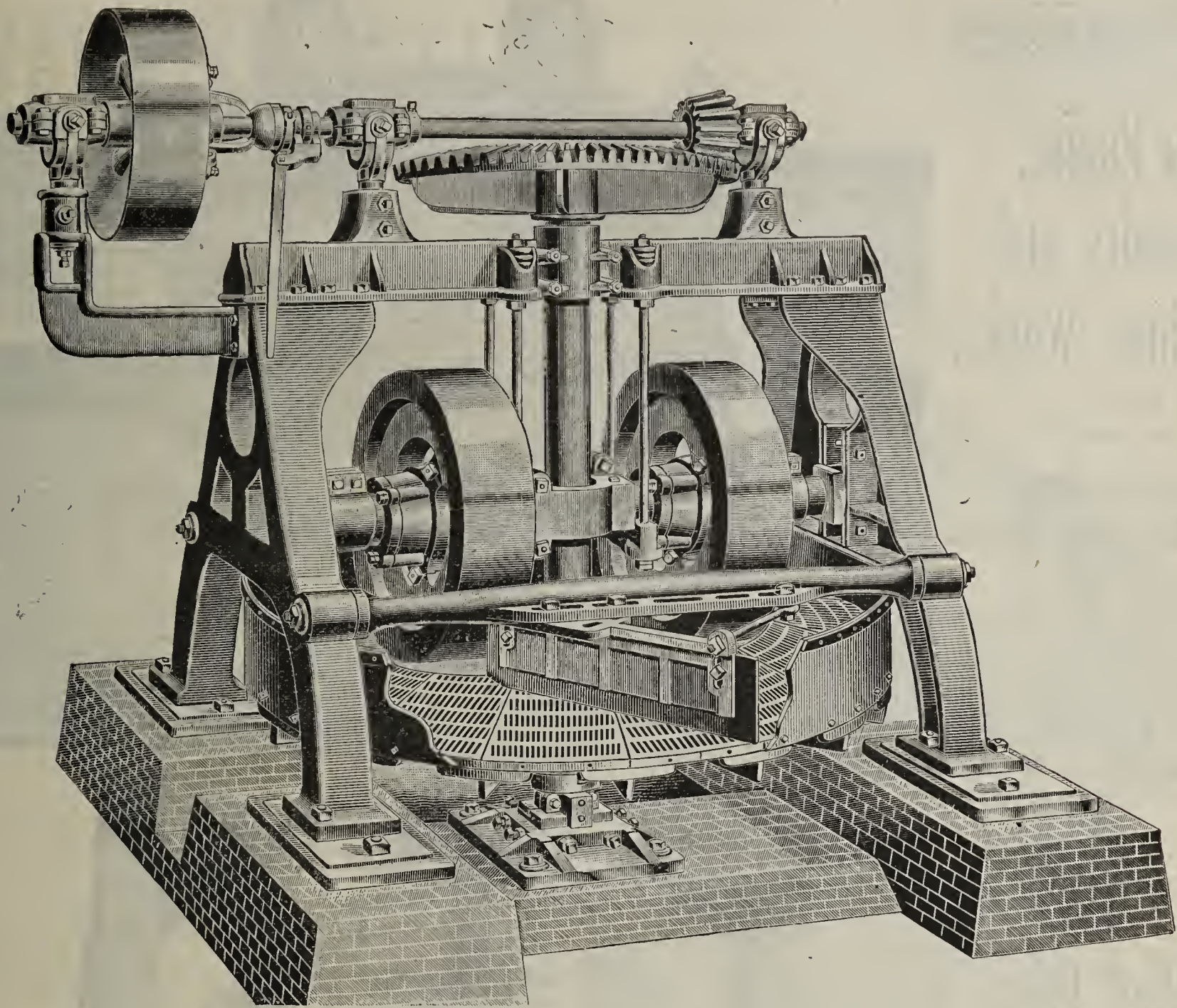


This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

Alsip Brick Co. is running 11 crushers; Hayt & Alsip Co. is running 6 crushers; Purington-Kimbell Brick Co. is running 8 crushers; May, Purington & Bonner B. Co. is running 4 crushers; J. B. Legnard is running 2 crushers; Weckler Brick Co. is running 1 crusher; Adam J. Weckler is running 1 crusher; Weckler Prussing Brick Co. is running 1 crusher; Chicago Brick Co. is running 2 crushers; Union Brick Co. is running 2 crushers; M. Myers is running 2 crushers; Wahl Bros. are running 4 crushers; Pullman Brick Co. is running 2 crushers; Fred Zapel is running 1 crusher; Myers & Toll are running 2 crushers; Harms & Schlake Brick Co. is running 1 crusher; L. Wehrheim & Son are running 1 crusher; Alexander Burke is running 1 crusher; John Sexton is running 1 crusher; John Busse, Jr., & Co. is running 1 crusher; John Busse is running 1 crusher; George Lill is running 2 crushers; Legnard & Madden are running 2 crushers; Turner Brick Co. is running 1 crusher; Mayer & Toll are running 2 crushers; Purington Brick Co. is running 2 crushers; Kuester & Thurnow are running 1 crusher; Reimer, Labahn & Kuester are running 1 crusher; Dumesniel Bros. Co., Louisville, Ky., are running 1 crusher; Mason City Brick & Tile Co., Mason City, Ia., is running 1 crusher; Eagle Clay Works, Streator, Ill., is running 1 crusher.

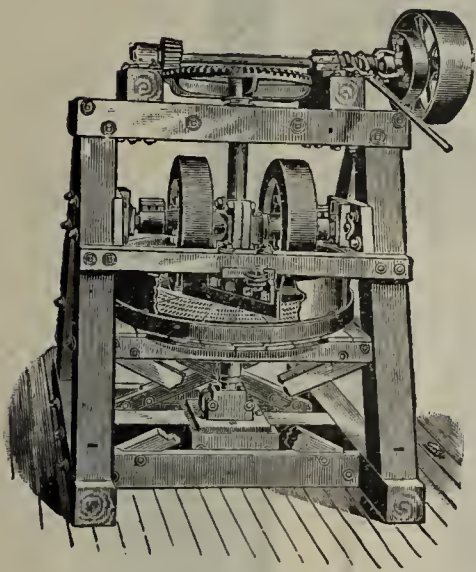
**NOTICE:**—Any parties manufacturing, or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.





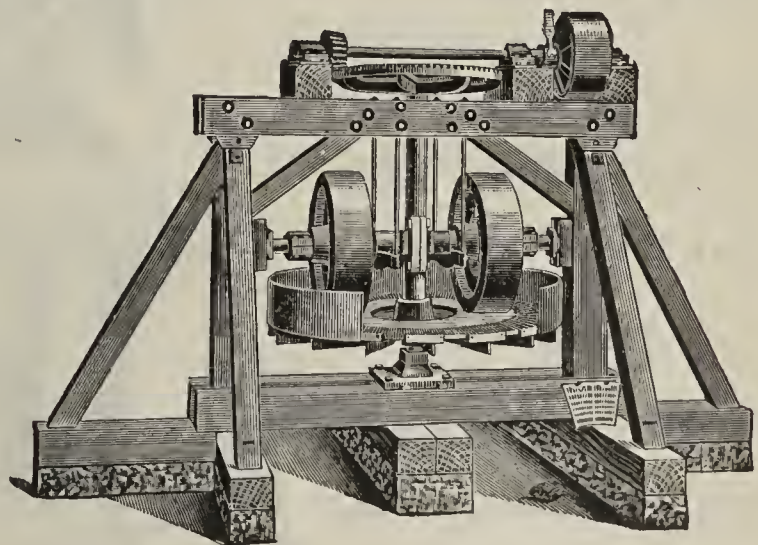
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.



# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

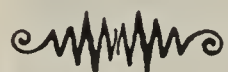
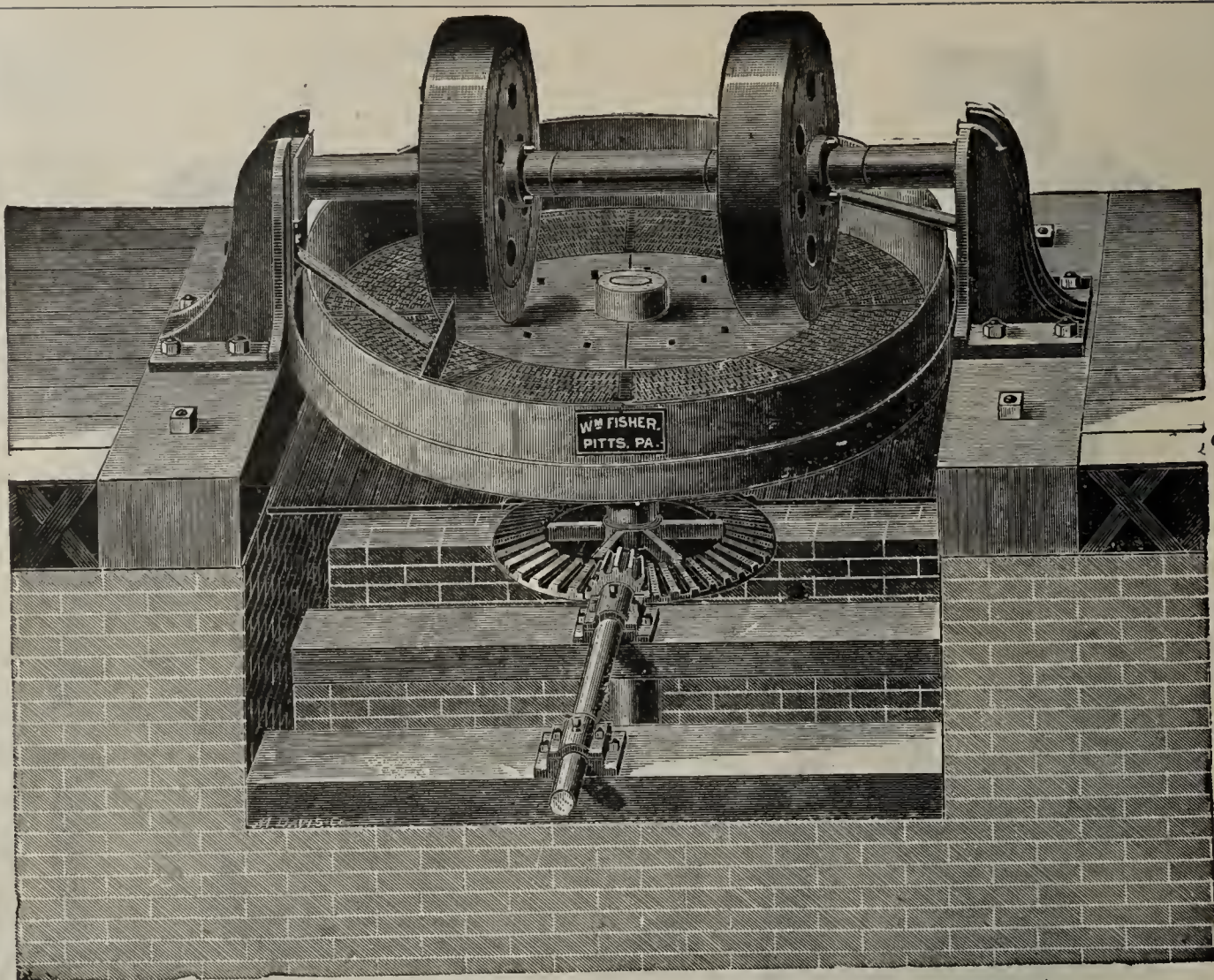
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

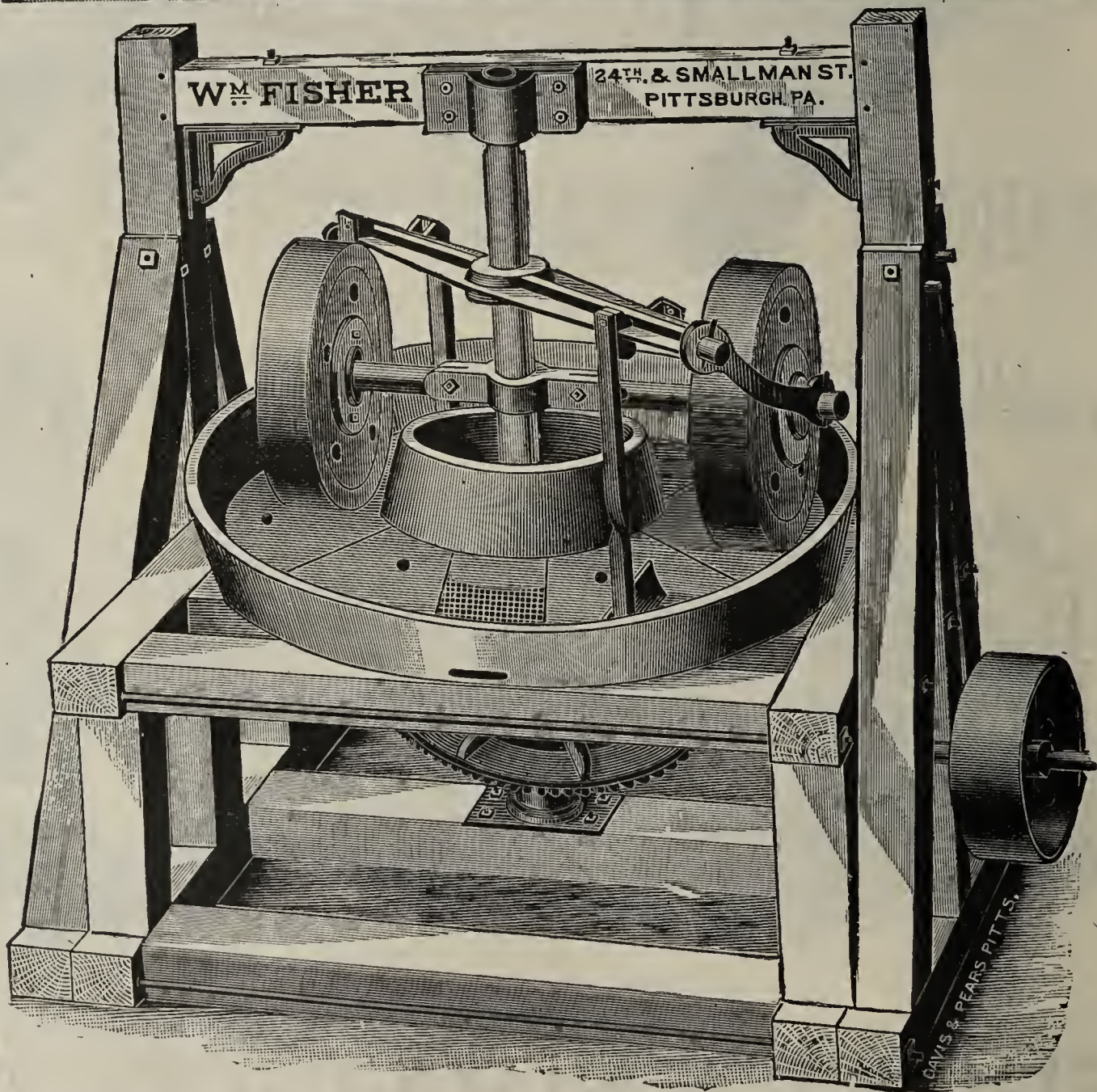
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.

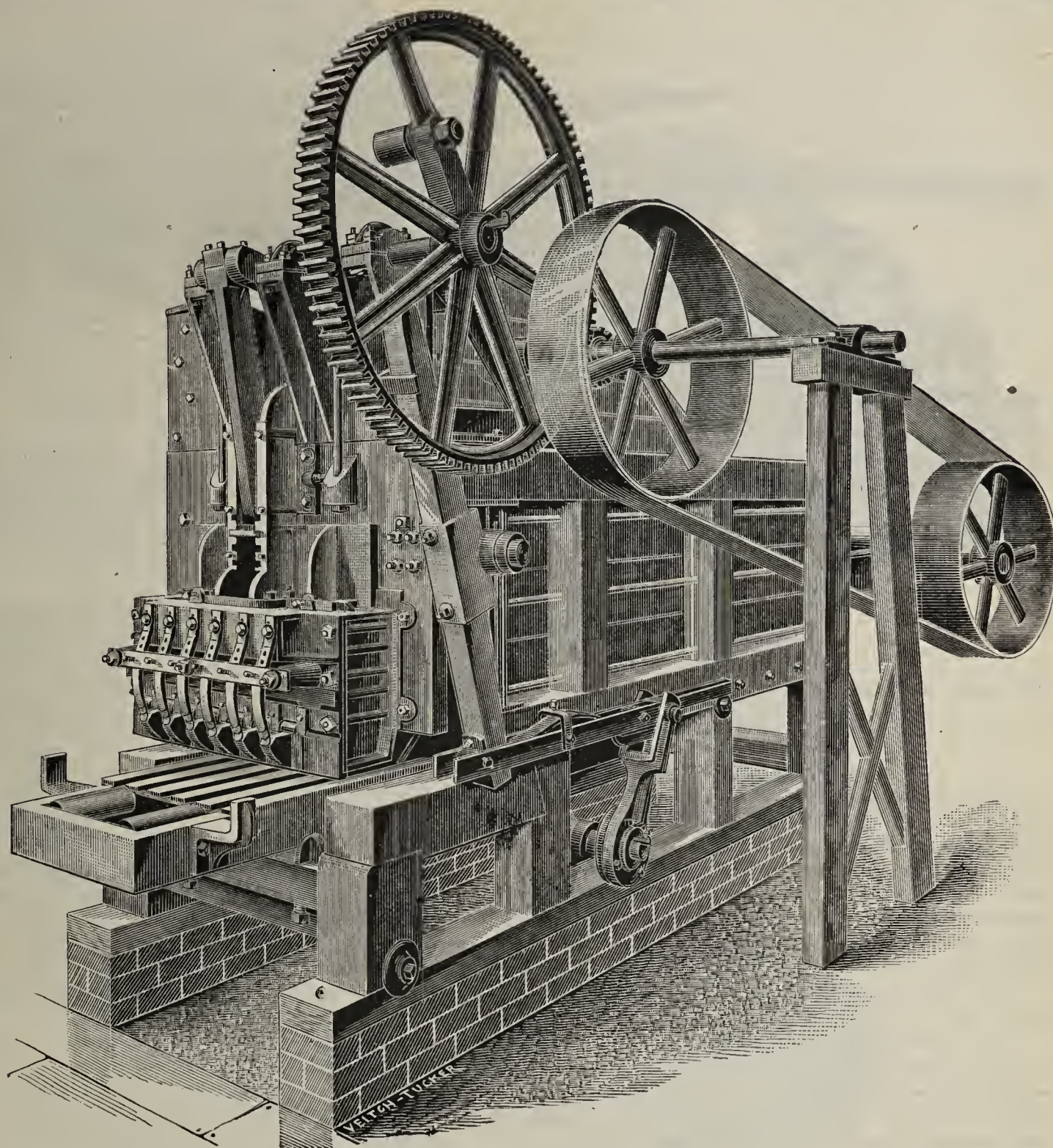


**OVER ONE MILLION**

Bricks Per Month Have Been Made With the First  
Machine We Built Since It Was Started  
Nearly Five Years Ago.



WEIGHT  
NEARLY EIGHT  
TONS.



**Not a Single Day's Work Has Been Lost Through Breakage**

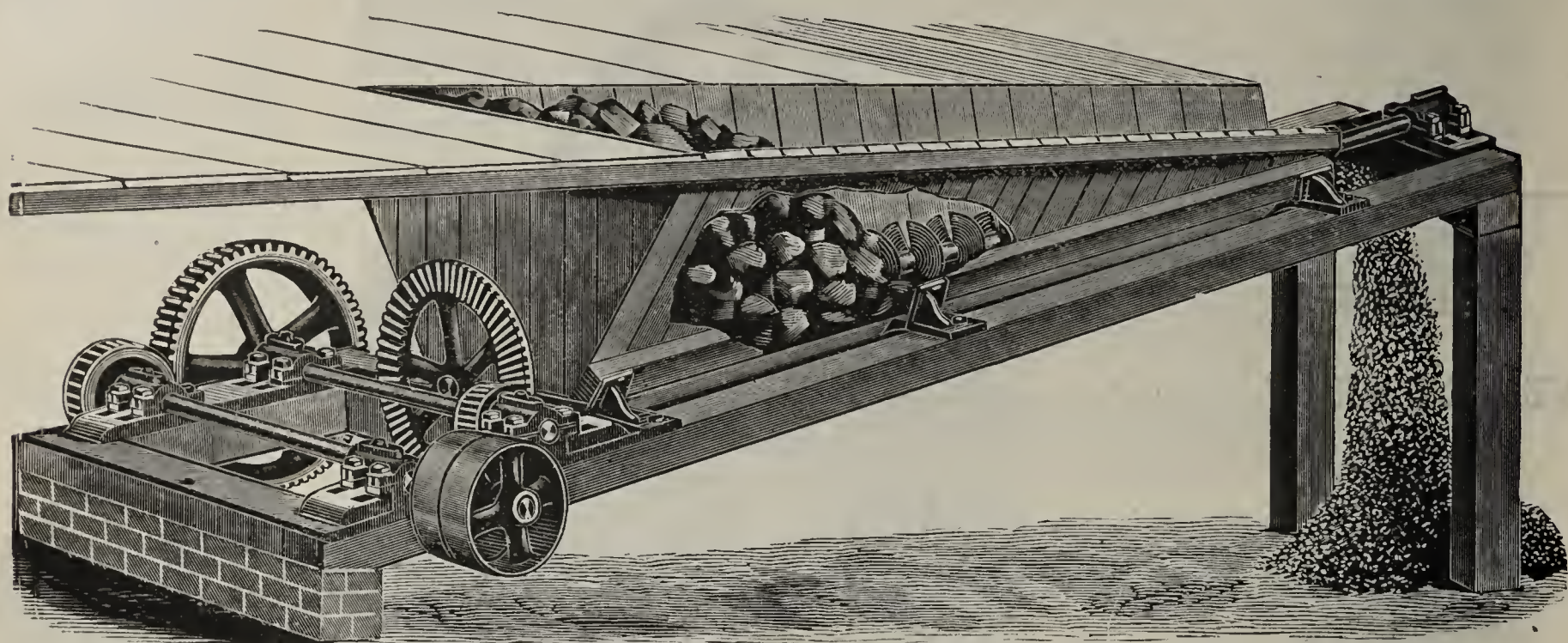
~~~~~  
The "New Haven" is adapted to work any clay, and is suitable for any yard that employs steam for motive power, be it large or small.

~~~~~ We refer with confidence to every purchaser. ~~~~~

**The McLAGON FOUNDRY CO., New Haven, Conn.**



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

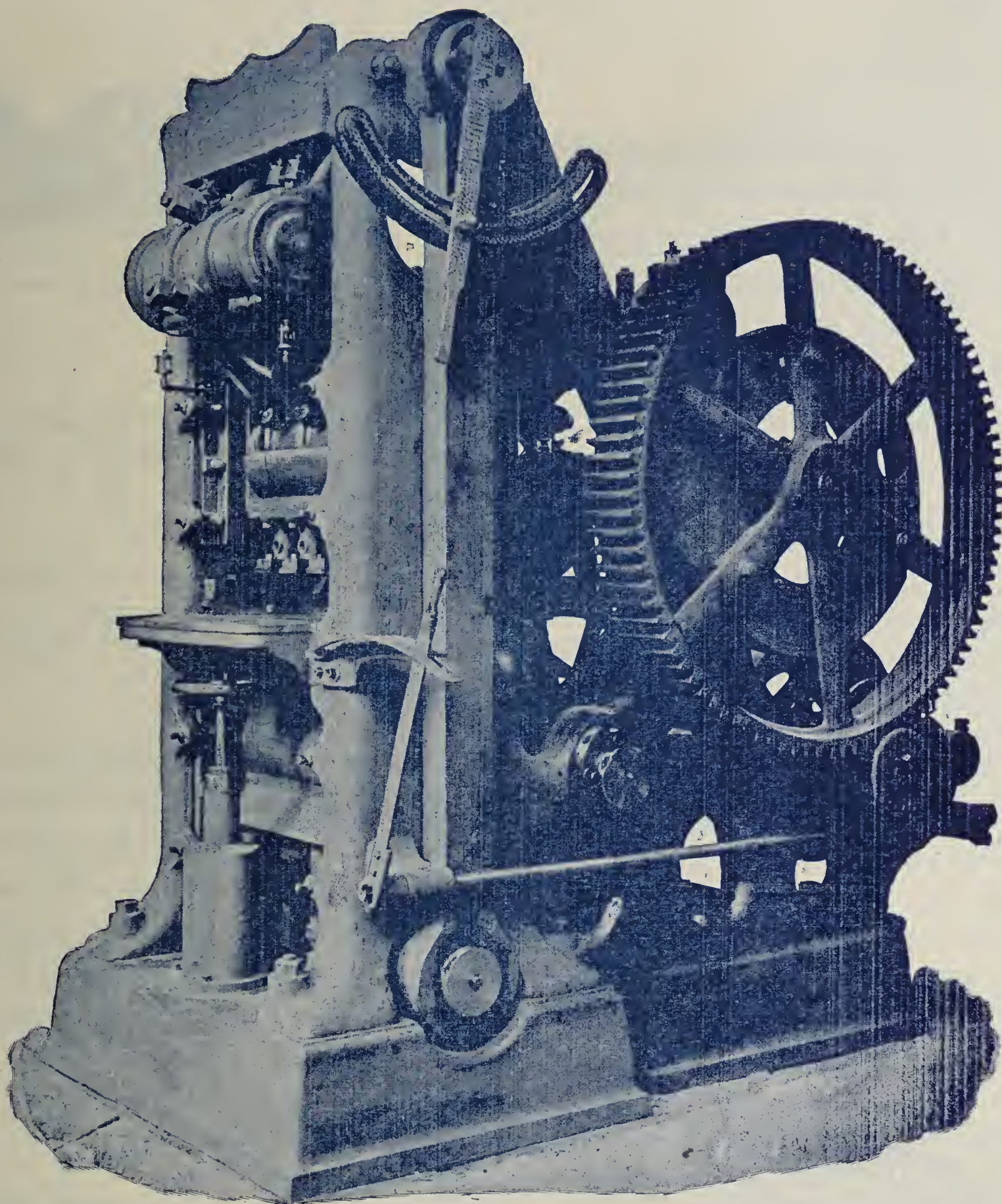
# John Torrent,

Mention Clay-Worker.

MUSKEGON, MICH.



J.W. PENFIELD & SON  
CLAY-WORKING  
MACHINERY  
WILLOUGHBY, O.



Penfield 4-Mold Dry Press Brick Machine.

## The Penfield Dry Press Brick Machine.

The largest, strongest and best machine of the kind upon the market. Send for particulars, or, better still, call at our works and see it in operation.

**J. W. Penfield & Son,**



MANUFACTURERS OF

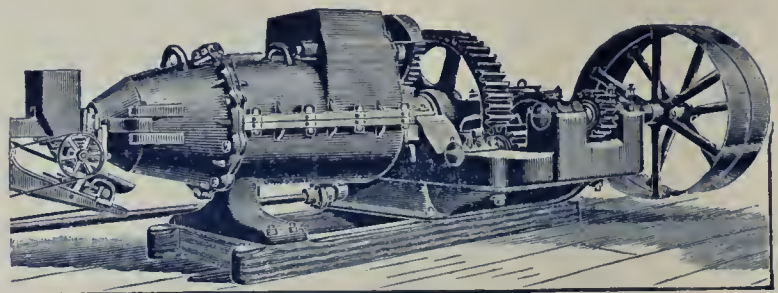
AUGER BRICK MACHINERY,  
PLUNGER BRICK MACHINERY,  
STOCK BRICK MACHINERY, (SAND MOULDING),  
DRY PRESS BRICK MACHINERY,  
SEWER PIPE MACHINERY,  
CLAYWORKING MACHINERY OF ALL KINDS.

WILLOUGHBY, OHIO, U. S. A.

J.W. PENFIELD & SON  
CLAY-WORKING  
MACHINERY  
WILLOUGHBY, O.



## A Proclamation To The Brickmakers.



The Penfield No. 15 Auger Brick Machine.

WHEREAS, the capacities of certain brick machines are notoriously small in proportion to the amount of power required to operate them, and the quality of ware produced by some others is of decidedly inferior quality, and

WHEREAS, the use of such inefficient machinery surely increases the cost of brickmaking or decreases the probability of sales at a remunerative price, thereby greatly reducing the profits justly due to the enterprise and investment of the Brickmaker,

THEREFORE, be it proclaimed that we do urge the brickmakers to serve their own interests by seeing that such machines are discarded and abandoned at once ; and we do also proclaim that the Penfield Auger Brick Machines produce nice, smooth, dense brick, which find ready sale for building and paving ; that the Penfield Automatic Cutter is unexcelled for regularity and accuracy ; that the rated capacities of the Penfield Machines are guaranteed, and that they are strong, durable and first-class in every way and are hereby recommended for the use of all conservative and judicious manufacturers of brick.



Signed and sealed at Willoughby, Ohio, this  
fifteenth day of October, A. D., 1893.

J. W. Penfield & Son.



# BRICK PALLETS.

WE MANUFACTURE ALL KINDS OF

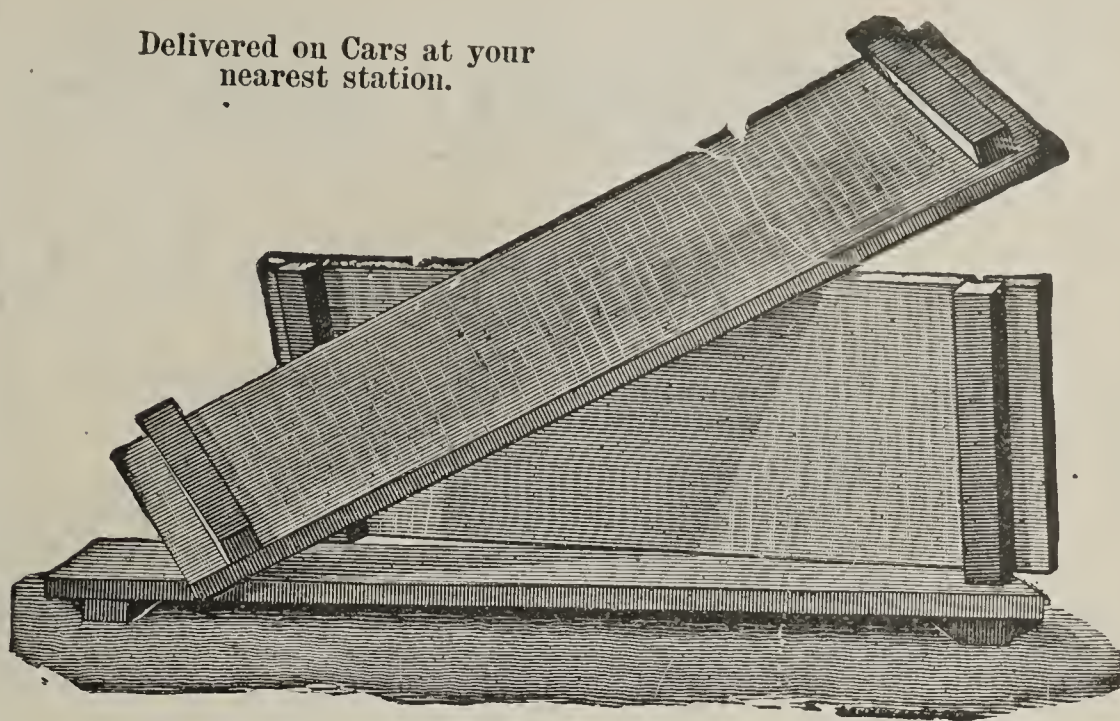
WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,  
PIPE BOARDS, ROOFING LUMBER, ETC.

Write for circulars and prices.

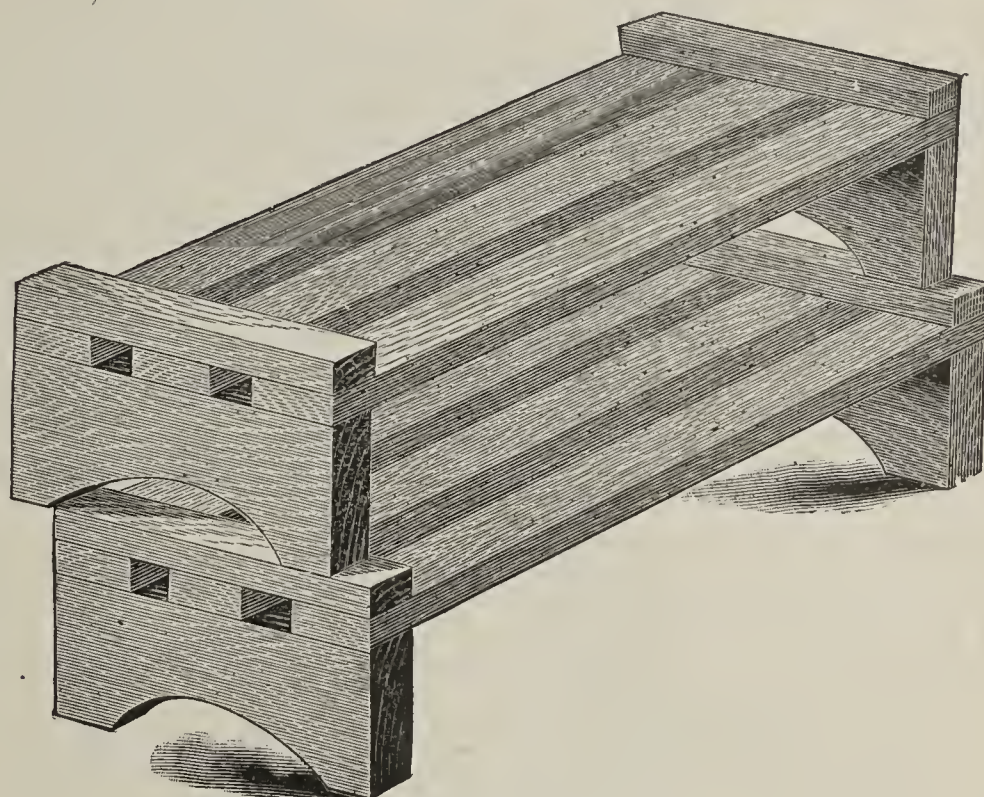
W. B. MERSHON & CO.,

East Saginaw, Mich.

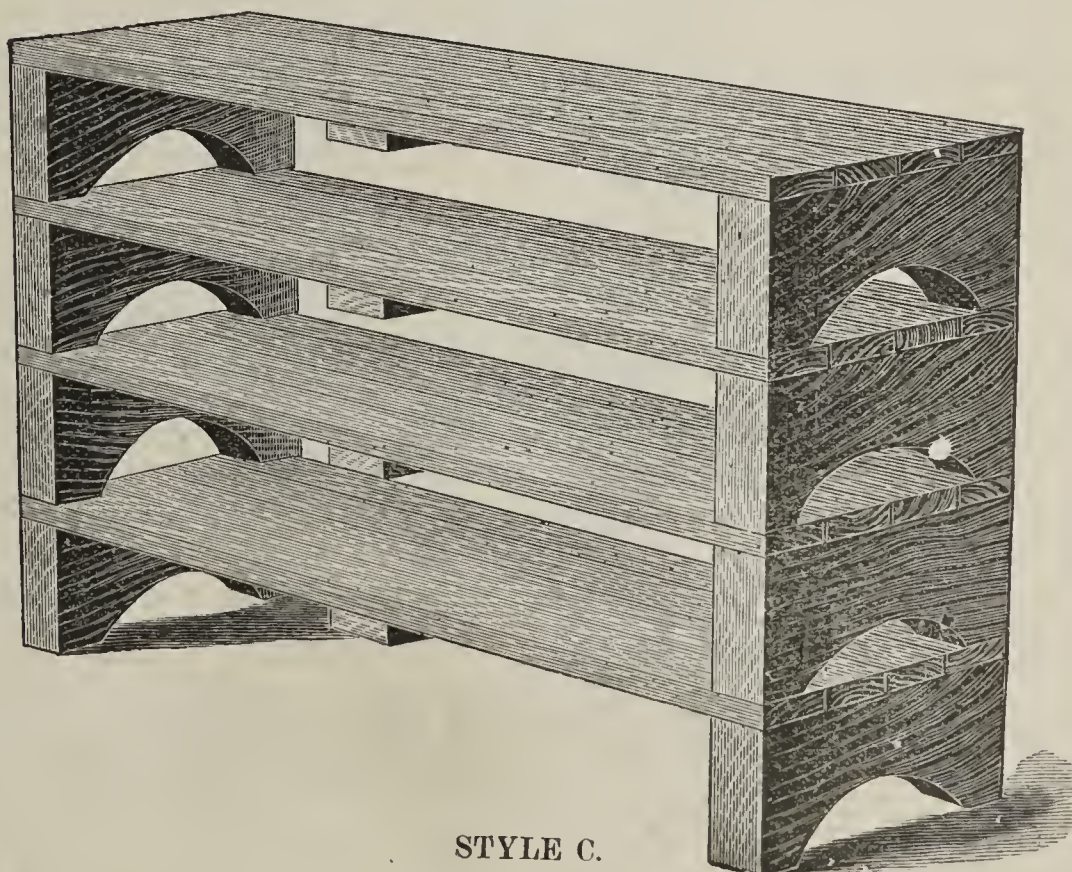
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.



STYLE C.



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6||Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be SOLD AT UNHEARD-OF PRICES.

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold VERY CHEAP. This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

**RUSHVILLE, IND.**

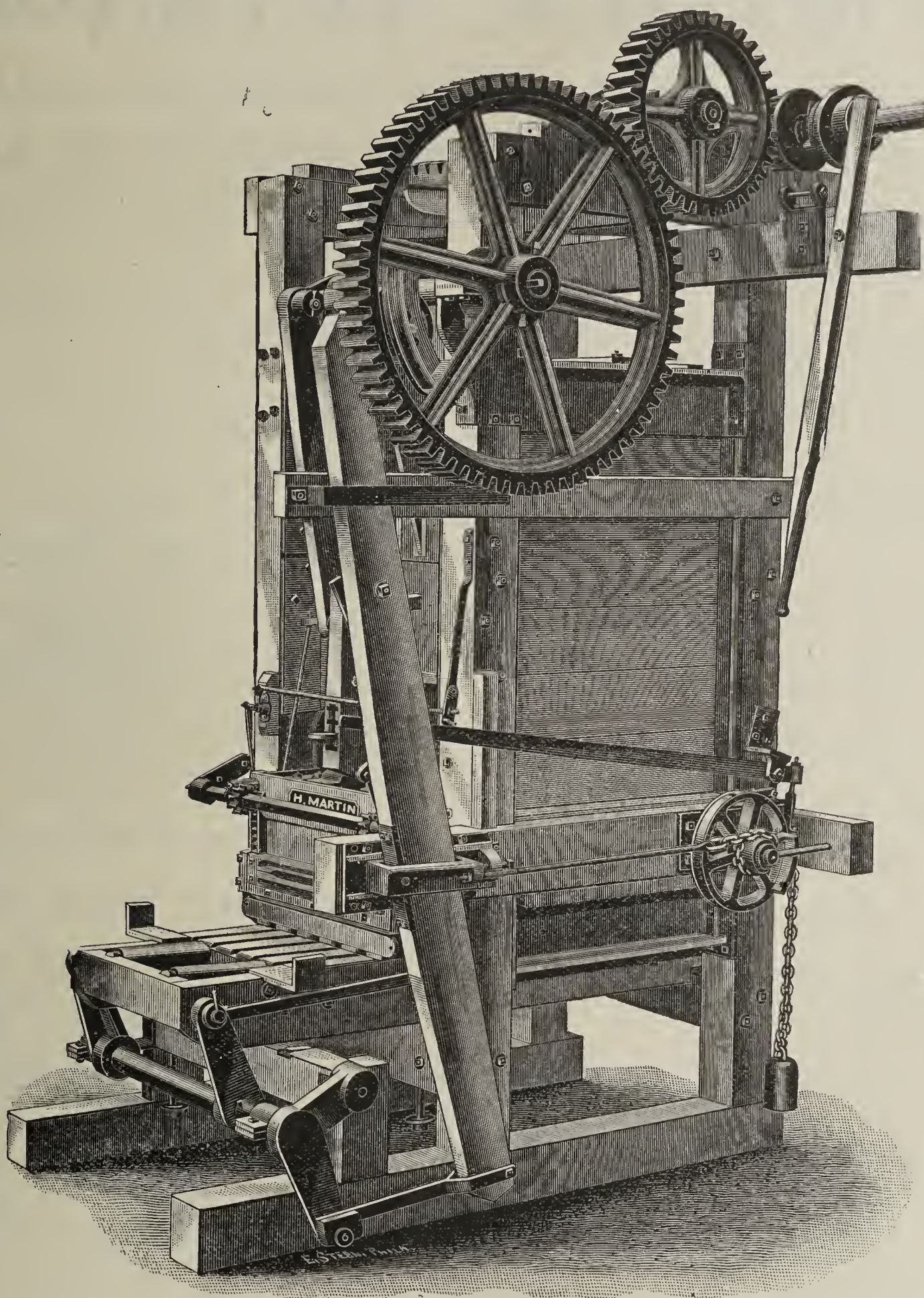
REFERENCE: Rush County National Bank.



# "MARTIN" BRICK MACHINERY.

DIFFERENT STYLES. DIFFERENT SIZES.....  
BUILT FOR STRENGTH AND DURABILITY.

Plans  
and  
Specifica-  
tions  
of  
Complete  
Plants  
Furnished  
Upon  
Application.



Clay  
Tested  
and  
Reports  
Furnished.  
Machines  
in  
Practical  
Operation  
at  
Our  
Works.

The Henry Martin Brick Machine Manufacturing Co. are so well commended to the  
brick interests of the United States that they are well and favorably known.....

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

SEND FOR CATALOGUE.  
SOLE MANUFACTURERS OF "MARTIN" PATENTS.

LANCASTER, PA., U. S. A.



# ANOTHER ADVANCE.

So much attention has been devoted of late years to meeting the demands of large yards, in the way of machinery, that **the wants of small and average capacity yards** have not had much consideration.

For years, our "New Quaker" Horse Power Machine has best met the needs of H. P. yards, but of late they want a H. P. machine to make as stiff a moulded pallet brick as a Steam-Power machine. Therefore, we have **remodeled** our H. P. machine, for the coming season.

**We have given more stroke to the Press.** This, necessitated a stronger machine all through. The **main-shaft has been enlarged** to 3 1/2-inch steel, and **all working parts greatly increased in weight.** For example, the gears in the machine weigh twice as much as formerly.

We also use **a new style of grinder**, which does all the tempering necessary, yet has very little draft, and **the machine pulls lighter** than ever, although it has always been noted for being **easy on the team.**

This machine we call the "**NEW MODEL QUAKER,**" Brick Machine, and are sure it will please brickmakers as much as our previous machines have.

For particulars, address,

## The Wellington Machine Co.,

WELLINGTON, OHIO.

[Mention the Clay-Worker.]



# THE BEST EVIDENCE OF ALL

## 43 Happy Customers

### USING THE "MONARCH" BRICK MACHINE.

**OHIO:**

AKRON, Akron Fire Brick Co. (first pattern).  
 McCausland Brothers.  
 CINCINNATI, John A. Hoesman. (Walnut Hills. Take Eden Park car to Brewster Ave.)  
 TOLEDO, A. E. Macomber.  
 Joseph Gates.  
 Frank E. Tracy.  
 PAINESVILLE, Thompson Bros.  
 MANSFIELD, Rowland, Mulcahy Carmichael.  
 MARTIN'S FERRY, Belmont Brick & Tile Co. (C. H. Carpenter, Mgr.)  
 ASHTABULA, Edward Reid & Sons.  
 JEWETT, Lucas & Shuss.  
 MASSILLON, Warthorst & Co.

**PENN'A:**

GETTYSBURG, F. G. Pfeffer & Co.  
 HAMBURG, Tobias & Co.  
 READING, Simon Kline.  
 SHAMOKIN, McWilliams & McConnell.  
 PITTSBURGH, McGraw Bros., 34th and Liberty Sts.  
 HANOVER, E. H. Snyder.  
 NORRISTOWN, Joseph E. Rapp.  
 UNIONTOWN, Brownfield & Boyle.  
 CHESTER, Wm. G. Price & Son.  
 HOLLIDAYSBURG, Joseph Hart.

SPRING CITY, Diehl & Schantz.  
 BLAIR'S STATION, John T. Chambers & Company.  
 CORAPOLIS, James R. Noss.  
 CARLISLE, A. A. Thompson.  
 WILKESBARRE, Morgan Bros. & Co.

**NEW YORK:**

BUFFALO, Brush Bros.  
 Adams Brick & Terra Cotta Co.  
 UTICA, Callahan & Doyle.  
 Geo. F. Weaver's Sons.  
 LA SALLE, Tompkins & Smith.  
 NIAGARA FALLS, Niagara Brick Co.

**IOWA:**

COUNCIL BLUFFS, Wickham Bros.  
 DES MOINES, Newman Bros.  
 CENTRAL CITY, A. L. Hatch.  
 CLARINDA, J. M. Crabill.

**INDIANA:**

MARION, Tingley & Case.  
 MUNCIE, B. W. Bennett.

**ILLINOIS:**

WOODHULL, C. A. Peck.

**WISCONSIN:**

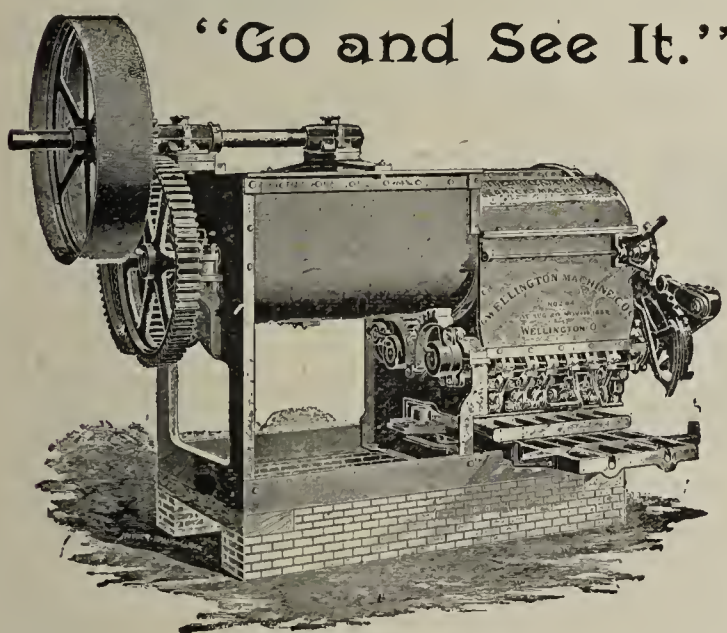
MENOMONIE, Wisconsin Red Pressed Brick Co. (C. L. Alexander, Supt.)

**MICHIGAN:**

SAULT DE STE. MARIE, G. G. Scranton.

**LOUISIANA:**

MONROE, Monroe Brick Co.



"Go and See It."

## WE DON'T WANT YOU TO FORGET THESE FACTS.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double).

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

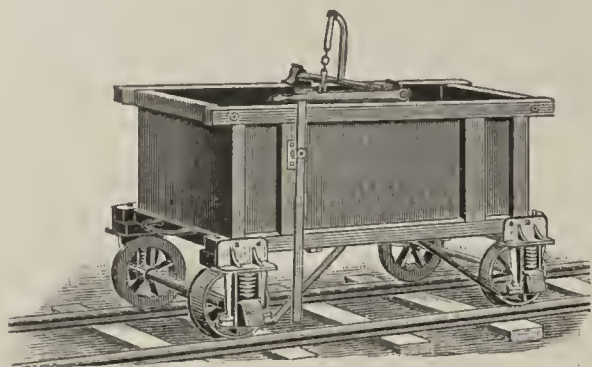
Investigate it now as it is the machine that will last a lifetime, and is Only investigate is all we ask. Don't believe a word we say, only GO AND SEE for yourself.

## The Wellington Machine Co.,

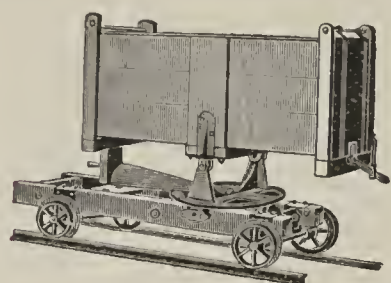
Wellington, Ohio.



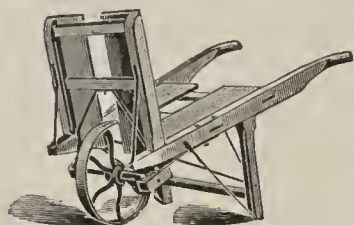
# BRICK YARD SUPPLIES.



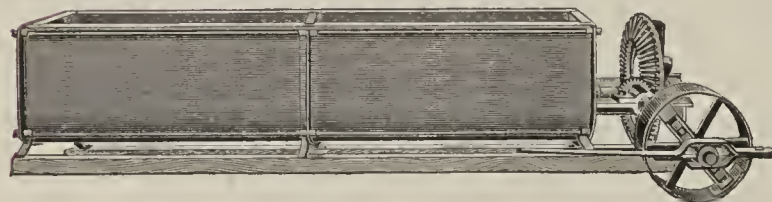
BOTTOM DUMP---Chilled Wheels.



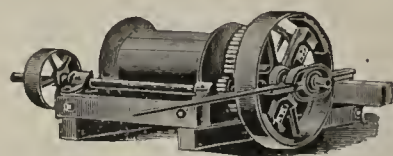
REVOLVING DUMP---Chilled Wheels.



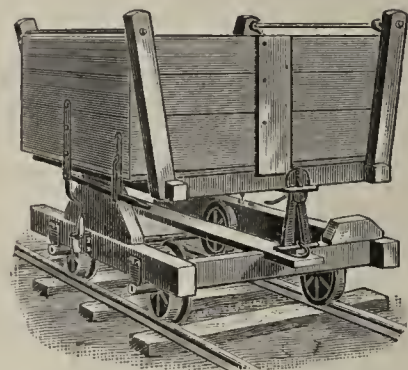
BARROWS.



PUG MILLS.



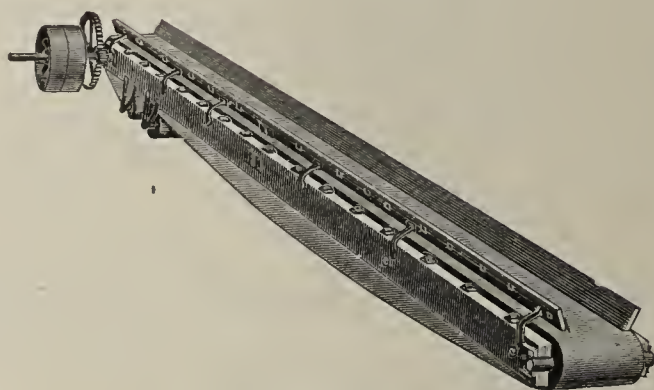
WINDING DRUM.



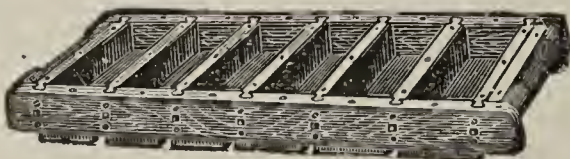
SIDE DUMP---Chilled Wheels.



TRUCKS.



ELEVATORS.



BRICK MOULDS.

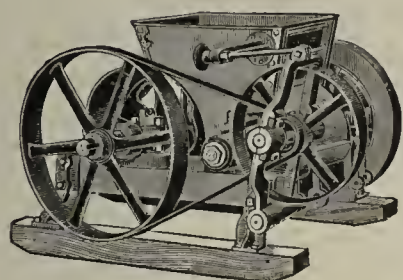
We make the only clay car having chilled wheels.  
 If in need of supplies of any kind we can save you *money*.  
 We manufacture everything used on a Brickyard.  
 When you purchase from us you buy from manufacturers and save all commissions.

**C. & A. POTTS & CO.,**  
**INDIANAPOLIS, - - INDIANA.**

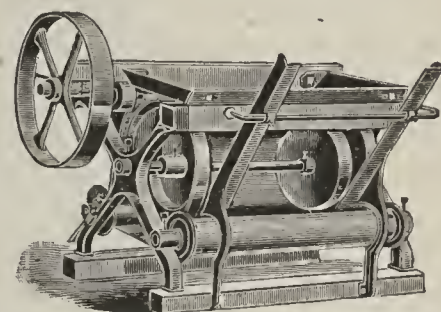
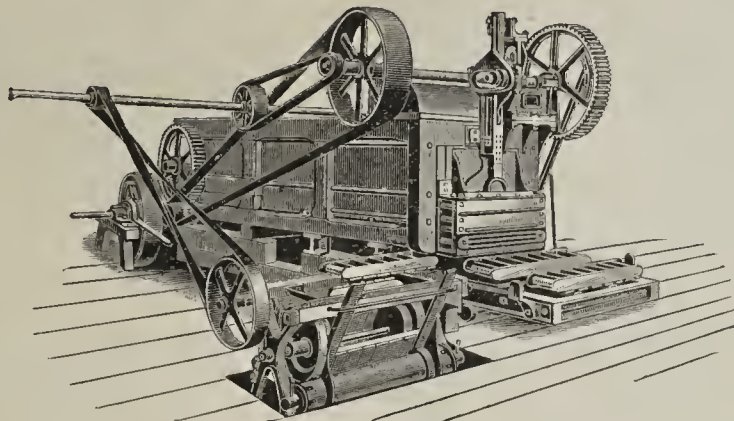


# THE BIG 3

## THE POTTS HORIZONTAL STOCK BRICK MACHINE, DISINTEGRATOR AND MOULD SANDER.



Having Chilled Rolls



Simple in Construction.  
Strong and Durable.

### A Disintegrator

Having **Chilled Rolls**. A machine that will grind hard, lumpy, or wet, sticky clays, and not choke or clog, that will separate or grind the stone. A machine that is simple, strong and durable.

### A Horizontal Stock Brick Machine

Which will work the clay direct from the bank without an extra Pug Mill. It will work the clay so stiff that the brick will not pitch in trucking or spread in drying. It will fill a six brick perfectly. The brick made will have *clean, sharp corners* and *smooth surfaces*. A machine which is *simple in construction, strong and durable*.

### A Mould Sander

Which will sand the Moulds better than can be done by hand, and will make a saving in labor and sand. It does not waste or spill the sand. It will make a saving of 75 cents to \$1.50 per day.

### With the Big 3

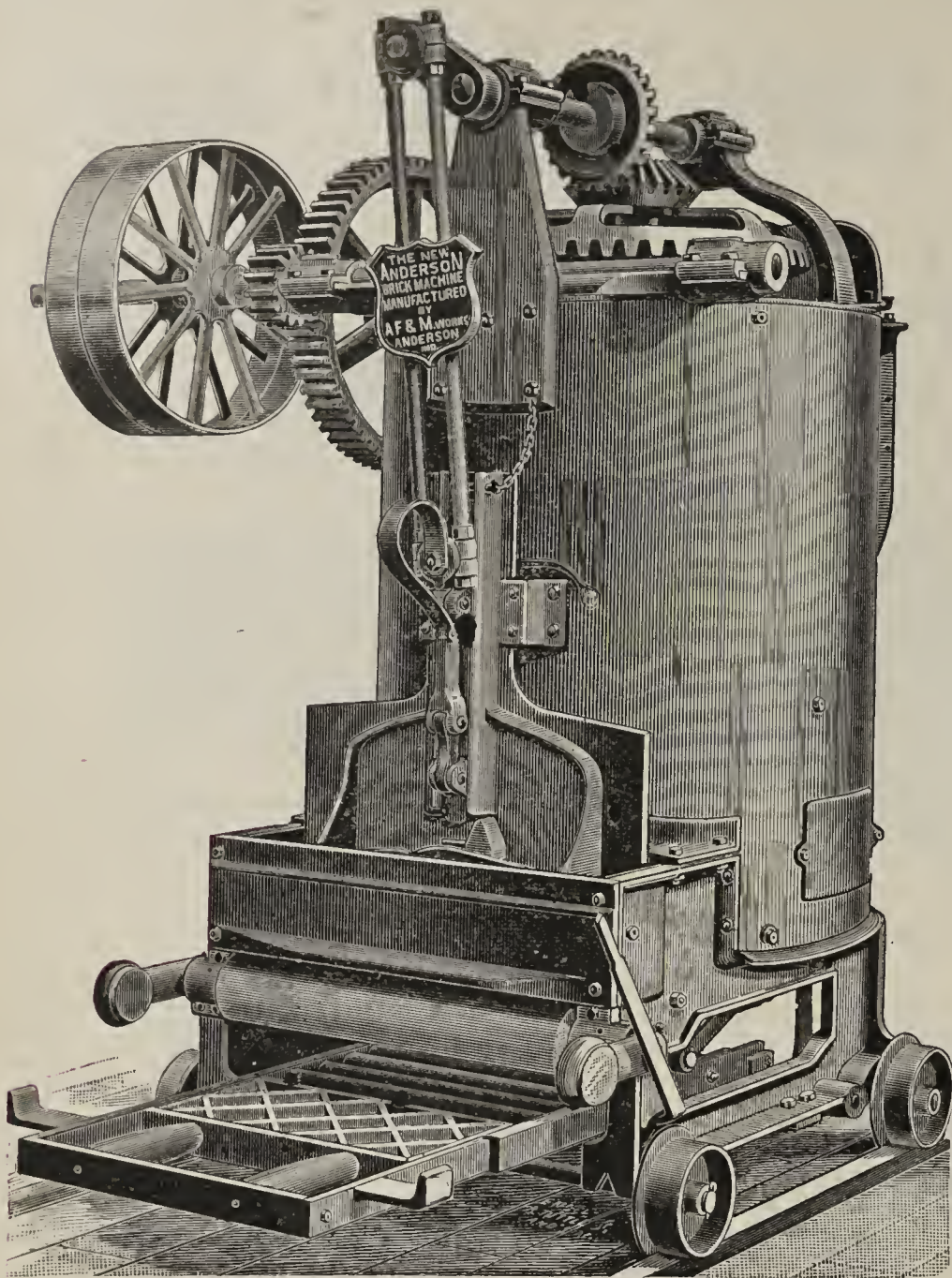
You can make brick which will always bring the highest market price. A brick which will always be in demand.

The above machinery is guaranteed to do the work and will be shipped on trial.  
For further information, address

## C. & A. POTTS & CO.,

INDIANAPOLIS IND.





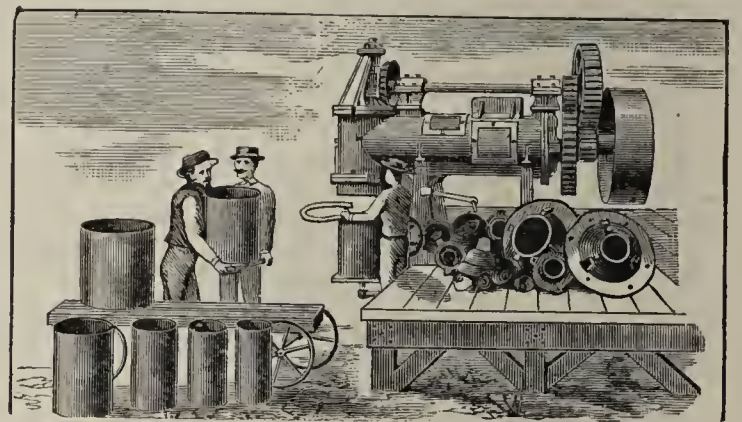
## THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.

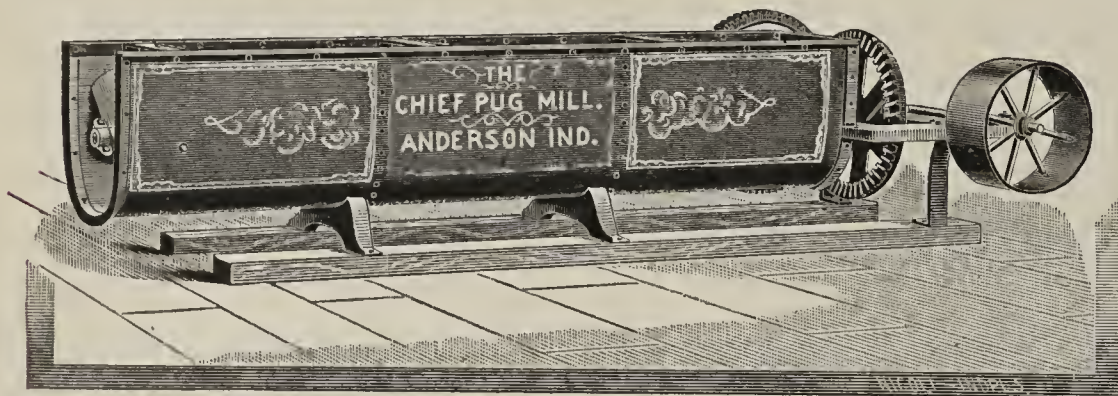


## The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.

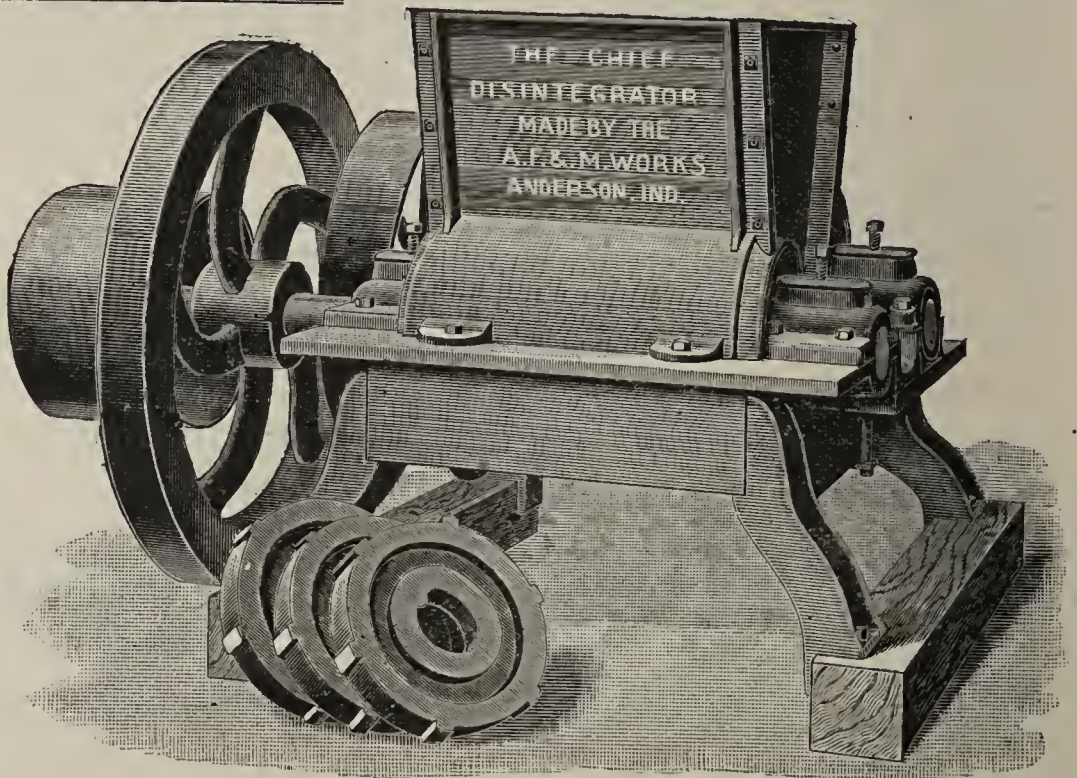


## The Chief Disintegrator and Stone

### SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 1/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.



[Mention the Clay-Worker.]

Correspondence Solicited.



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

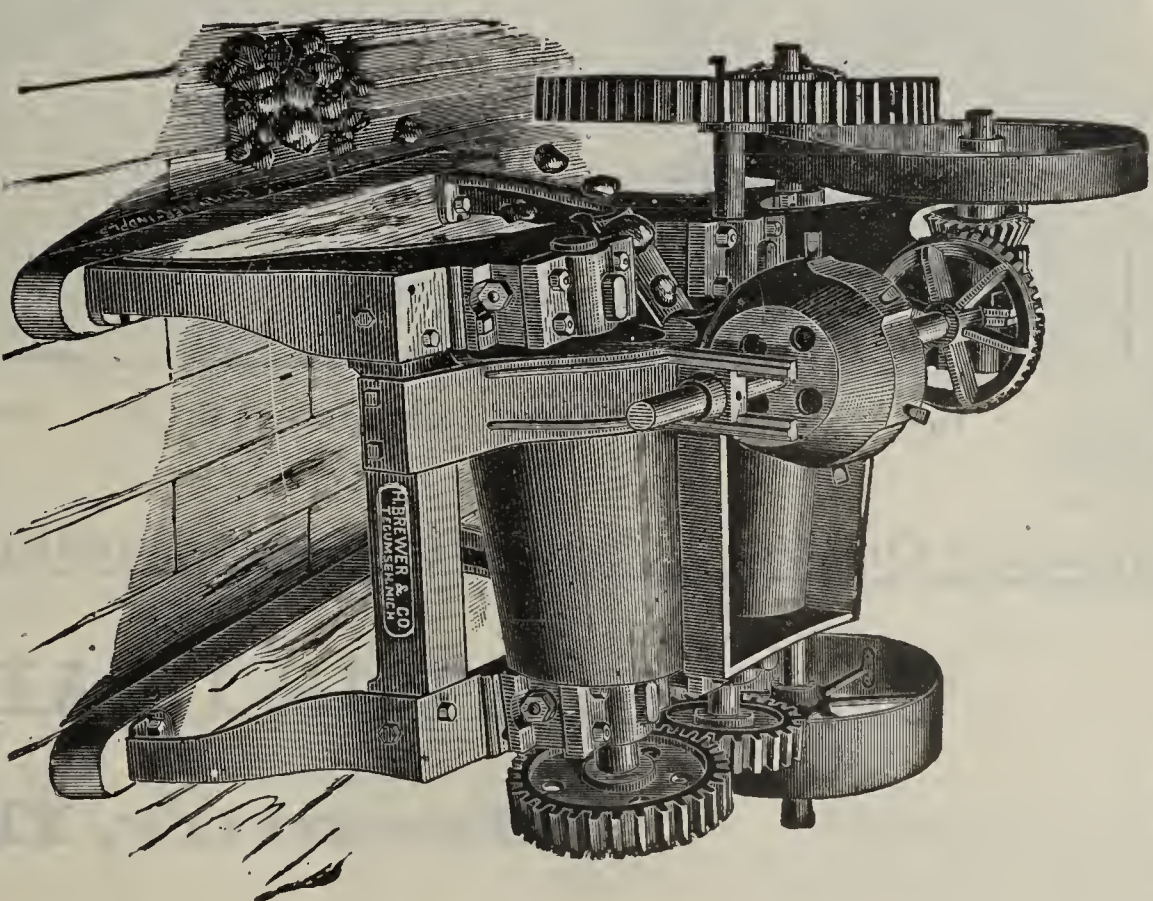
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

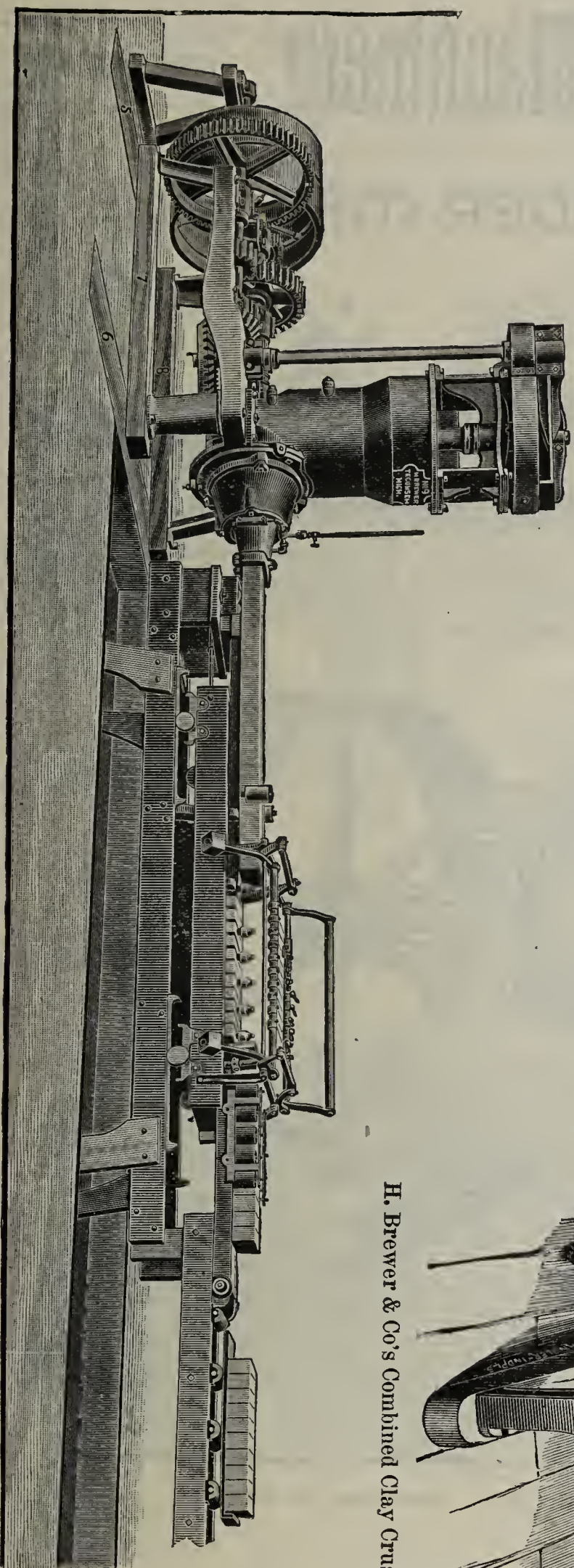
For full information address

### H. BREWER & CO.,

[Mention the Clay-Worker.]  
**Tecumseh, Mich.**



H. Brewer & Co's Combined Clay Crusher and Stone Separator.



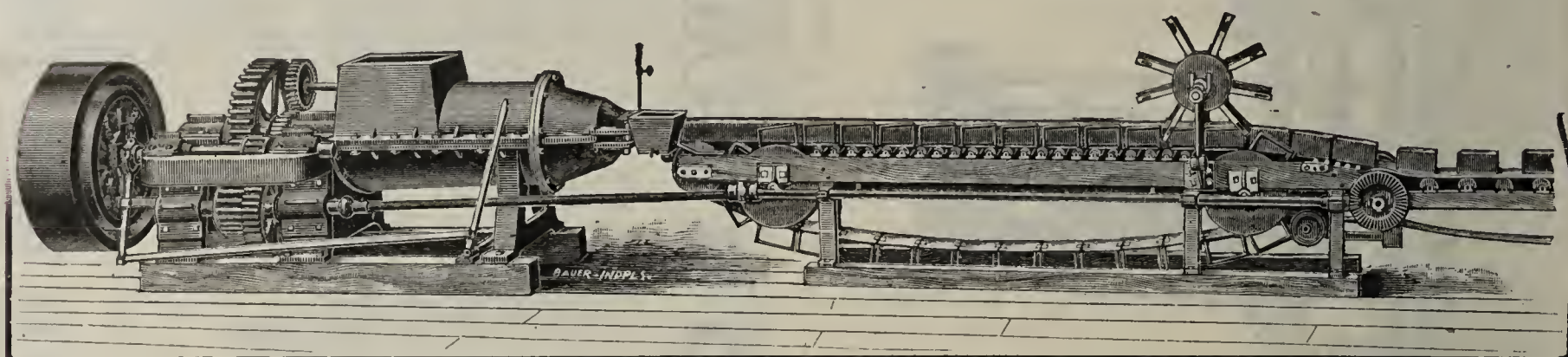
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



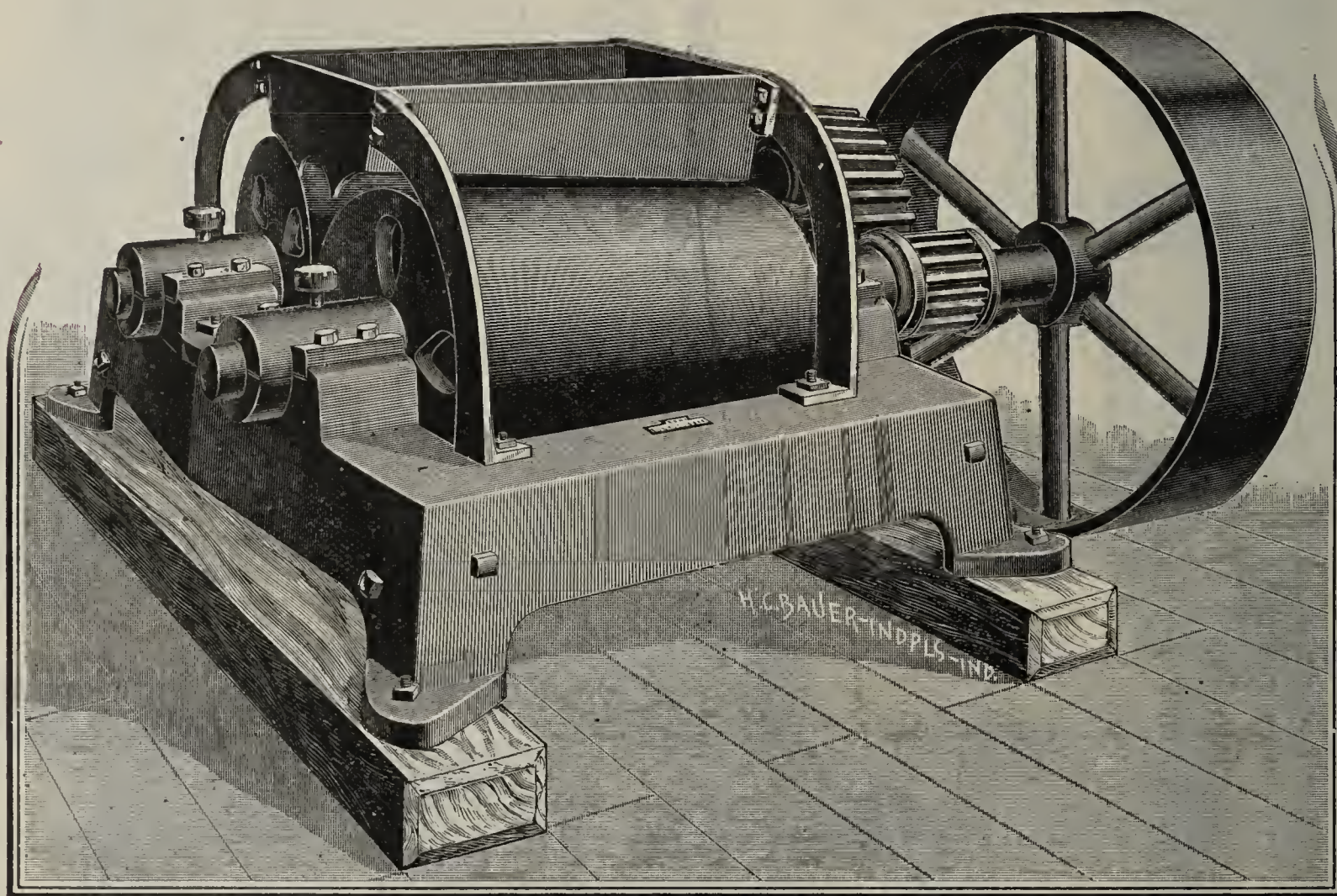
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

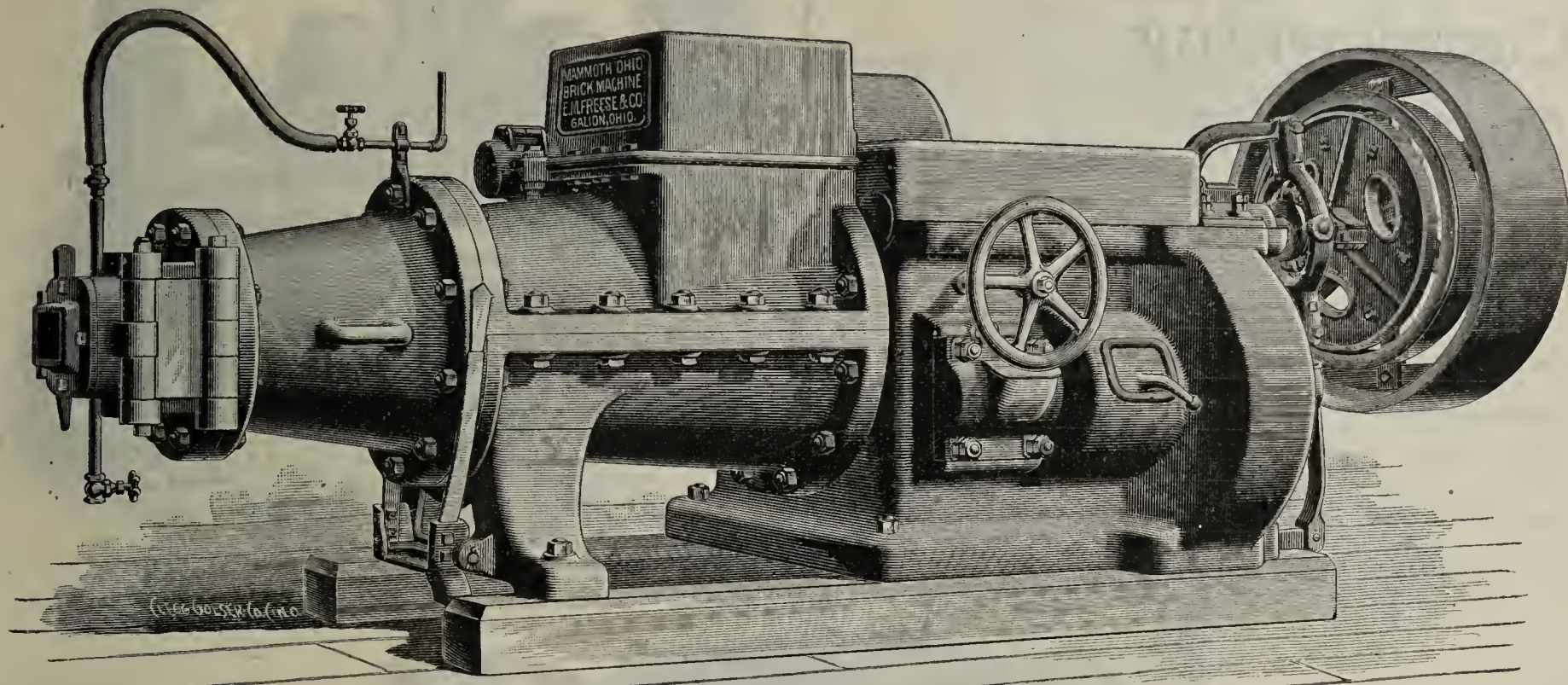
[Mention the Clay-Worker.]

Decatur, Ill., U. S. A.



# SUPERIOR BRICK MACHINERY.

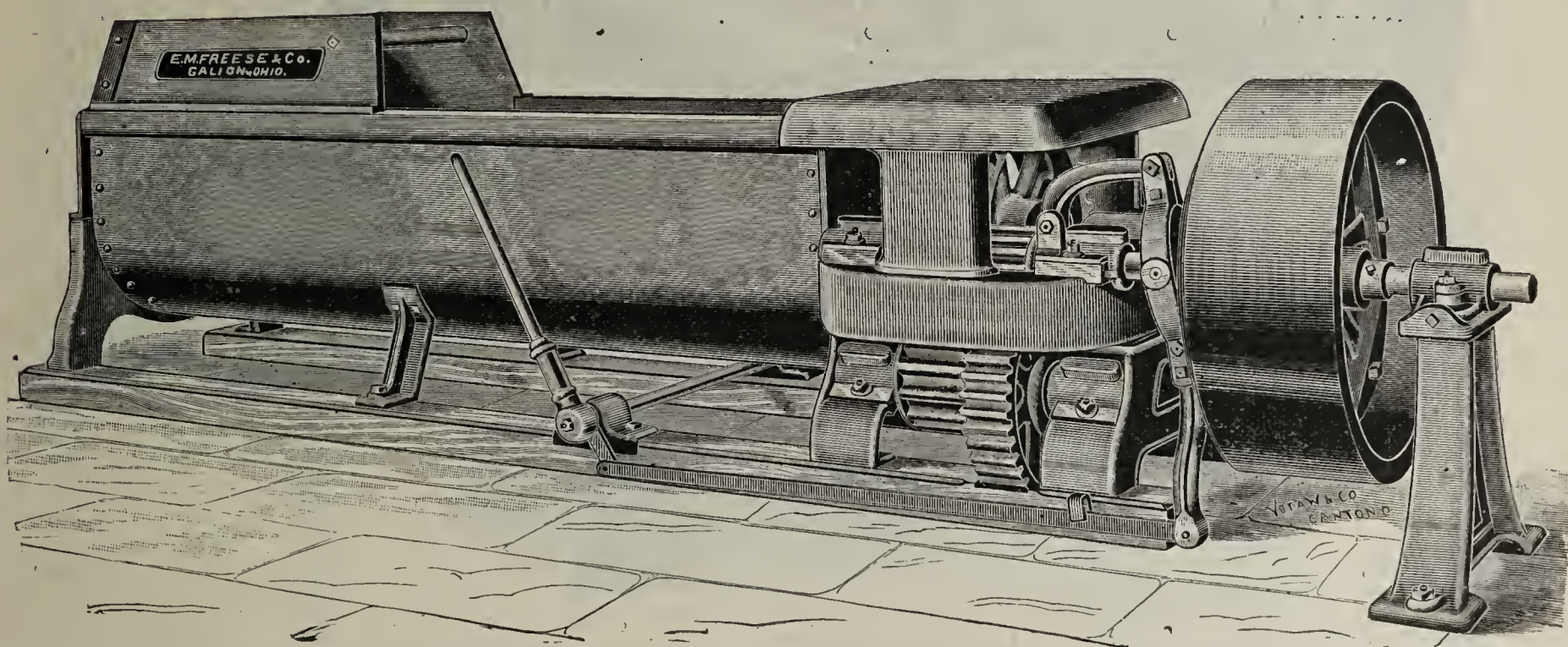
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

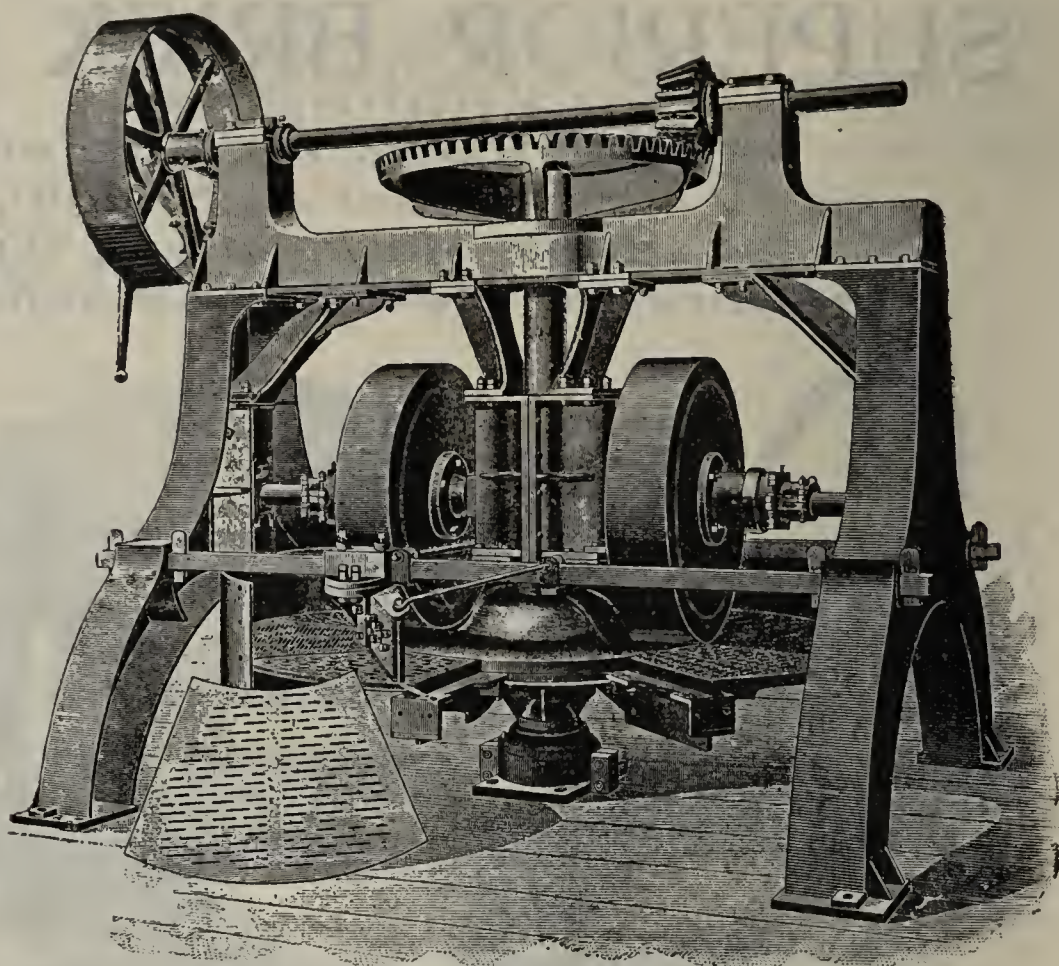
ADDRESS **E. M. FREESE & CO.,**  
GALION, OHIO.



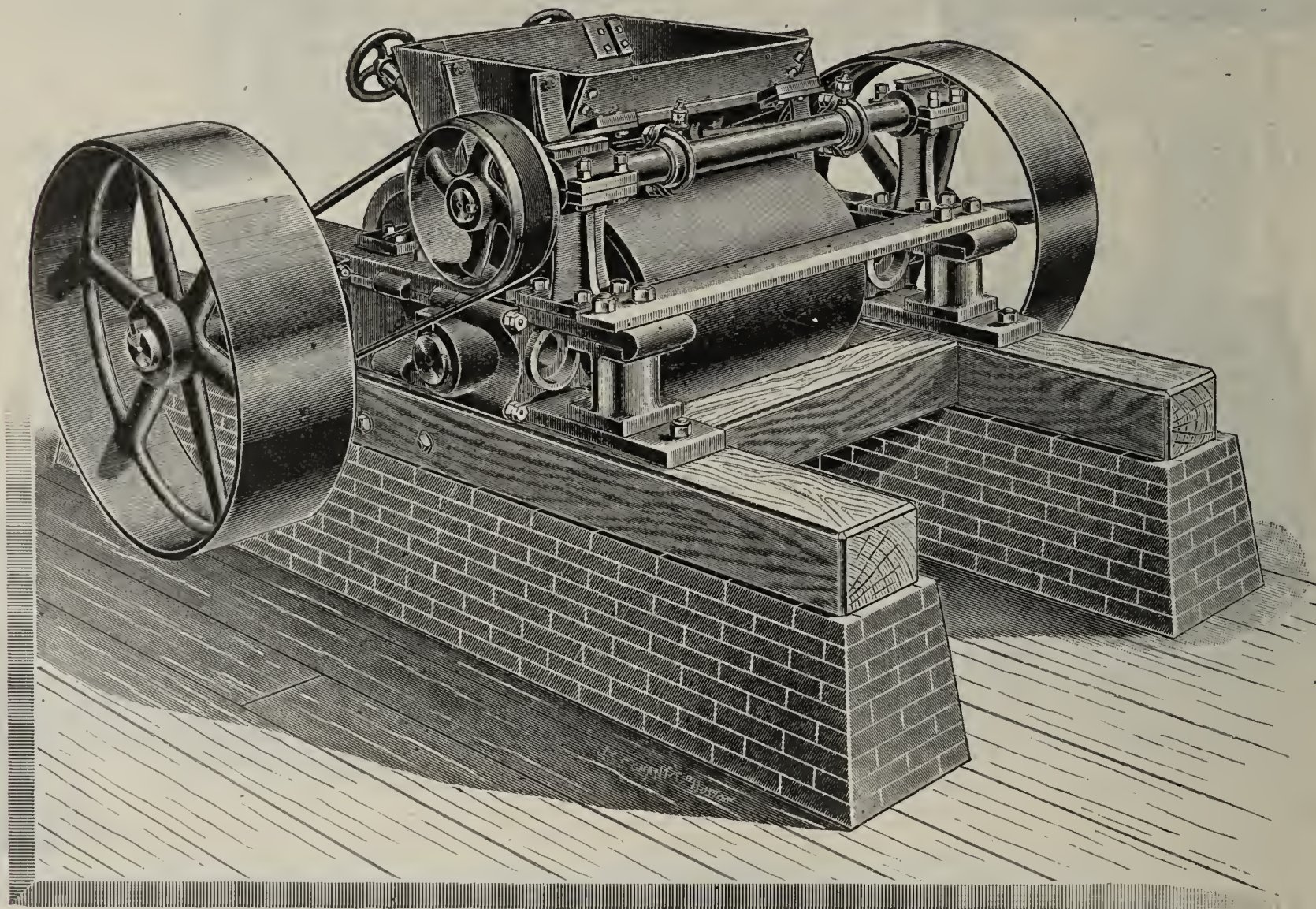
# The Frey= Sheckler Company Clayworking Machinery



Brick, Tile and Terra Cotta Machinery,  
Cutting Tables, Dry-Pans, Wet Pans, Crushers,  
Reduction Mills, Pug Mills, Winding Drums,  
Dump -Cars, Clay Conveyors, Clay Screens,  
Brick and Tile Trucks, Engines and Boilers,  
Line Shafting, Pulleys, Belting, Etc.



Nine Foot Diameter All Iron and Steel Dry-Pan.



Tailings Crusher. Size of Rolls 20x26 in.

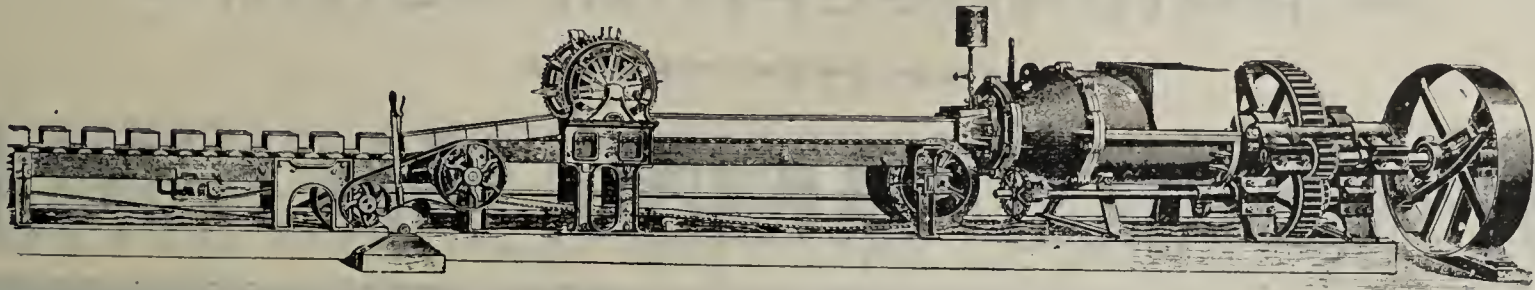
## The Frey-Sheckler Co.,

[Mention the Clay-Worker.]

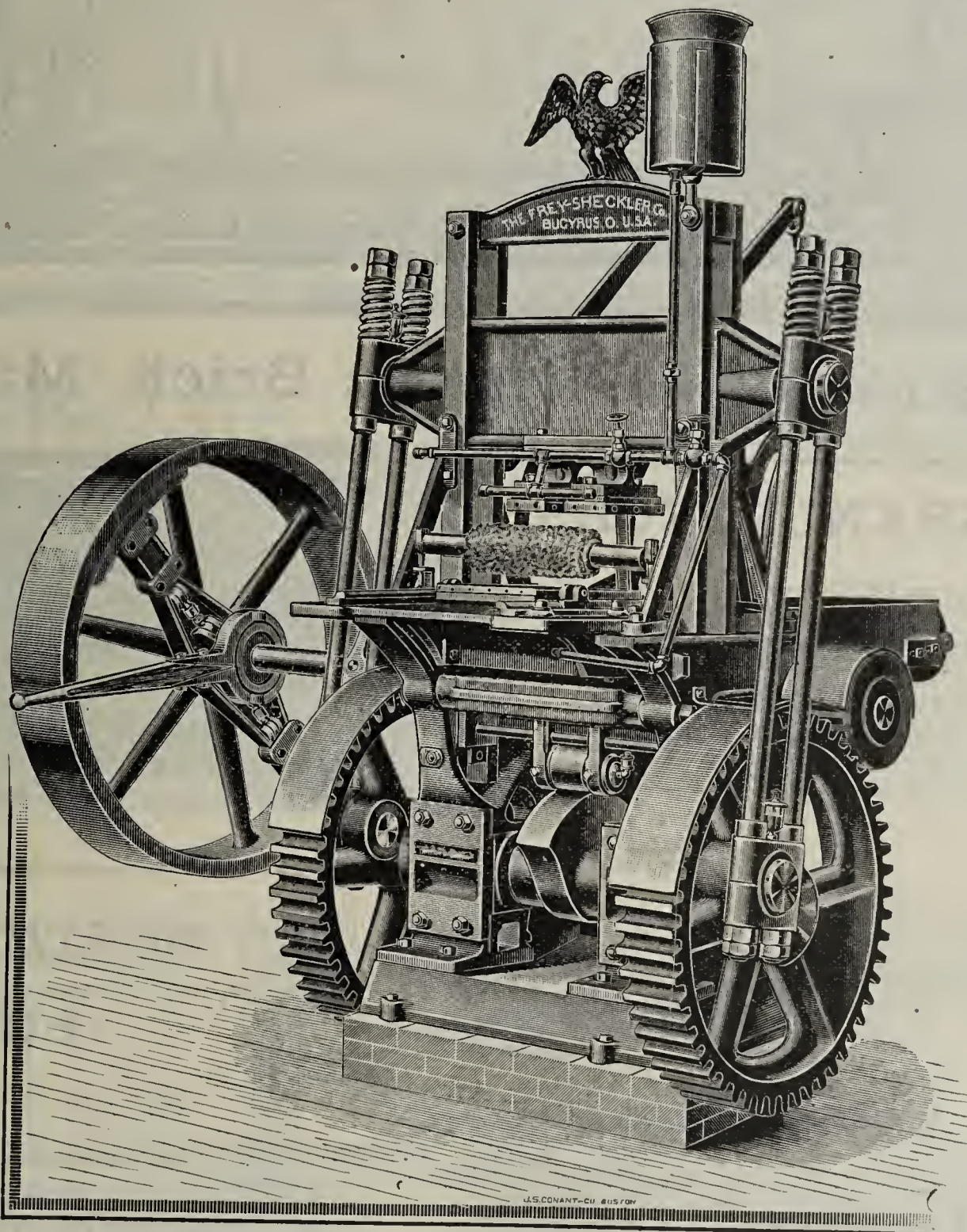
Bucyrus, Ohio, U. S. A.



# The Frey-Sheckler Company Clayworking Machinery.



No. 1 Giant Machine with Automatic Cutting Table.



Eagle Steam Power Double Die Repress.

**The Frey-Sheckler Co.,**  
Manufacturers, BUCYRUS, OHIO, U. S. A.

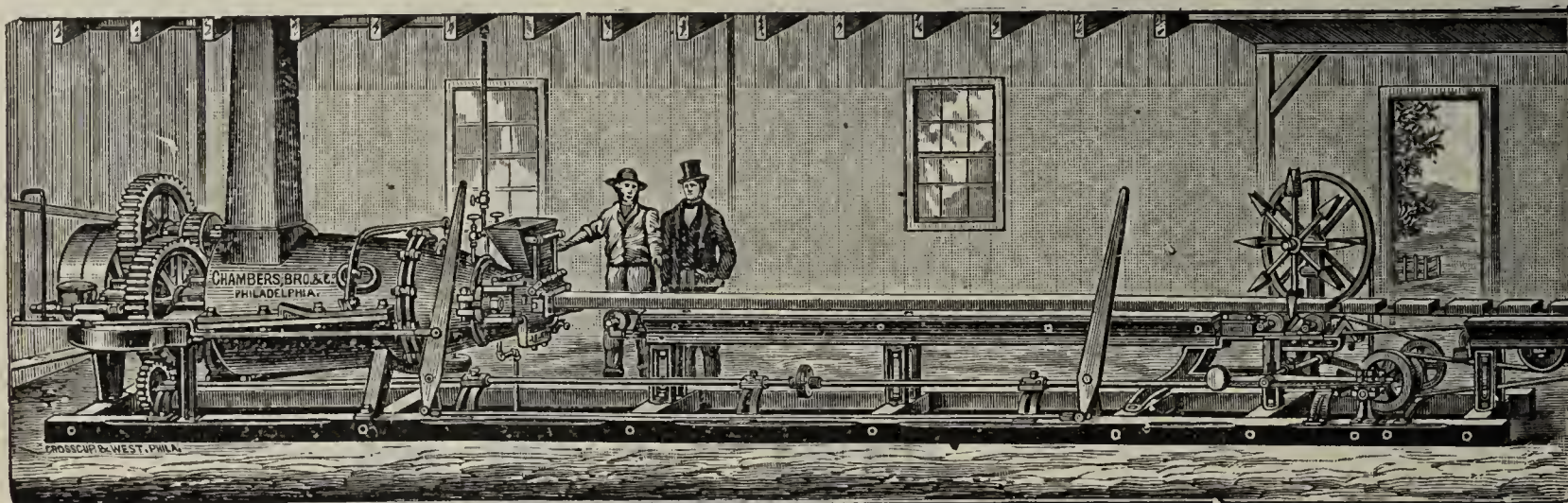


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



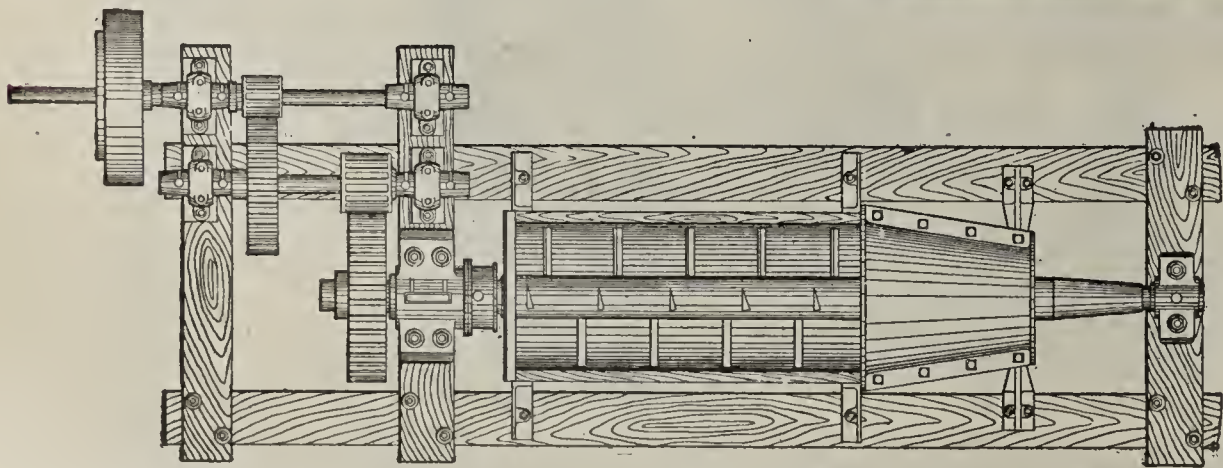
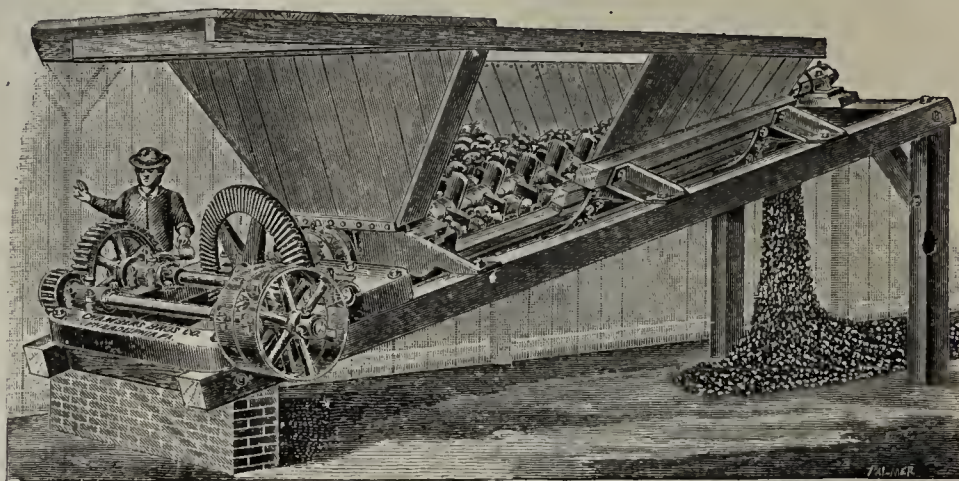
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

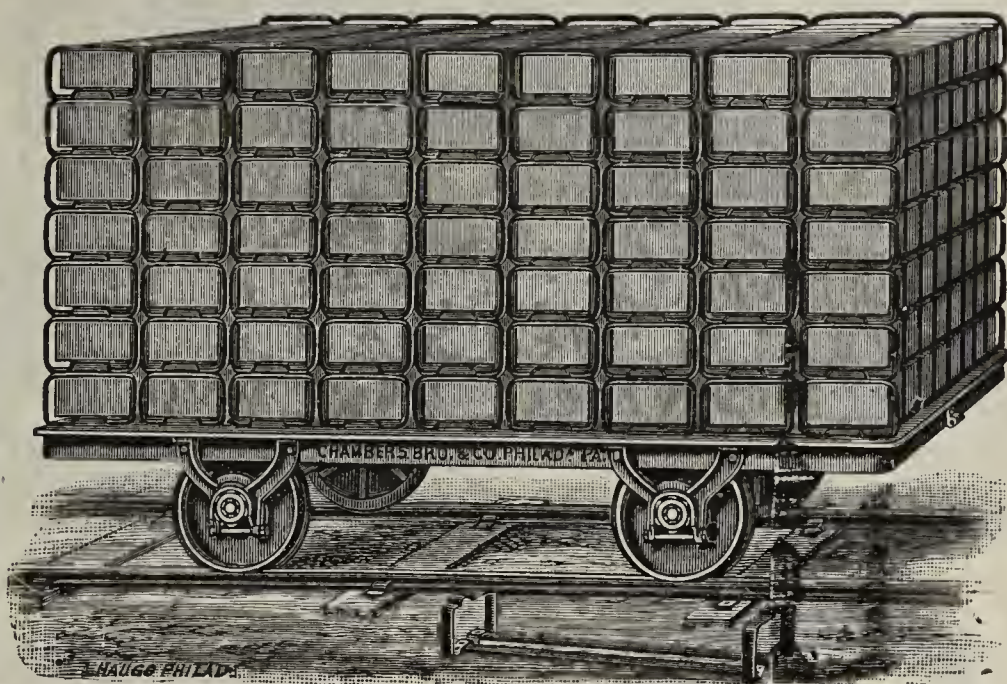
Fifty-Second St., Below Lancaster Ave.,

PHILADELPHIA, PENN.

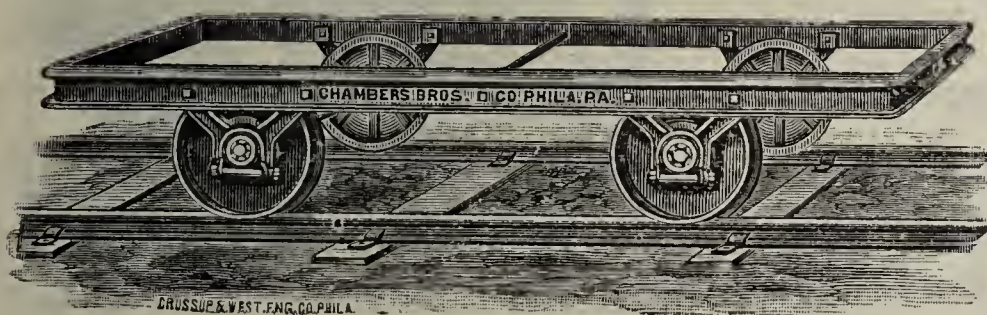
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

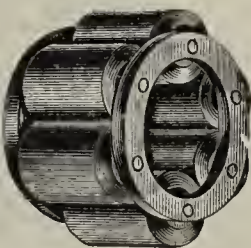


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

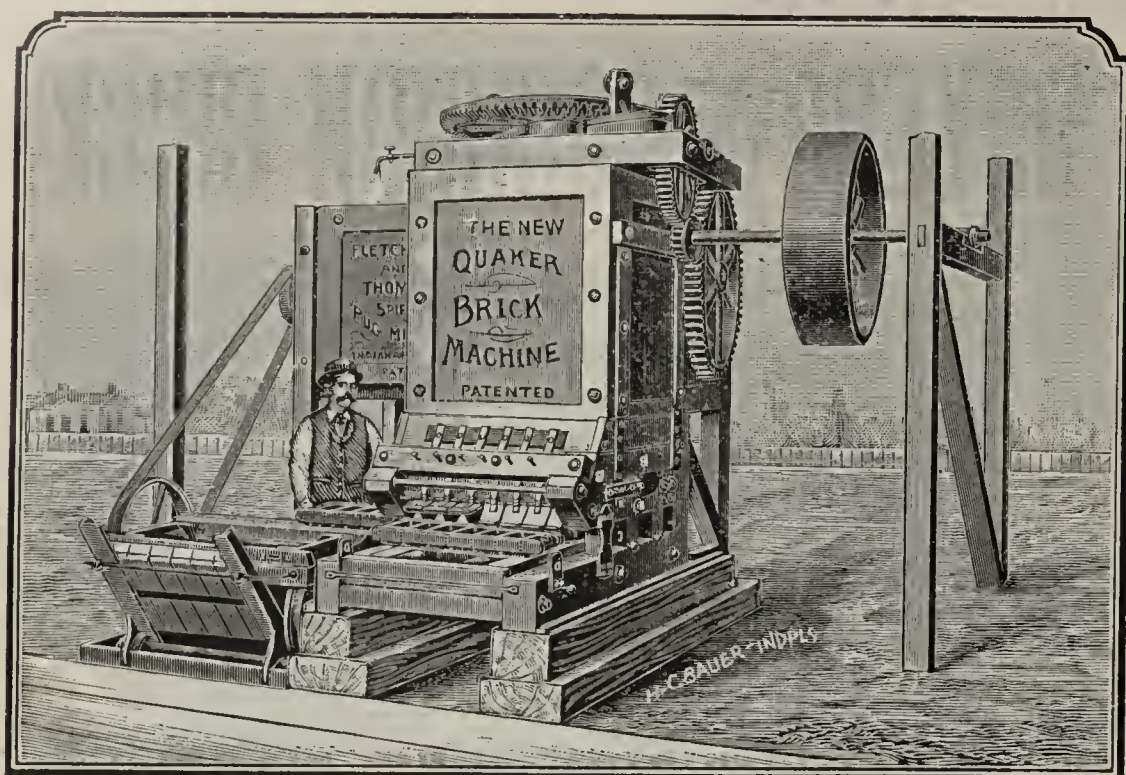
[Mention the Clay Worker



FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

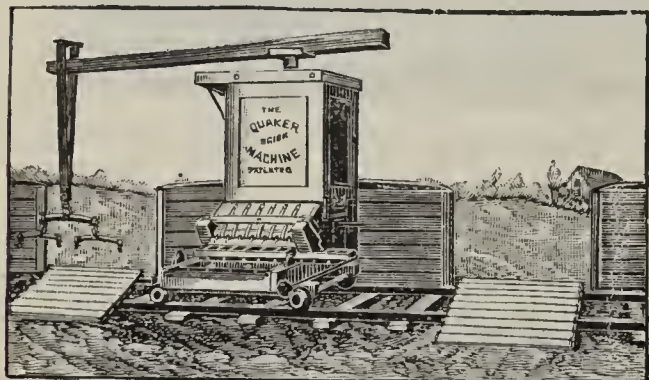


Machine Molds.



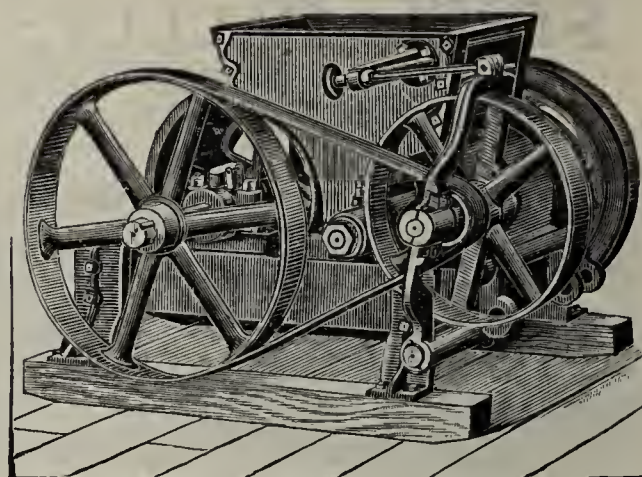
Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



**THE NEW QUAKER** HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.

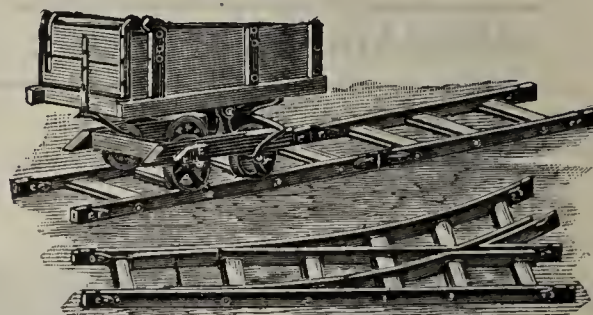
**DISINTEGRATORS.**

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

**FLETCHER & THOMAS, Indianapolis, Ind.**



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS  
—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

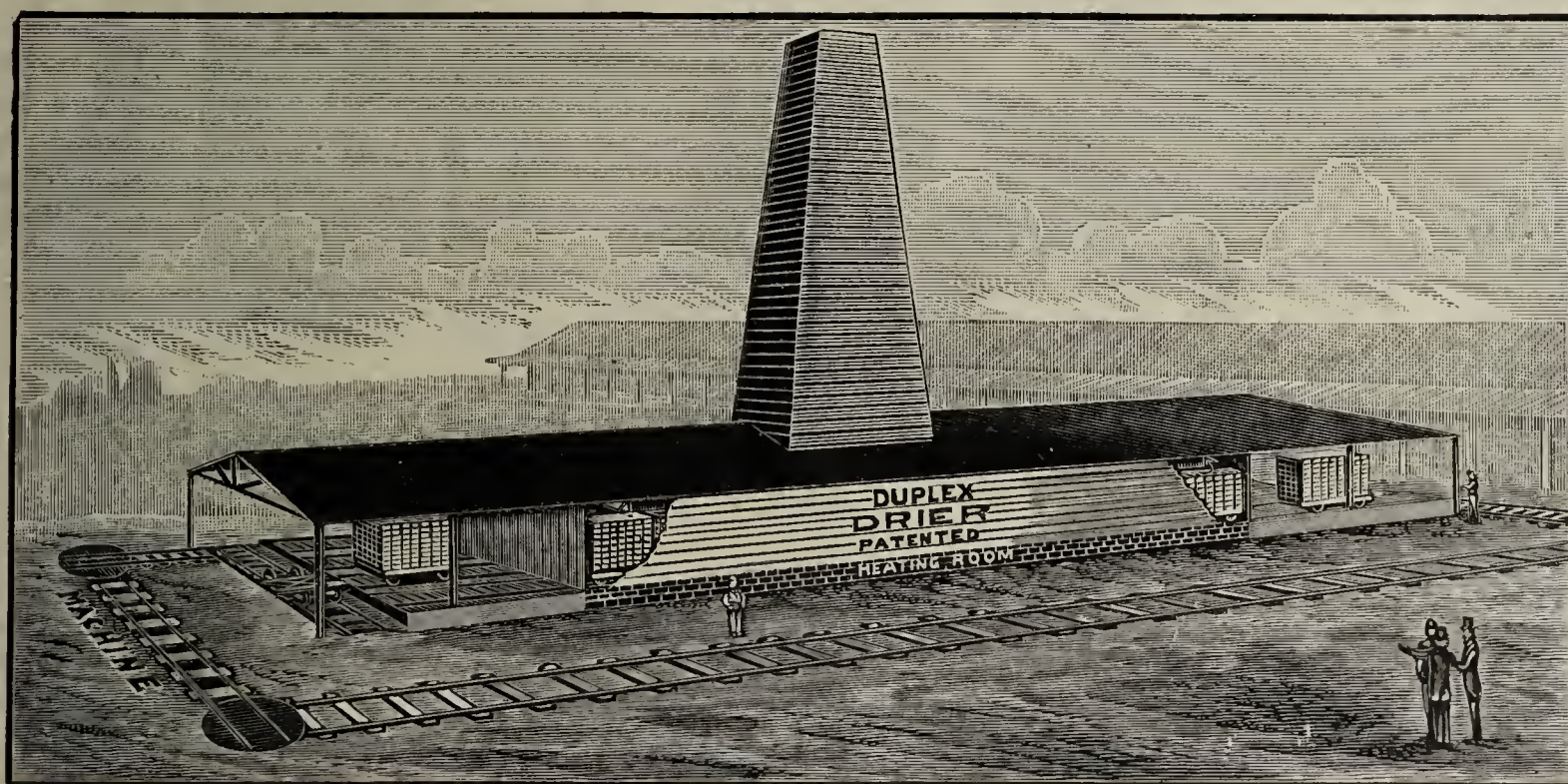
## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## ATTENTION BRICKMAKERS!

Do not be alarmed by the  
screeching of Wild Cats  
or the howling of WOLVES.



.....  
The  
Duplex  
Steam  
Drier

IS NO....  
INFRINGEMENT.

.....

Harland Brick Co. have been using it at Bernice, Ill., for eighteen months, 75,000 daily capacity. Harland Brick Co., Shermerville, Ill., twelve months, 75,000 daily capacity. Galesburg Paving Brick Co., Galesburg, Ill., six months, 150,000 capacity. J. B. Legnard, Chicago, Ill., four months, 160,000 capacity, and others.

Now is the time to buy. Address,

W. C. BYRNE,

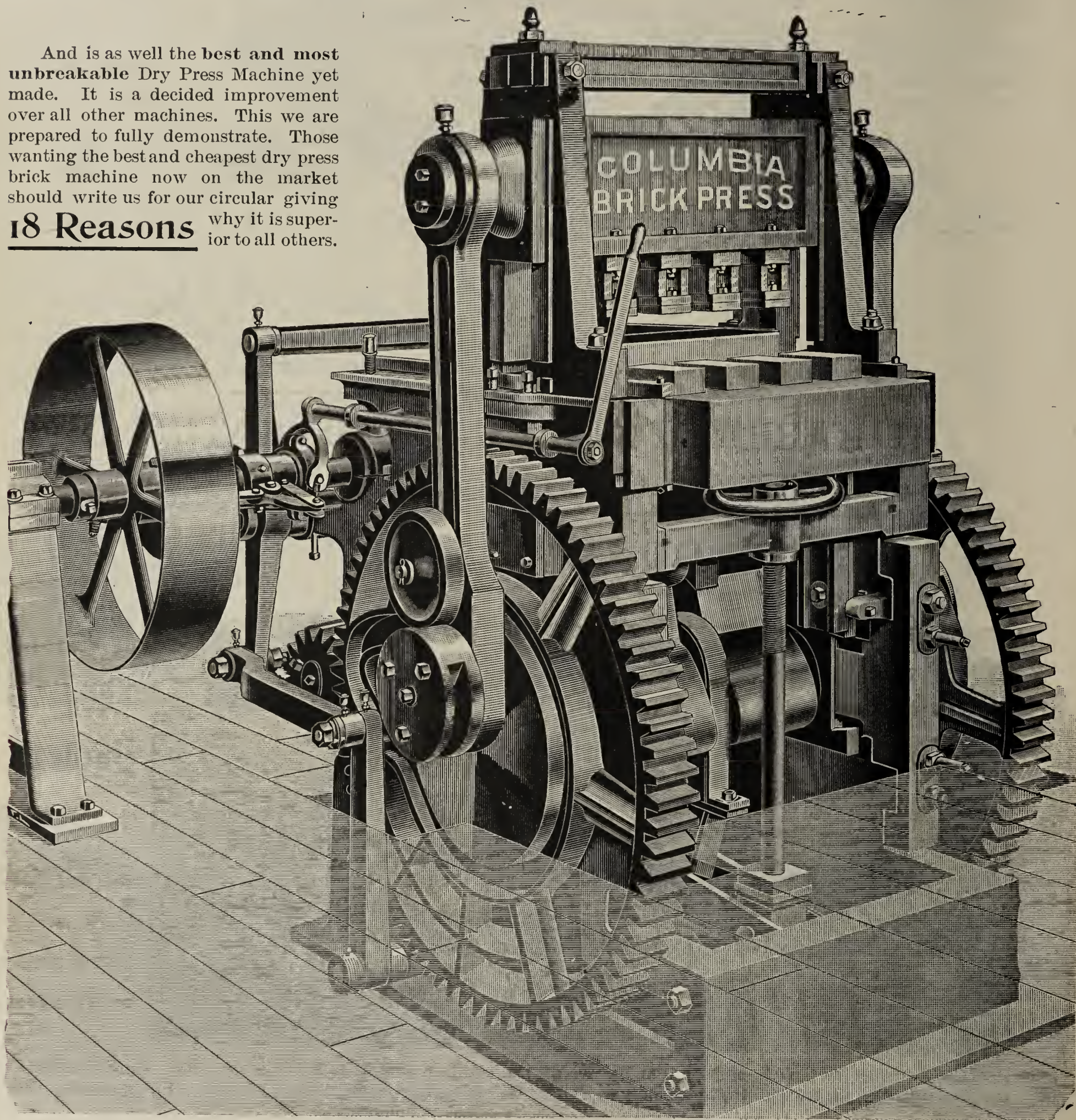
Room 67, 162 La Salle Street,

Chicago, Ill.



❖ THIS ❖ PRESS ❖  
 IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF  
**FINE ORNAMENTAL BRICK**

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

**COLUMBIA MANUFACTURING CO.,**

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

## Refer to . . .

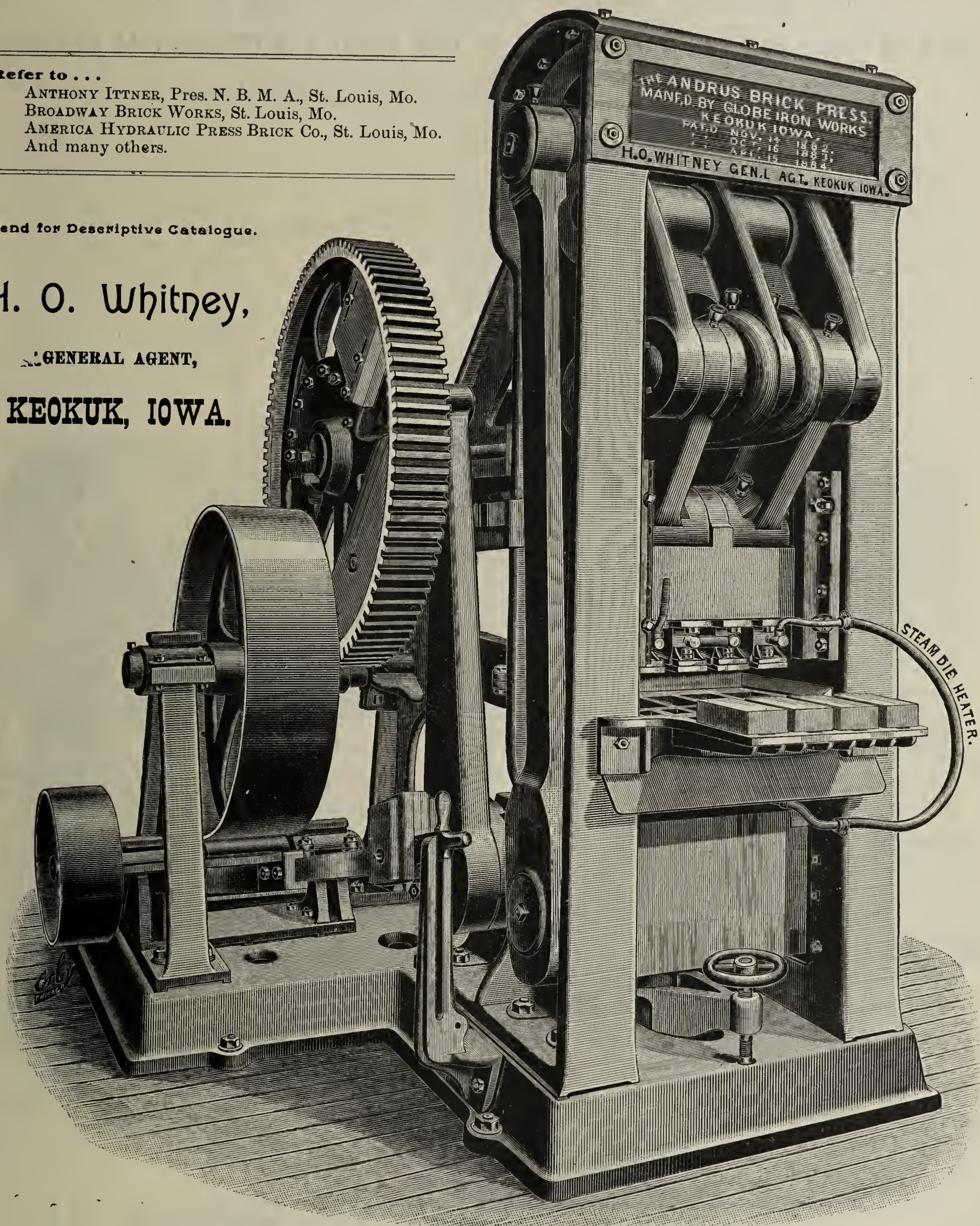
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





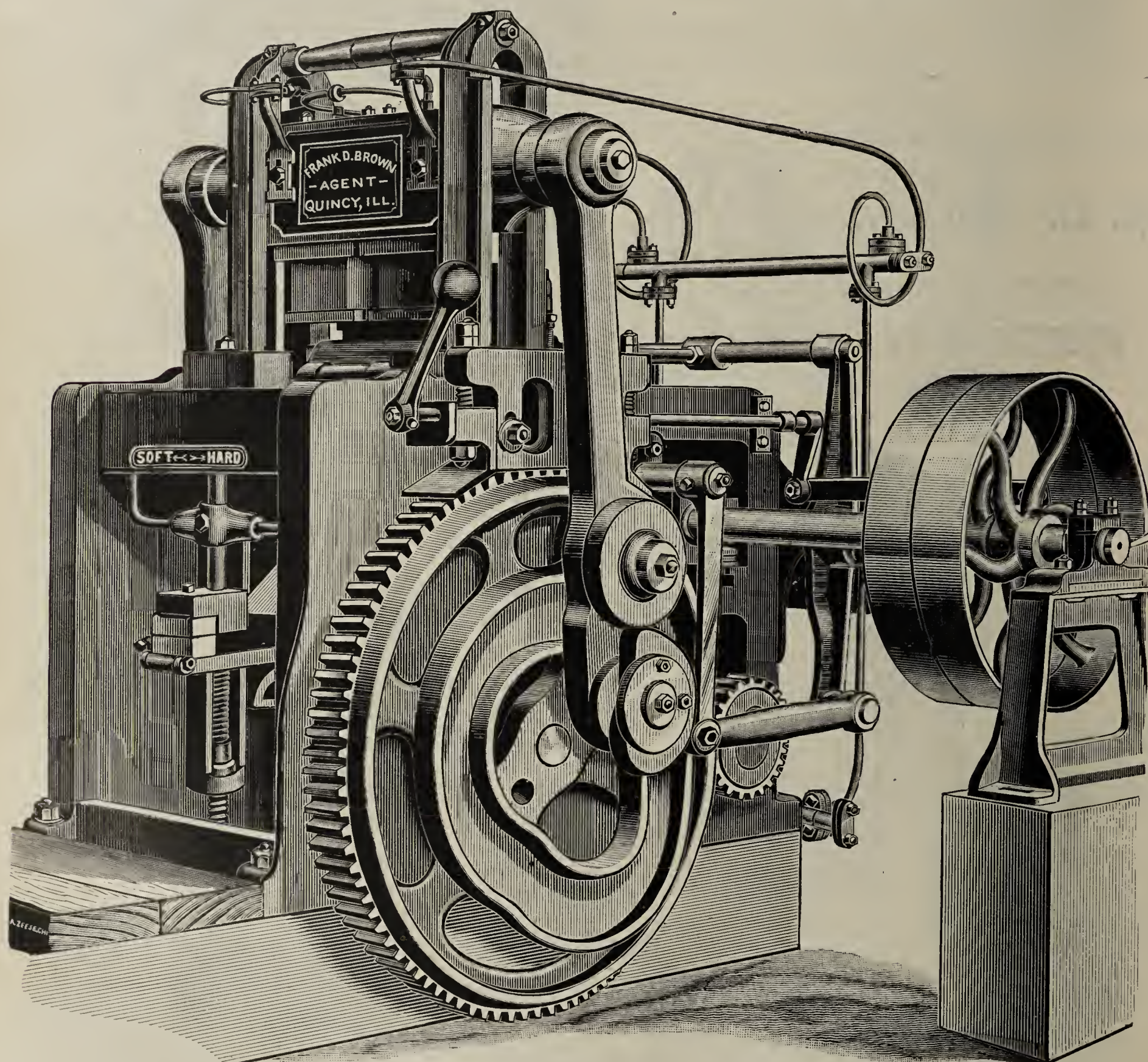
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.  
Will place the machine in your yard and guarantee entire satisfaction.  
Your correspondence solicited.

**FRANK D. BROWN, Quincy, Ill.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

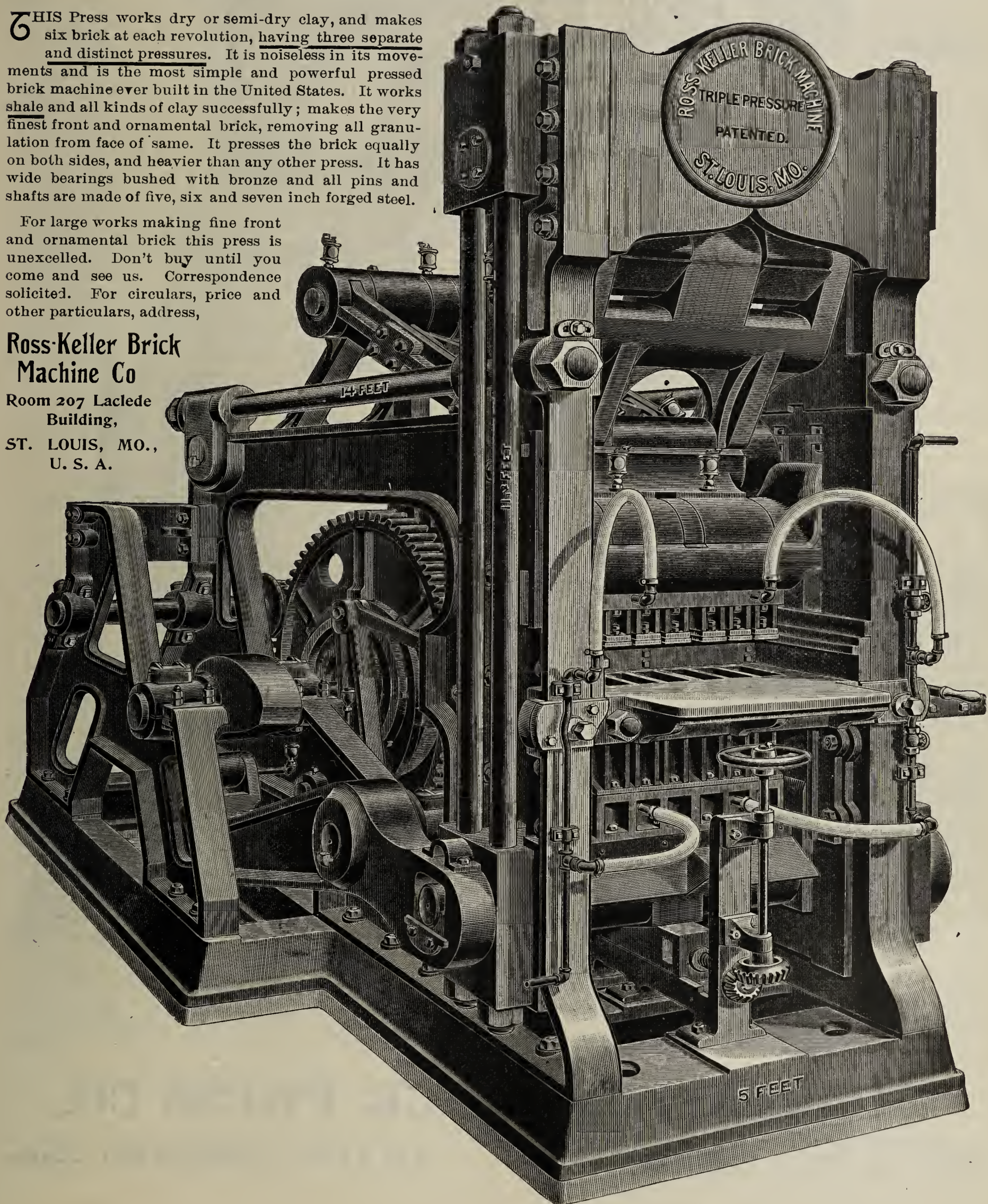
**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co**

Room 207 Laclede  
Building,

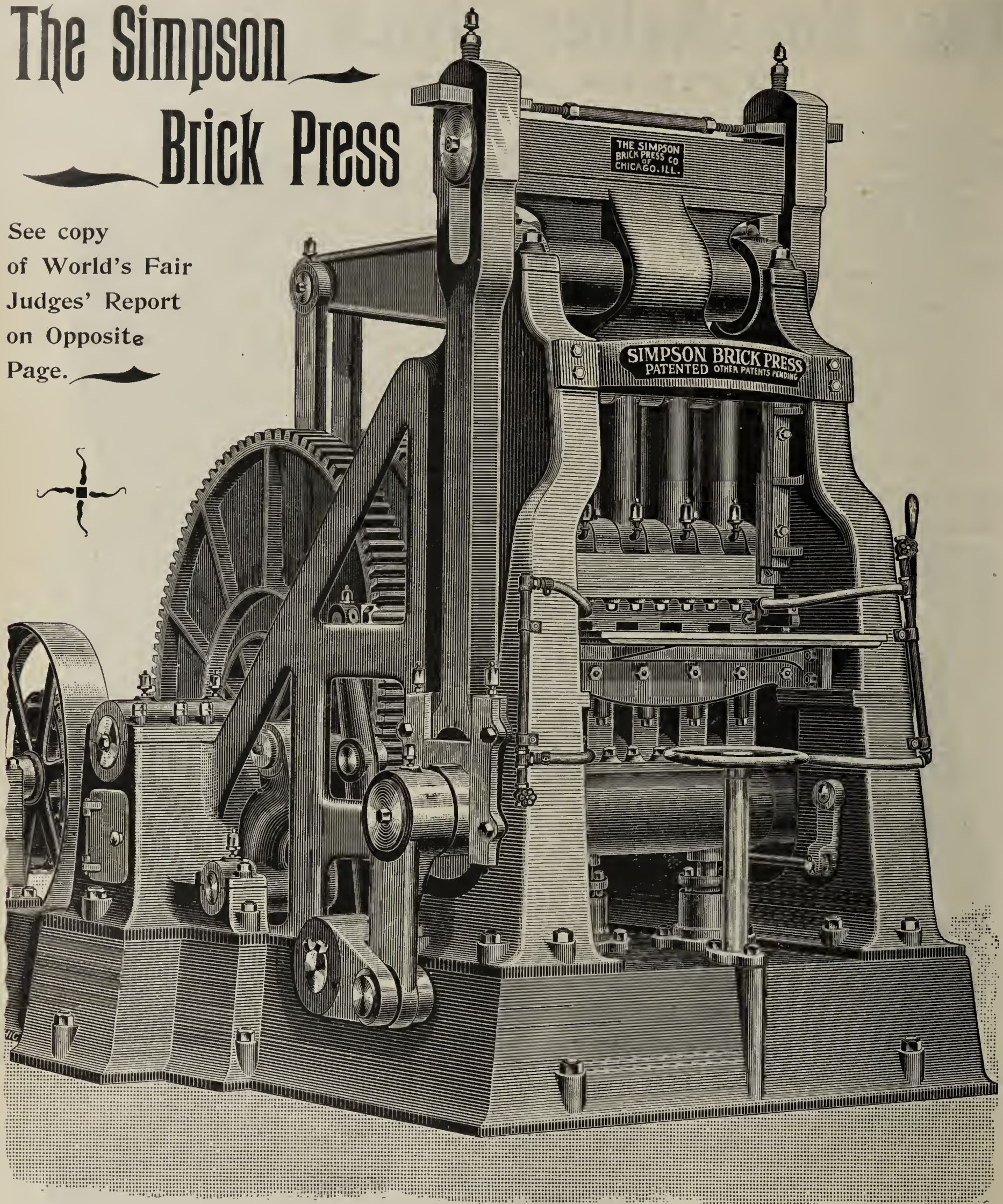
ST. LOUIS, MO.,  
U. S. A.





# The Simpson Brick Press

See copy  
of World's Fair  
Judges' Report  
on Opposite  
Page.



## THE SIMPSON BRICK PRESS CO.,

Agents for Canada:  
WATEROUS ENGINE WORKS CO., Brantford, Ont., Can.

87 and 89 Wash. St., CHICAGO, ILL.



# World's Columbian Exposition

\* \* \* \*

## At Departmental Committee on Awards, MACHINERY HALL.

\* \* \* \*

August 30th, 1893.

At the regular meeting of the Jurors in that department, the report on the Waterous Engine Works Co., (showing a Simpson 5-mold press) was read and APPROVED as follows:

Waterous Engine Works Co, No. 6,490 as follows: This exhibit consists of a machine (the Simpson Brick Press) for making brick by the dry press process, good in design, material and workmanship.

This machine shows an advancement in mechanism in regulating and reducing the mechanical difficulties.

## FIRST.

Its longer pressure forces partial cohesion of the particles. Longer is better than stronger pressure.

## SECOND.

The use of the long lever with toggles, causes long even pressure without excessive strain of parts.

## THIRD.

The pressing strain is taken up by two exposed steel side bars and not by the frame.

## FOURTH.

The clay moves in the mold during pressure, giving polish to the product.

The brick is made in the bottom of the mold and the pressure is held until the brick is delivered, insuring surface polish.

## FIFTH.

The mechanism provides for exact thickness without

shimming or packing, and the modification of their dimensions are easy and quick.

## SIXTH.

The discharge of the brick from the mold, by the came on the master gear, is a marked improvement on the lifting of the entire pressing mechanism, together with the green brick.

## SEVENTH.

The heating of the charge box.

## EIGHTH.

The toggles work inward, thereby giving unobstructed access to the table on which the brick is delivered, instead of leaving them to be pushed out and damaged by the following brick.

## NINTH.

The parts are accessible and changeable without delay.

\* \* \* \*

For These Points of Advancement in Dry Press Mechanism an Award  
is Recommended.

\* \* \* \*

The above points of superiority, given the Simpson Brick Press explains the well known fact that The Simpson Brick Press Co., has more successful and money making institutions using their machines than any other dry press brick machinery concern in existence Write us for information and address,

THE SIMPSON BRICK PRESS CO.,

87 and 89 Washington Street,

CHICAGO, ILL.



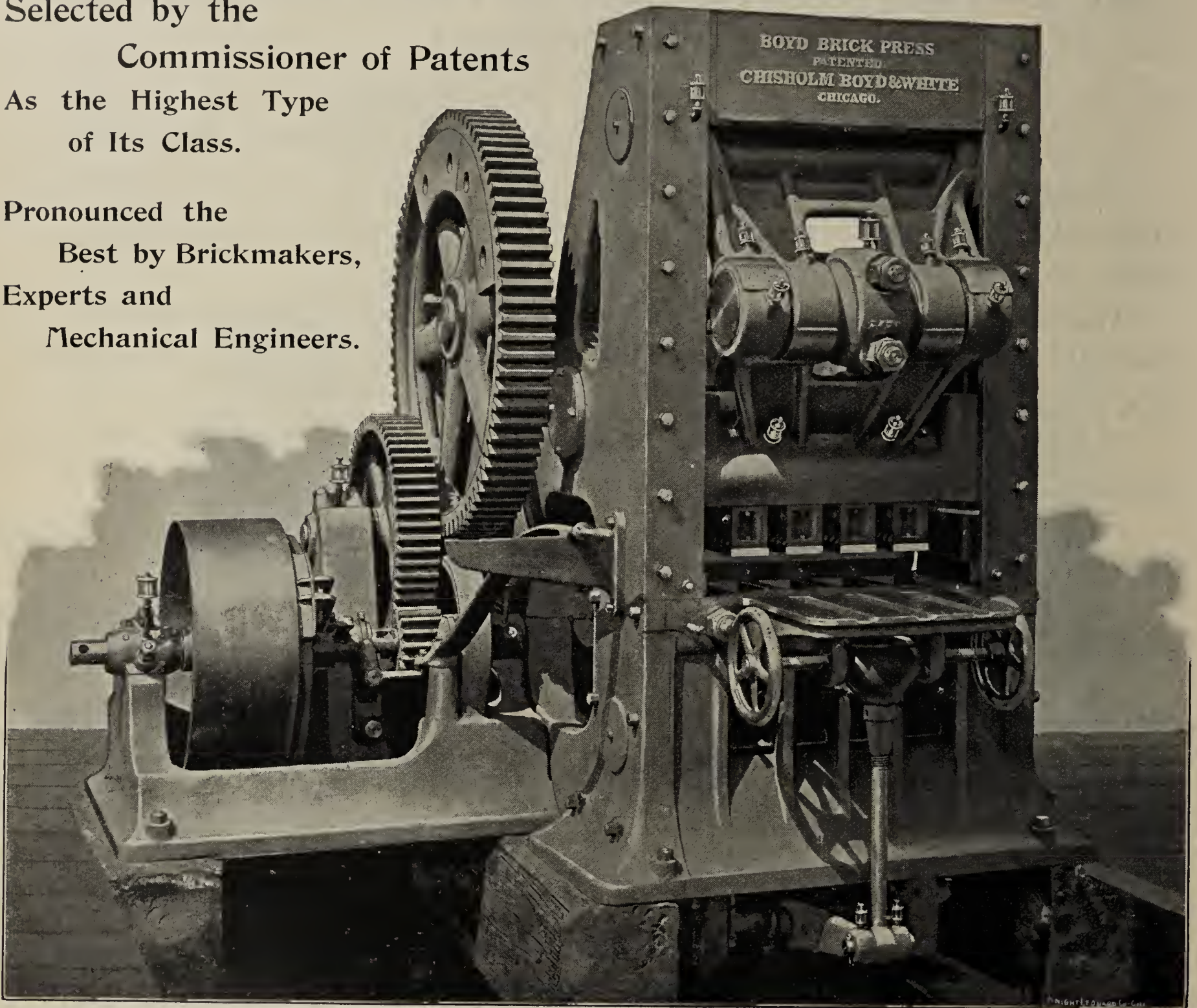
# TRIUMPH OF THE BOYD PRESS

• • • • •  ALL THE HONORS.

AWARDED A MEDAL AND DIPLOMA.

Selected by the  
Commissioner of Patents  
As the Highest Type  
of Its Class.

Pronounced the  
Best by Brickmakers,  
Experts and  
Mechanical Engineers.



THE BOYD BRICK PRESS IS THE ONLY AMERICAN BRICK MACHINE  
TO RECEIVE A MEDAL, DIPLOMA, OR OFFICIAL MENTION AT

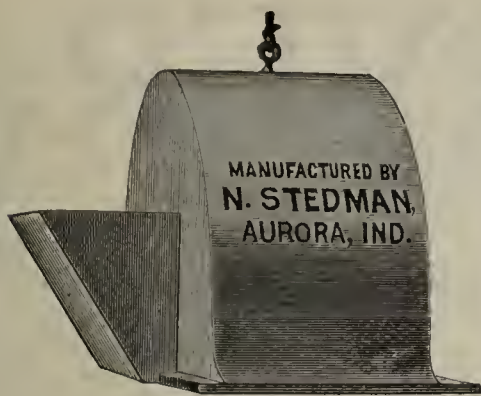
✧ The World's Columbian Exposition. ✧

Monon Block:  
324 Dearborn Street.

CHISHOLM BOYD & WHITE,  
Chicago, Ill., U. S. A.



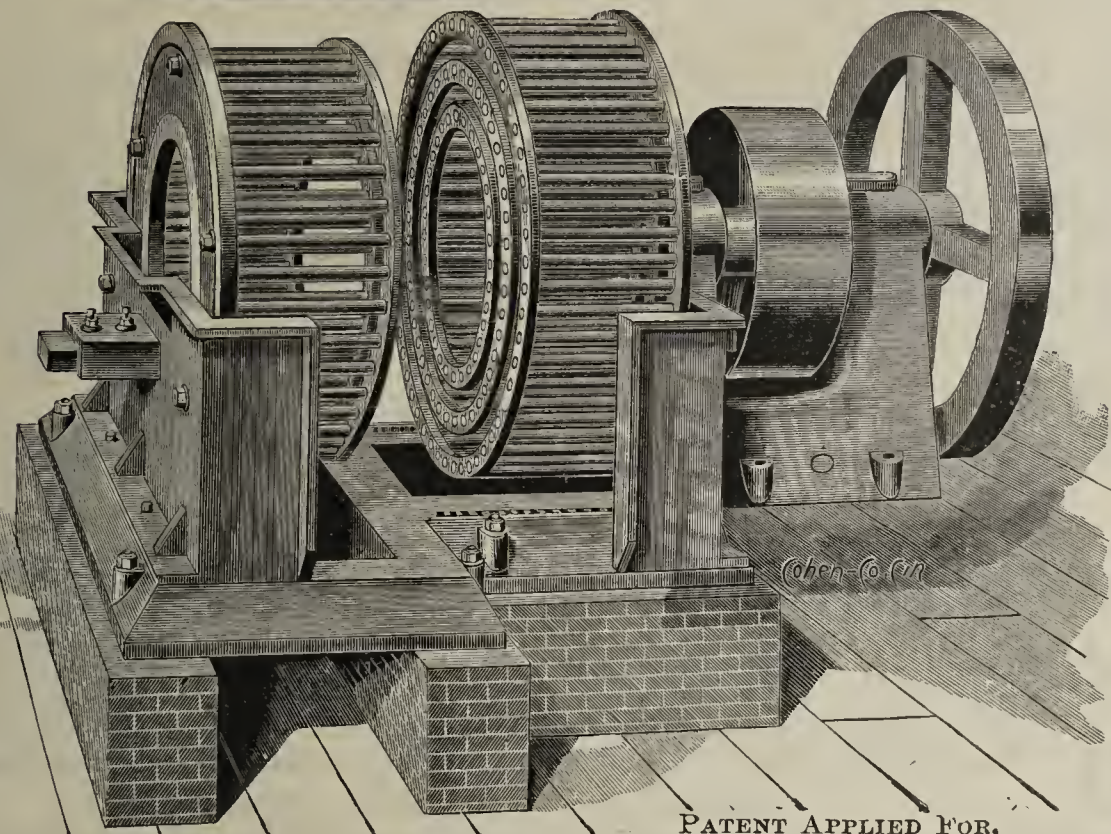
## Description.



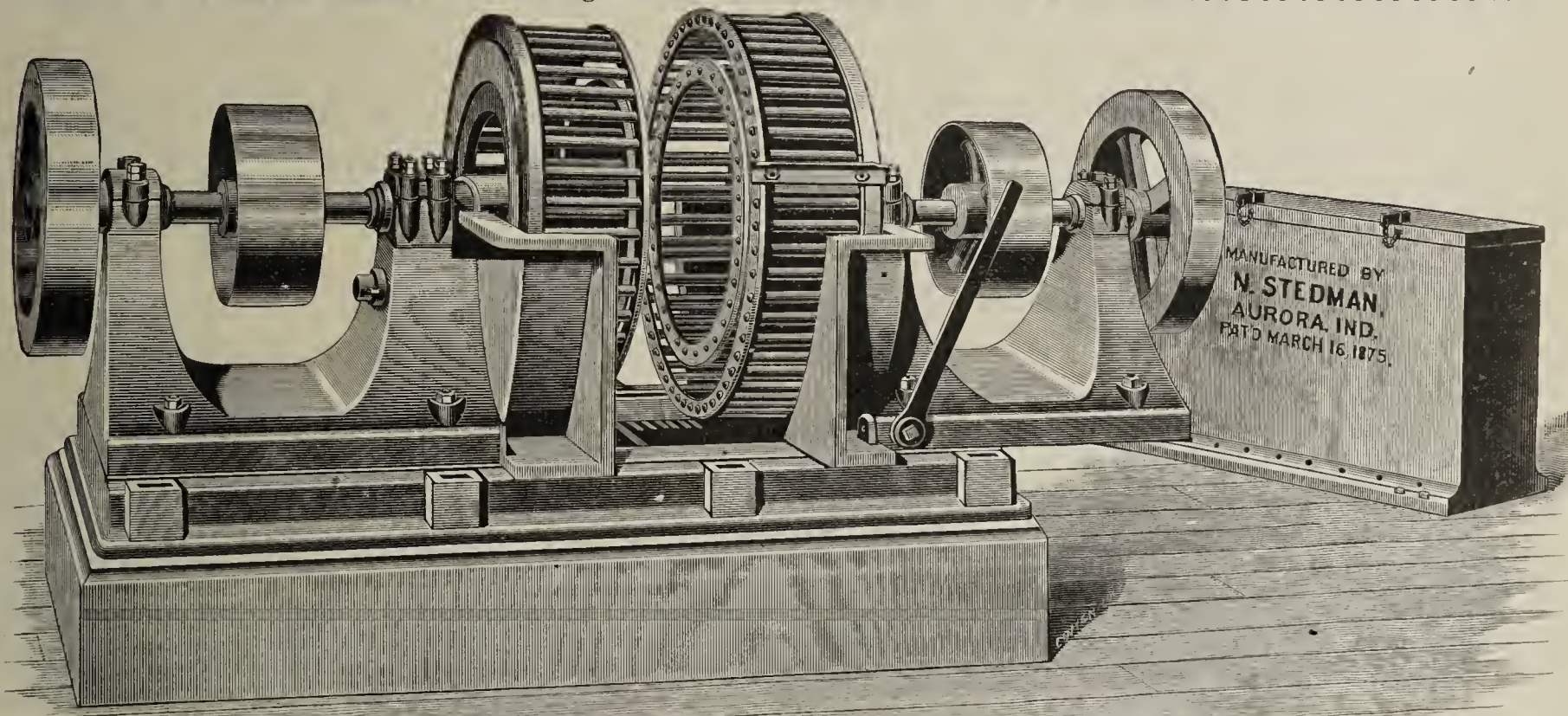
This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loomy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

Mention the CLAY-WORKER

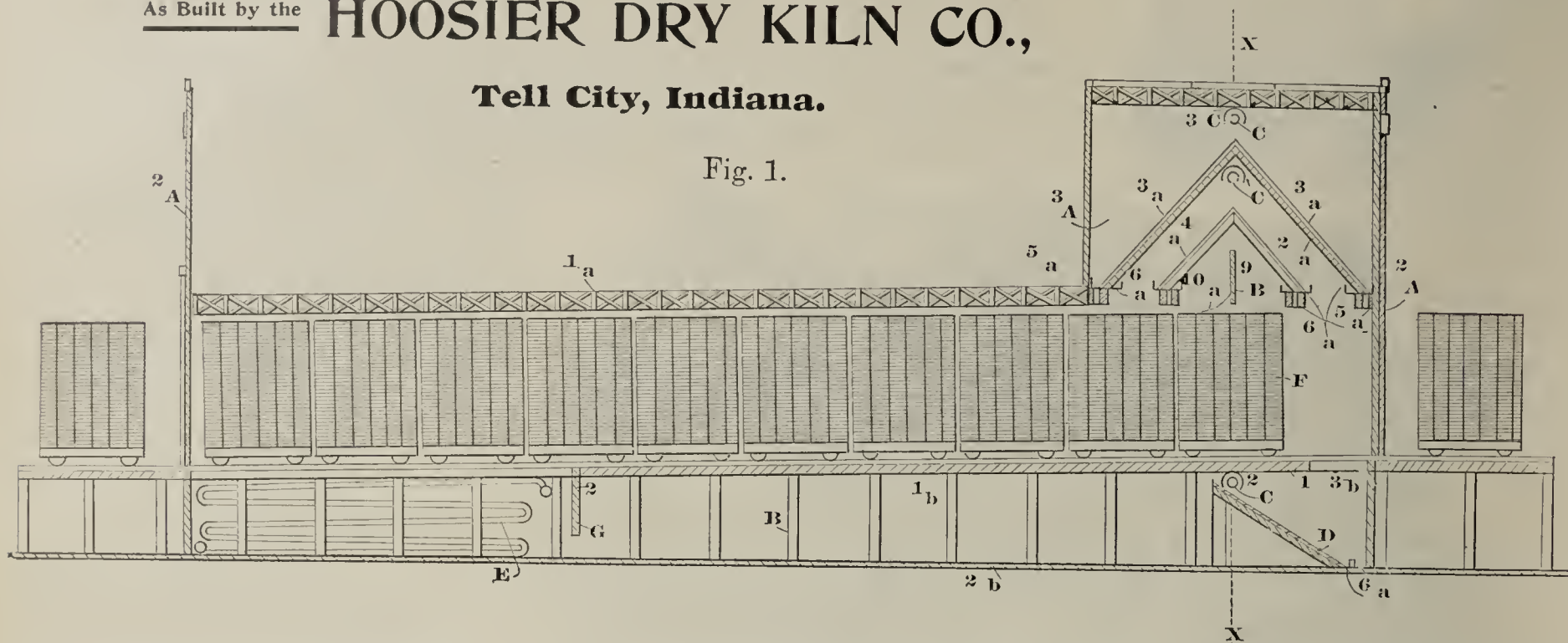


# HOOSIER DRYER,

As Built by the **HOOSIER DRY KILN CO.,**

**Tell City, Indiana.**

Fig. 1.



**TEST ON THE MARKET.  
ITTLE IN APPEARANCE.  
ARGE IN RESULTS.  
EAST IN FIRST COST.  
IGHT IN COST OF OPERATION.**

**THE HOOSIER DRYER** in addition to the advantages indicated is constructed and operated in a manner that enables us to guarantee quicker work and more satisfactory results than any other dryer now on the market. By our system, which is covered by letter patents and which does not conflict with any former invention, we can handle clays that heretofore have defied all attempts at rapid drying. Our terms are reasonable and satisfactory results are guaranteed.

**Either Gas or Steam used for Heating.**

## THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has **MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.**

Read the following testimonial, then come and judge for yourself:

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

St. Louis, Mo., Nov. 29th, 1892.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

ANTHONY ITTNER.

For further information and Illustrated Circular, address,

**WM. & S. H. ALSIP,**

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



# "Morrison's Improved Kiln Record"

IS NOW READY FOR DISTRIBUTION.

Success is the only positive evidence of merit.....

.....Merit without success is faith without works.

Here is a page from "The Record."

Office of SELMA BRICK & TILE CO.

SELMA, ALA., Oct. 3rd, 1893.

R. B. MORRISON & Co.,  
ROME, GEORGIA.

GENTLEMEN:—We have burned the kiln you put in for us second time and are perfectly satisfied with results. Each time we burn your kiln we save \$100 on fuel and \$50 on labor, and in saving of our arch brick and uniformity of color throughout the kiln and large increase in percentage of hard brick, we realize at least \$200 more for the 350,000 brick, making us \$350 saved each burn.

Yours truly,

SELMA BRICK & TILE CO.

For further encouragement write us for copy of "The Record." No stamp need be sent.

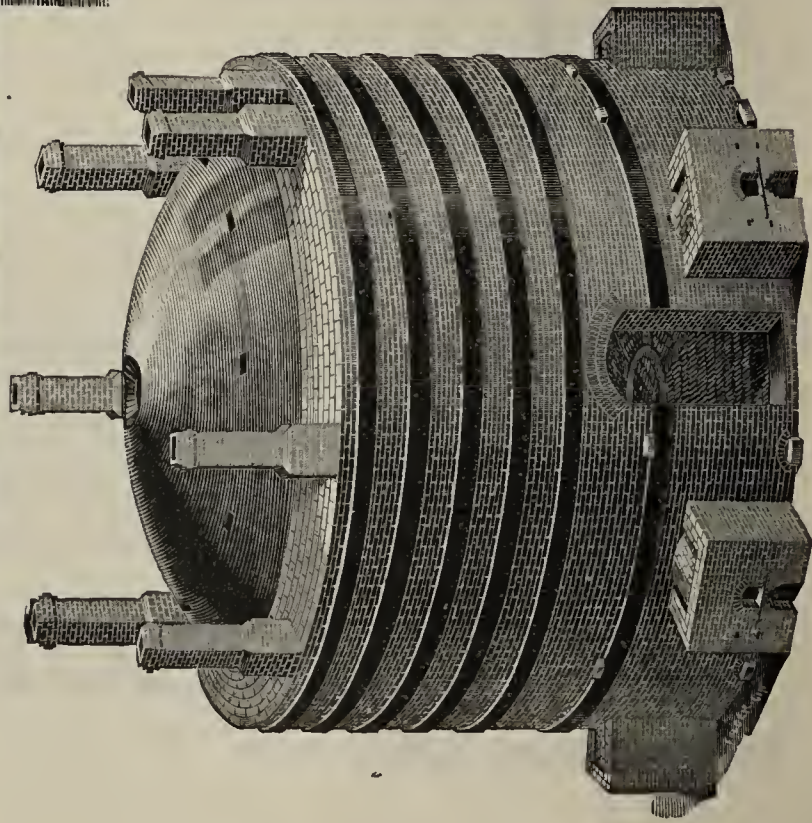
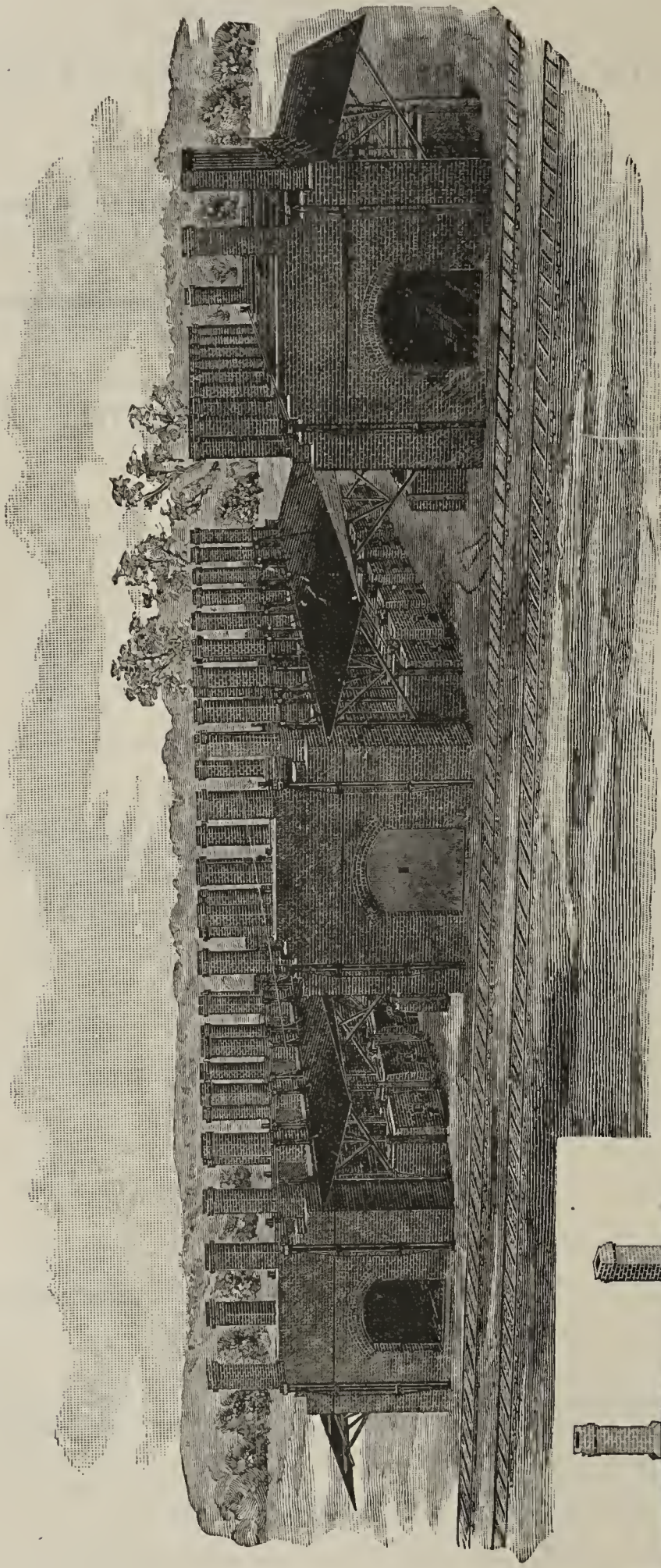
Brick Manufacturers, you want results! We give them in the Record of our Kiln for seven years past in all parts of the United States and Canada.

For the "Record" descriptive pamphlet, and all information desired, address,

**R. B. MORRISON & CO.,**  
P. O. Box 335. Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

## FROM CANADA.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular. (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

TORONTO, February 28th, 1893.

CARROLL, VICK &amp; CO.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



W. H. KELSO, President.

PAUL BOEHNCKE, Treasurer.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

F. HASPER, Secretary.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

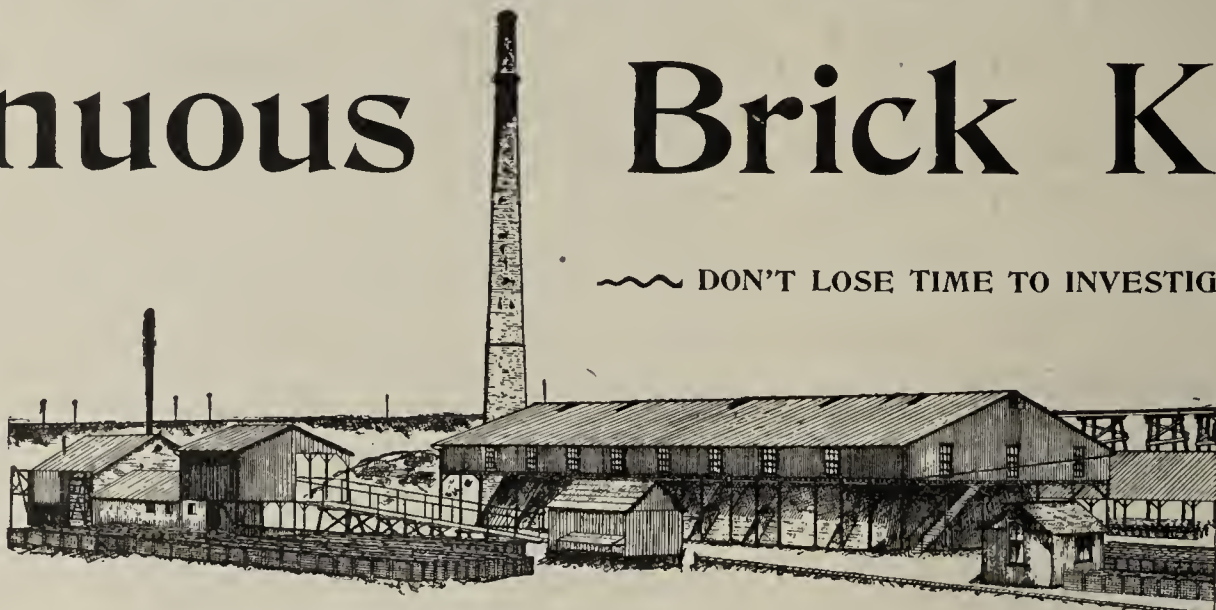
Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

## Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

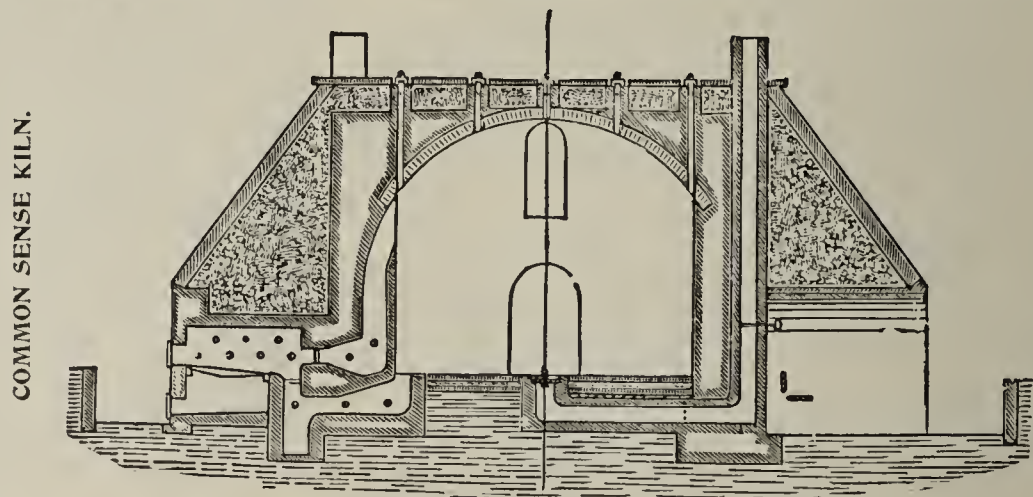
Beware  
of  
Infringe-  
ments.

### ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,  
Box 35, Centinela, Cal.



COMMON SENSE KILN.

Patent No. 475,433.

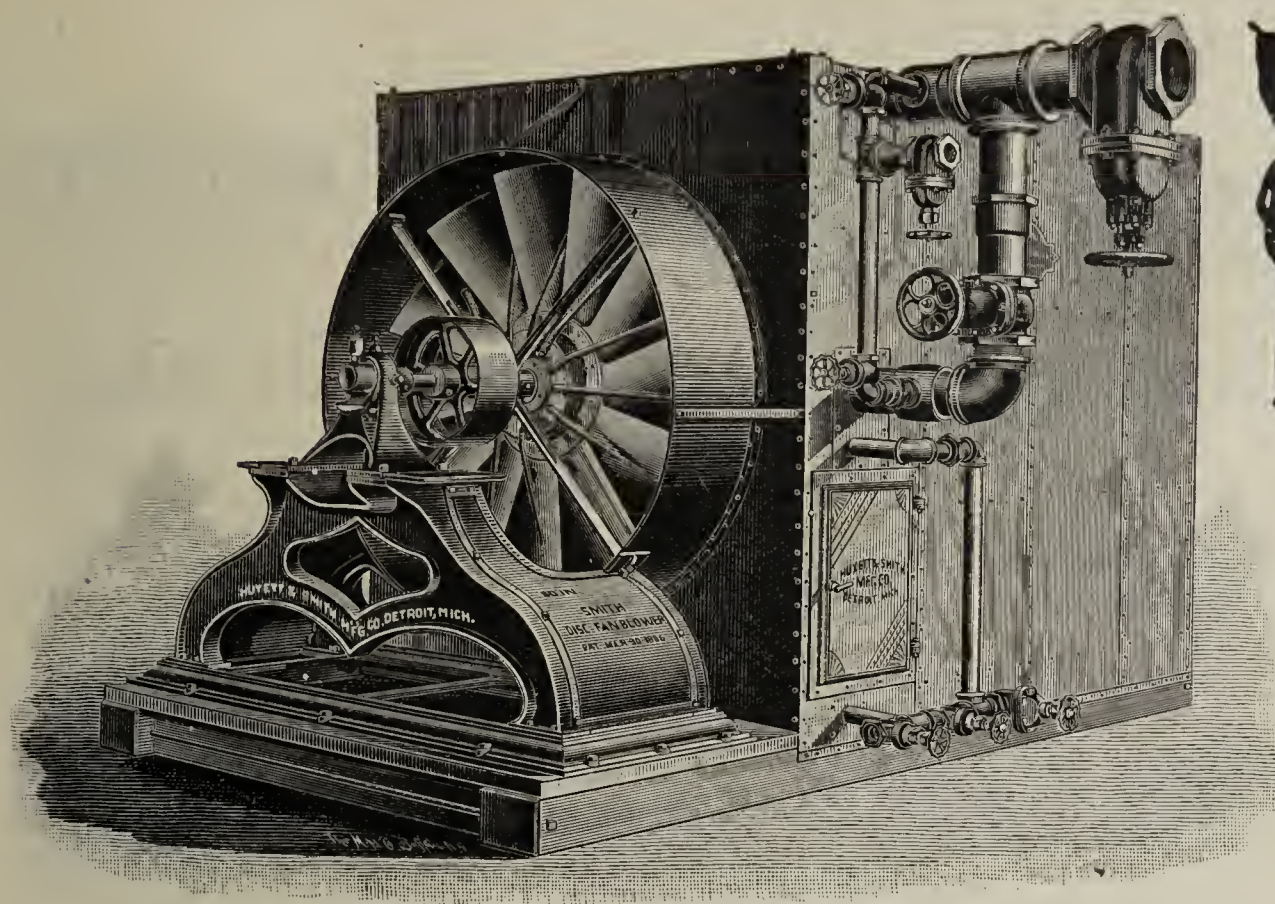
FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

does not need any extra fuel or labor in connection with continuous kilns. Write for circulars and catalogue.

We have also Boehncke's Brick  
Drier, which is very economical





## DON'T READ THIS

letter unless you want  
to learn of the merits of  
the

### Best Brick Dryer

on the market:

FLOOD BRO.,  
Manufacturer of  
MACHINE AND HAND-MADE BRICKS.  
Main Yard: Old Front St.  
and Nicetown Lane.  
PHILADELPHIA, PA., Oct, 6th, 1893.  
Huyett & Smith Mfg. Co.,  
Detroit, Mich.

GENTLEMEN: We are much pleased with the  
Fan and the Dryer. Not one brick has been  
cracked in the process of drying, while in  
its operation we find the Fan and Heater  
easily managed.

When we have added the other boiler  
required, we expect to get 40 and likely  
50 M daily from it. Very truly,

FLOOD BRO.

(The above plant was sold guaranteed to  
dry 30,000 daily.)

# SMITH HOT BLAST BRICK DRYER

MANUFACTURED BY

## THE HUYETT & SMITH M'F'G. CO.,

MAIN OFFICE & WORKS: DETROIT, MICH.

Among the many Brick Manufacturers made happy by the purchase of a HUYETT &  
SMITH MANUFACTURING COMPANY HOT BLAST BRICK  
DRYER are the following:

Covington Improvement Co., Covington, Va.

Flood Bro., Philadelphia, Pa.

Gunn Bros., Philadelphia, Pa.

Penn Brick Co., Philadelphia, Pa.

R. G. Eisenhart, Horseheads, N. Y.

James E. Dingee, Philadelphia, Pa.

J. M. Rumbaugh Brick Co., Greensburgh, Pa.

John A. Schmitt, Wilkes-Barre, Pa.

Montello Clay & Brick Co., Reading, Pa.

Arthur Johnson & Bro., Omaha, Neb.

Swoyer Bros., Allentown, Pa.

Geo. A. Fleming, Boston, Pa.

For full information, catalogue, plans and references write

## The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

DETROIT, MICH.

NEW YORK, 107 Liberty Street.

CHICAGO, 31 South Canal Street.

BOSTON, 48 Union Street.

.....BRANCHES.....

PHILADELPHIA, 118 Custom House Place.

LONDON, ENGLAND, 13 Little Trinity

Lane, E. C.



## STILL THEY COME



ANOTHER GOOD REPORT!

## This Time On Drying Soft Mud Brick.

CHASE BRICK COMPANY.

SUCCESSORS TO E. CHASE &amp; SONS.

MANUFACTURED BY AND DEALERS IN

MILWAUKEE CREAM COLORED  
PRESSED AND COMMON

BRICK

OFFICE AND YARDS  
LINCOLN AVENUE  
SOUTH SIDE

TELEPHONE 603

Milwaukee, Aug 8<sup>th</sup> 1893The Standard Dry Kiln Co.  
Louisville Ky.  
Gentlemen,

After having used your system of drying for some months, we are in a position to state, that brickers having found ourselves in the very best of hands in our dealing with your house - the four tunnel dryer is giving us good satisfaction drying the brick thoroughly and with trifling loss from checking.

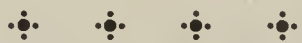
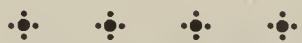
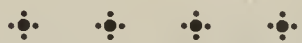
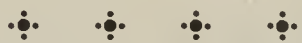
We use the Potts Horizontal machine and turn out 34000 Brick per day - good brick with square corners - and not cracked.

Wishing you continued success  
We remain

Yours truly  
Chase Brick Co.  
By Elbert Chase *Man.*

THE above is a sample of the many very flattering endorsements recently received from our patrons; the combined evidence of which proves quite conclusively, we believe, that for drying Stiff, Soft Mud, or Pressed Brick,

THE STANDARD PATENT



BRICK DRIER

IS THE BEST.

We have just issued a new Catalogue, No. 15, which is replete with illustrations and descriptive matter of interest to every brickmaker. Send for a copy.

The Standard Dry Kiln Co.,

Gen'l Office and Salesrooms, 923-925 W. Main St.

LOUISVILLE, KY.



# THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XX.

INDIANAPOLIS, IND., NOVEMBER, 1893.

No 5

Written for the Clay-Worker.

## OLD TIME BRICK WORK.

THE building shown in the accompanying illustration was erected in 1485. At least the date on one of the dormer windows indicates that it was

finished in that year, and as building work was not slow at that time, it is fair to presume that it was begun and finished within the year. This structure is located near Rouen, France. It has no particular history connected with it,

or rather it was not occupied by the class of people who made history during those times. Its owners from the beginning were mercantile people, who during this period, were not engaged in developing history. It is interesting



BRICK PALACE AT MARTAINVILLE, FRANCE.



to bear in mind that here is a brick structure within the stone section of France, which was made of this material because of the taste of the owners. They built the brick building, not because the brick were immediately or more conveniently at hand, nor because the material was less expensive than stone, such not being the case. They built of brick, decorated with brick, for artistic reasons. The interior is finished in brick with occasional trimmings of stone. The external material is various as to color, as we may see, and rich as to detail.

The interesting quality to the clay-worker with respect to this building is that it illustrates very clearly what has been set forth so many times, that the French method of stone construction is particularly well adapted to terra cotta construction. The blocks of stone are small; they are not arranged in lintel forms, and all together nothing better could be selected as a perfectly rational and natural method of clay construction. A drawing of this building showing all of the stone joints just as they occur, could be transmitted directly to a terra cotta worker and he would find it necessary to make few or no changes. The blocks are not too large to be conveniently burned in terra cotta and they are exactly of the form and structural arrangement that is necessary to the natural and proper handling of that material. This illustration was selected particularly to emphasize this idea which has been set forth many times in the columns of this journal. The clay world is moving and we must do our part to see that it moves in successful lines. Clay is one of the principal elements which will develop an American architecture. Hence we wish to see it moving along successful, rational, and artistic lines. Through such methods there will be no halting, no stepping backwards. One of the best French critics, in speaking of this building, says that the outline, but for the detail, would be crude and a little heavy, but for the refinement of the mouldings, the elegance of the decorative detail, the proper handling of the otherwise plain surfaces, all conspire to remove what would otherwise be a suggestion of crudeness. While the outline may be heavy, it is refined, it is rendered artistic by the mind of the artist, who conveyed his own high instincts into forms of brick and stone through the hand and mind of the artisan. The coloring of

the brick in this structure is various; yet the selection is so carefully made, the form so nicely worked out, that instead of making a confusion, a disturbance in the otherwise plain surfaces, there is an artistic harmony and elegance running through the entire composition.

I refer to the artistic qualities of a structure of this kind constantly with the idea that it has commercial benefit in connection therewith for the clay worker. It is the little touch of elegance and beauty which lifts a building from something which is cheap and common in a commercial sense to that which requires the expenditure of respectable sums of money for its consummation. By building elegantly, building well, in brick, in terra cotta, we attract capitalists and those who have money for investment into the use of this material, and in that way reflect to the business advantage of all engaged in clay work. I say all, carefully and thoughtfully. To those who are engaged in making a very common kind of brick, it has the same commercial benefit. It removes from them a certain amount of competition of those who are engaged in other lines. If all were engaged in making a common article of brick, instead of having the work distributed into the various grades of brick manufacture, competition would be much greater and prices much less satisfactory.

The plan of this building is exceedingly simple. A hall runs through the center from the doorway which we see. At the rear there is a tower in which the stairway is placed, and which winds to the top. On each side of the hall are two rooms, and the towers on the corners form rooms themselves. Thus, there are practically four rooms on each floor on each side of the hall, the walls of these rooms are finished in brick, the decoration being in stone and colored brick arranged in artistic patterns. The ceiling is of oak, richly decorated and carved, though now, through neglect, it has fallen into decay.

LOUIS H. GIBSON.

THERE's no question but what the advertiser has advantages over the non-advertiser in many ways. People have confidence in a firm that can put brain, energy, and money into advertising. It shows ability in other directions,—to buy well and to sell well. People trade with the advertiser.—*Profitable Advertising.*

#### BRICK PAVEMENTS.

WRITING on the wear of brick pavements, the city engineer of Dunkirk, N. Y., says "the brick pavement put down during the past year has proved satisfactory in every way, and the taxpayers are anxious for more of it. I consider brick for business streets in small cities far preferable to macadam. If properly put down on a concrete foundation 6 inches deep, it should last from fifteen to twenty years without much repairing. Of course, in time the corners will wear off as will those of the best blocks used. The cost of the brick pavement so far will average about \$2.30 per square yard. The present year we propose putting down some on a broken stone foundation, which will reduce the cost to from \$1.75 to \$2.00 per square yard. I prefer a concrete foundation, but think if carefully put in and thoroughly rolled the ballast foundation will be all right, especially on streets where the travel is light. I would oppose anything but a concrete foundation for a business street, or a street with a heavy carting. The cost to property owners fronting on the street will average about \$6.00 per frontage foot." Brick is not an experiment for street paving. In Europe bricks have been used for a century at least. In Holland pavements of this material are used very extensively. Amsterdam is paved almost entirely with bricks, and many of the pavements there have been down for more than fifty years, and do not show any great signs of wear.

#### UNCLE SILAS AT THE CAPITAL.

It tuk er heap o' travelin'  
Ter git me here to-day  
Ter celebrate the corner-stun  
Our gran'sires fought ter lay.  
'Twas long ago they thought ter make  
A buildin' fine an' fit.  
An' tain't no sin ter notus that  
It

Ain't Done Yit.

The universe kin see the flag  
Thet from it is unfurled;  
The word thet's spoken in its halls  
Is heard aroun' the world.  
It's big an' glorious ez it stands,  
It matters not a whit,  
Exceptin' ter its credit, thet  
It

Ain't Done Yit.

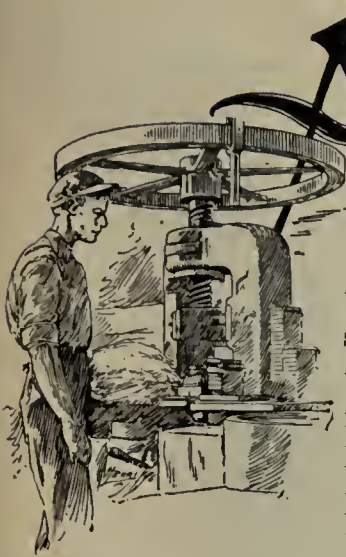
The nation thet it reppresents  
Is very like it, too;  
It hez risen in its granjer where  
Eternity kin view.  
Fur power an' prosperity  
There's none compares ter it;  
It hez distanced all its neihgbors—  
It

Ain't Done Yit



Written for the Clay-Worker.

### ARCHITECTURAL TILES.



AMONG the features of the great Columbian Exposition, the display of art tiles was one of the most attractive. While it is very true that the exhibits were so very far apart, and scattered in a number of buildings, that it required some knowledge of their geography to make them an entertaining display to the average visitor, yet for those who are enthusiastic upon the subject, there was ample material for thought.

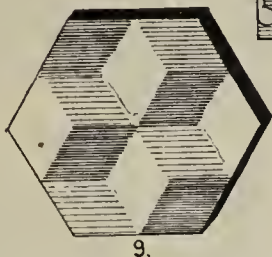
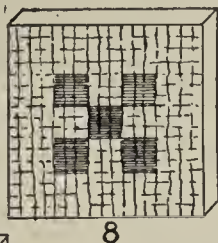
But before entering into some of the specimens of new and original design, such as various makers are showing, it might be interesting to go for a time into a modern factory, and take note of the methods and machinery used therein. There are several of these factories located in the valley of the Ohio, which is one of the most interesting industrial centres of the world. The small towns seem to follow each other so closely, as to be little less than a long rambling railroad city, for the houses straggle along beside the ribbons of steel, these being indeed the veins from which Ohio towns draw their life blood. It is in just such a little town or portion of city, that the Beaver Falls Art Tile Co., have placed their works. Although only established a few years, and producing a limited variety of designs, they have succeeded in taking a prominent

place in the front rank of American



makers, and to-day they are found competing in every state. Much of the success is due to the individuality of the secretary and treasurer of the firm, Mr. F. W. Walker. He is all energy. One morn-

ing not so very long ago, your writer with camera in hand, walked into the office of the factory. In a few minutes Mr. Walker appeared, having just stepped from a train from the east. As one of the representatives of the industry, he had been interviewing the fathers of the nation before the Committee on Ways and Means, the body of statesmen that tinker with the tariff. There is surely no secret in stating that the representatives of the tile industry,



were charged to impress the reformers that so far as the tile trade was concerned, a tariff reduction was inexpedient, nor is it a further breach of confidence to say that success attended the efforts of the tile makers.

To begin at the beginning. The clays of which these tiles are made come from several parts of the country. One pile is shipped from Trenton, N. J., and is of the quality so well known to the industry. Another grade comes from New Jersey, while the third one is a native of the valley in which the works are located. The latter is in apparently inexhaustible quantities, and a great deal of it is worked up into a fine class of bricks.

### MANIPULATING THE CLAY.

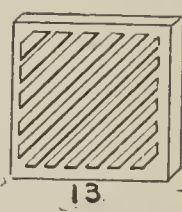
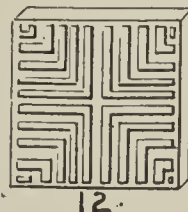
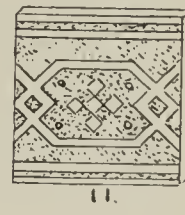
The clay as thus brought together is portioned off according to the private recipe of the maker, and being placed in the big slip vat, undergoes the first grinding, this reduces it to a fine powder. It then goes into a vat containing water with which it is held in solution. After all impurities are removed the clay is again dried or reduced to plastic mass. This latter process is accomplished in an interesting manner. The drier is a receptacle built out of a number of metallic rings, between each of which is a web of textile material. The slip is pumped into this contrivance, and the fine particles of clay collected

upon the webs. This continues until they are filled, and then by means of steam, the material is thoroughly dried. When taken from the drier, the clay cakes look something like a big round waffle, and appear good enough to eat. When this material is again pulverized, it is fine as a dust, and in such shape it is ready for the press room.

The presses are plain screw plunging devices, the dies being engraved with the desired pattern. However, a great many plain tiles are made, these are of various shapes and depending upon a colored glaze for their ornamental quality. The powdered clay is quickly brushed into the mould with a dextrous wave of the hand, and the other revolves the wheel or bar of the screw. The plunger swings downward, and a pressure of several tons is brought to bear. The pressed tile is pushed out by a bottom plunger and given to the attendant who rubs the face of the plain tiles upon a piece of blanket. This is to smooth the surface. At this stage, the tiles are ready for the biscuit kiln. They are packed carefully into great oval saggars, flint or silica sand being sifted in to prevent their adhering to each other. The heavy saggars are placed upon a little trolley carrier and rolled off to the biscuit kiln in another room.

After a period of great heat, the prolongation of which varies somewhat for each firing, the pieces are placed in the hands of a number of girls who separate them and rub up the edges to sharpness. They also cull all of the spoiled ones, and in their work there is a merry clinking of the ware, for in this state it is quite resonant. While they are preparing the tiles for the dipping or glazing room, we will step up stairs to the room wherein all of these colors are prepared.

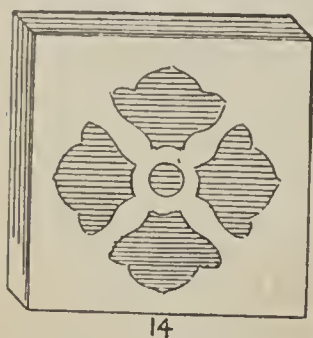
The glaze is an important feature of



an art tile. It must be handsome in color, and it must not craze. Mr. Walker in commenting upon the latter trait



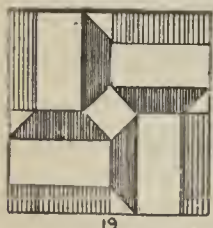
claims for his tiles, less crazing than the majority, noting at the same time the impossibility of perfect immunity. The glazes as ready for application are in the shape of slip, and the tiles are dipped into bowls of the liquid. What these different glazes contain is known alone to the mysterious old gentleman who compounds them. The den is interest-



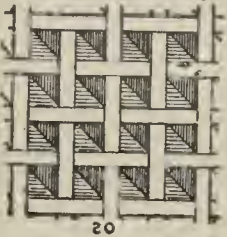
ingly gloomy and savors of neocromancy. Pots and

kettles of all kinds lie about, and mortars, pestles, and little piles of minerals ornament dark shelves. It all savors of the old laboratories and the search for the philosophers stone, and one is lost in a reverie—only for a moment however. A shrill whistle from the corner announces the presence of a speaking tube, and a far-away voice calls in tones of command "A gallon of number 32, please." The alchemist drops a pestle and scurries about for some of No. 32. From a tub No. 32 is dipped up, and a nimble "Mercury" is dispatched with the precious fluid.

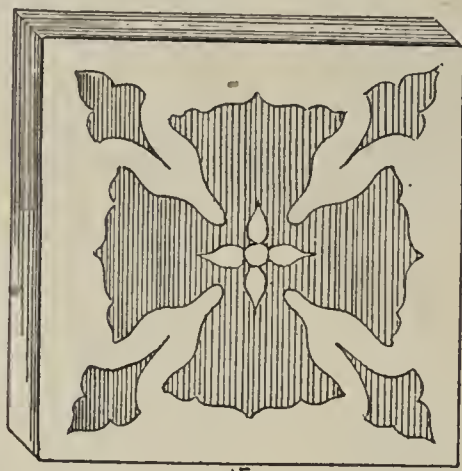
No. 32 goes to an interesting place. A long room is provided with a long table down the centre. Back of it are a host of drying racks, upon which are spread many tiles that have been dipped,



so that they may dry ready for the oven. Before the table in

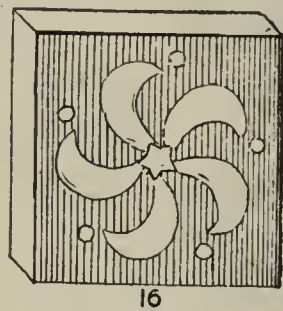


seats, is a little bevy of girls whose work is to perform the dipping. It is deft and careful work and while one hand dips the face of the tile into the bowl of glazing slip, the other, armed with a flat knife, scrapes any of the glaze that may have become deposited upon the edges. This is the delicacy of the work, to dip evenly and at the same time to get none or very little upon the edges of the tiles. Glaze upon the edges would prevent



close joining. The dipping room presents a pretty picture especially to the male visitors for on the appearance of a young gentleman a score of girlish eyes are focused upon him and woe is he, if bashful. Gazing and not glazing is the order of the moment.

From the dipping room, the tiles are again packed into saggars, and go into the kiln for the final baking. The method of carrying the saggars to and from the kiln is novel. A young hercules places one up on his head, trudges off and places them in their proper position.



After an intense firing for about thirty hours, they are permitted to cool, and are taken to the packing room. They are filed away for future reference, as it were, and when the orders come in they are looked up again by the young denizens of this great room, and placed in boxes with care. Such a store of beautiful tilings lie about in profusion, tables are covered, and shelves are loaded with the treasure.

Briefly, this gives an idea of the process by which similar tiles are manufactured. In the way of designs, there is the most amusing jealousy, especially by the foreign makers. This jealousy has been noticeable in particular at the Columbian Exposition. It seems to be the dread that others will copy the design and compete in the market. In obtaining many of the designs that are shown in this article, the writer was driven to absolute theft. The sketches were done in greatest secrecy, and even then, in one section he was constrained to a hasty retreat. However, there seems to be a perversity in human nature. The result as now placed before the reader indicates the successful extent of the perversity in this case.

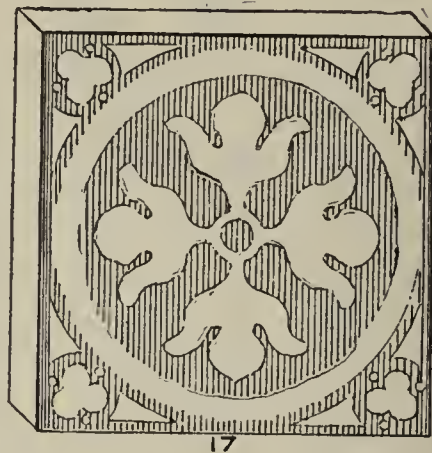
The Belgian tiles were shown in the section from that country located in

the Liberal Arts Building. They were manufactured by the Boch Brothers, and have achieved some note in the world, especially in the old world. Their lasting qualities is one of the features, especially in the varieties made expressly for the purpose of flooring, and known as the flint tiles. Indeed these last are so boasted of, that the representative industriously chips the edges together for the purpose of creating the sulphurous odor that ensues when true flints are struck. "There" he exclaims triumphantly, "you can smell it. They are real flints." In one of the principal churches of Paris they have worn without repair for twenty years.

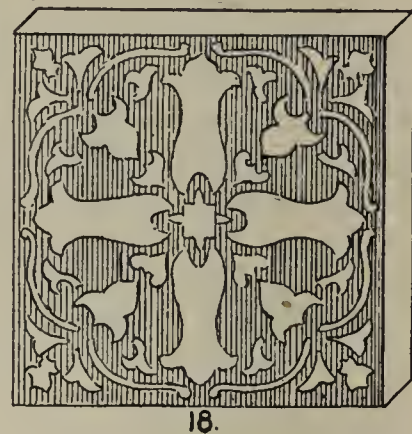
Number 1, is one of the tiles designed for facings, and is shown in the exhibit in conjunction with a handsome terra cotta mantel, the tiles being used to finish out the fire place opening. They are in pale green and pale yellow, being

placed in alternate colors. The fleur de lis is recessed, but otherwise is of the same glaze and color. The result is rather a neat motive.

Number 2 is a plain floor tile in red and white, the



ground being of the former color. It is six inches



square and is rather a soft pleasing pattern. Its companion No. 3 is in a variety of colors. A broad line of black traverses the square. On the larger side of this is a blue ground over which are buff figures. The ground upon the other side is a dark buff, the figures being in a yellow.

No. 4 is a glazed tile in blue and white. It has the appearance of a delft, the design being very delicate and pretty. It is also made for use as a facing. The remaining Belgian tiles up to No. 9, are all for flooring, and are also of the flint variety.

No. 5 is in buff and brown, the curved portion of the figure being mosaiced.

No. 6 is in red and white.

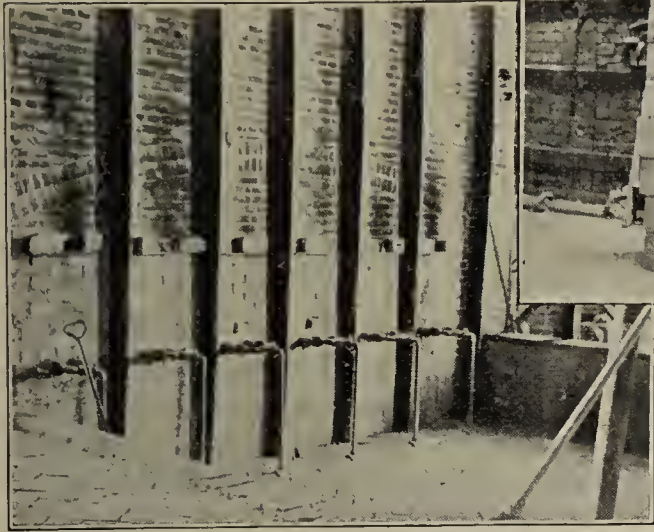
No. 7 begins at the corners with a small triangle of red. The first band is



a neutral color, while the second is a drab. The interior is a yellow buff, the entire tile being mosaiced.

No. 8 is in plain black and white, being mosaiced. The same pattern is also shown with the colors reversed.

No. 9 is in three colors, white, black and blue. The completed



A MUFFLE KILN UNDER FIRE.

tile is of a hexagonal form, each side being about three inches long. These flint tiles are marked for their non-porosity and resistance to absorption. It is claimed for them that even grease fails to enter the ware, and that they never discolor.

Damberty, Servais & Co., is a firm, manufacturing floor and causeway tiles in Ehrang bei Trier, Germany.

No. 10 and 11 are for flooring purposes, and are in plain colors, white, yellow, blue and several others. The color of each tile is solid, the ornamentation being in low relief.

The cause way tiles No. 12 and 13 are examples of heavy durable patterns. The ribs in both are well raised, and afford a very firm foot hold.

Over in the Minings Building, in the Pennsylvania section, there were shown some of the art tiles made by the Star Tile Co., of that state. While their exhibit is not as thorough as could be wished, several pretty patterns are shown. A particularly interesting feature of the exhibit is the fact that specimens are shown in the several stages of completion, some before coloring, some after coloring, after glazing and after the firing.

No. 14 is a small tile about  $2\frac{1}{2}$  inches square, and is shown in blue and white, and brown and white.

No. 15 is in the same colors, but is somewhat larger than the last. They are both pretty and attractive designs.

No. 16 is only about an inch and a

half square, but is a pretty combination of white and blue.

Nos. 17 and 18 are both in buff and



A ROUND KILN COOLING OFF.

brown the former being one of the neatest tiles shown in the Exposition.

In the Liberal Arts Building, in the heart of the British section, were shown the tiles of Maw & Co., a firm that has attained great note in the old world for their wares, and have considerable sales upon this side of the water as well. Their exhibit was perhaps one of the most thorough at the Exposition, being a small temple built of terra cottas and ornamental tiles.



YOUNG HERCULES TOTING TILE IN SAGGERS

No. 19 is a bit of flooring and is composed of small pieces shaped in the odd forms. The dark pieces are reds, others being drabs and buffs. It is rather an odd conceit, and requires good work in the setting, as the forms are too complex to permit carelessness.

No. 20 is likewise a flooring design, and as the contrasts of white, drab, and red are very marked, the effect is brilliant. Like its companion it requires careful setting.

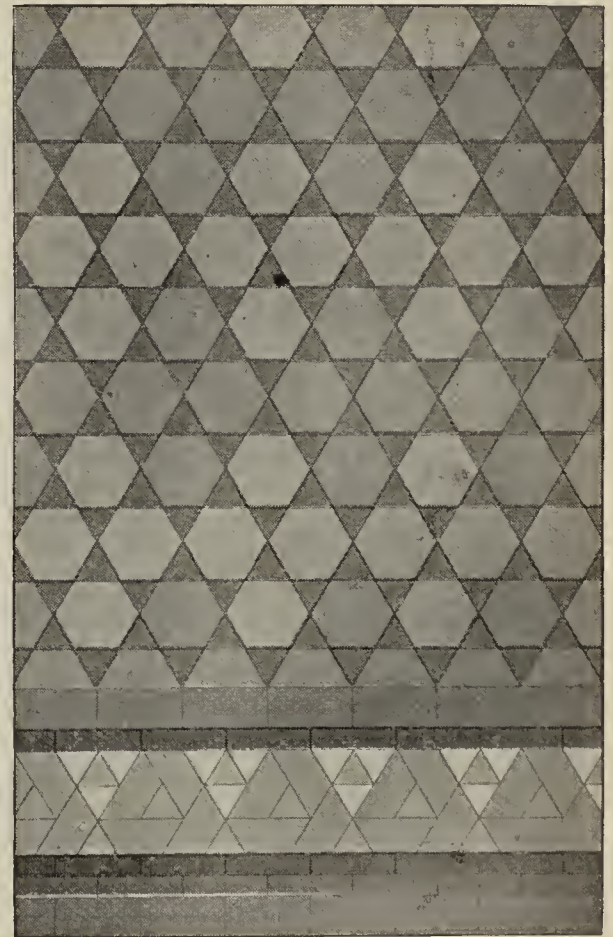
No. 21 is a floor tile in buff. The lining is in fine black and the ribs are in low relief. It is a design that soon be-

comes clouded with dirt, and the mop would be in great requisition.

No. 22 is a piece of frieze and is colored red, drab and black.

There is one lesson however in comparison of the work done abroad and that of our American manufacturers, which impresses one who takes the pains to look into the matter. It has often been said that our own manufacturer could not compete with the old makers in the quality of colors and glazes. This is not true, at least if the Exposition is to be looked to for competing samples. If not superior to those from abroad, the American glazes are fully equal. They have all of the rich coloring, and in some tints are without rivals. Constant experiments in the glaze slip room have added several to the palette of colors within the last few years, and the time is soon coming that our makers instead of competing with foreign goods in our market will meet them at home.

Natural gas in the tile industry as well as in others, is now playing a prominent part. The kilns of the Beaver Falls Art Tile Co., are fitted up for its



DESIGN FOR FLOOR—From Catalogue of U. S. Encaustic Tile Works.

use, and it proves a very satisfactory method. The convenience of regulating the flame and heat is such as to cause the burners to sigh over the idea of the failure of the fuel and a return to the days of coal. It is an event how that may occur at any time.

The readers of the CLAY-WORKER are



doubtless aware the United States Encaustic Tile Works located at the Hoosier capital is one of the largest plants in America. They made two displays at the fair, one a collection of tiles in the Indiana department in the Mines and Mining building and the other a beautiful tile mantel in the Indiana Building. For which they were awarded a medal by the World's Fair Commissioners. Their ware is all burned with Natural Gas and embraces all kinds of floor tiles and a very large variety of glazed ware. The works are well equipped and managed. Visiting clay-workers are always welcome to inspect the work in all its details.

EDWARD WEAVER.

Written for the CLAY-WORKER.

### HINTS ON BRICKMAKING.

No. 81.

BY R. BRICK.

#### RERESSED BRICK FOR FACING WALLS.

**A**LTHOUGH repressed brick have been used for facing walls of buildings for perhaps a half century, they are still popular, and more universally used for this purpose than any

good mortar, and properly protected from roof water by well constructed valleys, eave troughs, and down spouts, they will retain their bright color for many years.

How to make a first-class article of repressed brick, has troubled many brickmakers in the past and will do so in the future. To begin with we must have clay that will burn the desired color. This may be cream, buff, mottled, or somewhat of red. If we have no clay that gives a color that suits the market, we cannot succeed. In some clay beds the clay seems to be of uniform quality in all parts of the deposit. This being the case the repressed brick can be made from same clay that the common brick are. In most clay banks there are several kinds of clay, each burns a different shade of color. In this case, the clay for repressing must be selected and the same quality used all the time, so that the color and shrinkage will be uniform. The next step is the proper preparation of the clay for the machine. This must take place either before or after it leaves the clay bed. The very best possible mode is to dig and throw it up in the

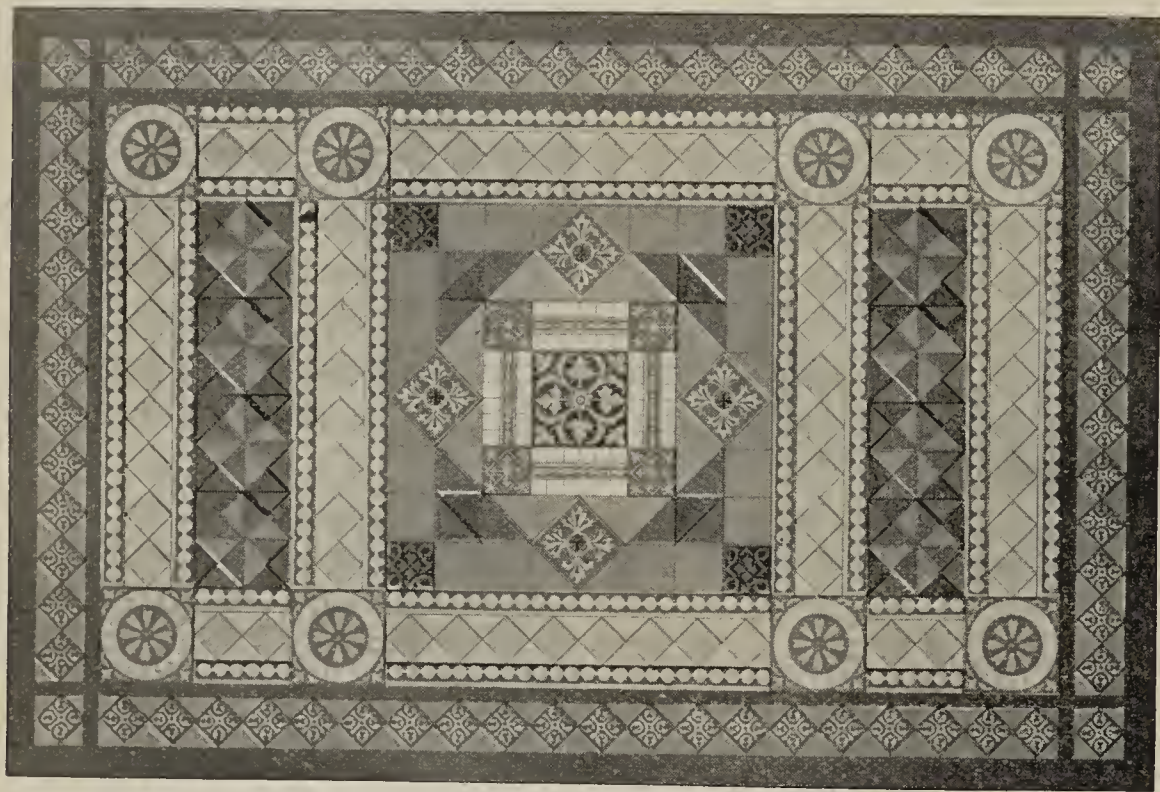
forces perform in the former method.

Where it is not convenient to water clay in the mine, a good plan is to put it through a disintegrator, then moisten it to the degree desired—for soft mud brick more, for plastic clay less. A pit full should be moistened, then allowed to stand a few hours to allow the small particles of clay to absorb moisture until the whole mass is moist, hence soft and ready to be ground and well mixed.

Some clays, clear of small, hard particles, can be well prepared by being well soaked and ground. However it may be accomplished, the clay must be a smooth, homogeneous mass before it is ready to be moulded. It must then be made into a good, smooth, square brick. For repressing, it should be made in a mould, so that both sides and ends are smooth before they are repressed. A brick that is faulty in finish on the surface before it is repressed will be faulty in a less degree afterward. The repress will give it perfect shape and sharp edges and corners, but cannot make a rough surface appear smooth and finished. After the bricks are moulded for repressing, they must be handled with greater care; if soft mud bricks, they are dumped on pallets or on the floor, and remain there until stiff enough to handle, then there must be no dents or finger prints in the surface, for those cannot be hidden by the press.

The bricks harden first on the surface, especially on the edges and corners; the surface is ready for repressing, while the inside is too soft. If they are repressed in this condition they will not bear lifting from the press without warping. The water also is driven to the surface by the pressure and gives them an undesirable finish. To remedy this, as soon as the bricks are hard enough to bear careful handling, hack them up in close order and cover with canvass for several hours. The canvass prevents them from drying by contact with the atmosphere. Being packed close the moisture is uniformly diffused. The surplus in center is brought to the surface, it is then ready to repress and will keep its shape and look well on the surface.

This is not necessary when plastic bricks are to be repressed, as they are ready for the repress when they come from the machine. Although it is best for them to stand perhaps an hour, to allow the surface to harden just a little, it will then polish rather better, as it comes



DESIGN FOR VESTIBULE FROM CATALOGUE OF U. S. ENCAUSTIC TILE WORKS. Scale  $\frac{3}{4}$  in. to a foot.

other material. It is true that the quality and appearance have improved and kept up with the progress of the times. Their continued use in buildings for fifty years is evidence that there are many good points in them.

They are durable, strong, and the best to resist heat, better than iron, sand stone, granite or marble. If well laid in

bank and leave it exposed to the action of moisture, frost and solar heat, during the winter. This is nature's disintegrator, and is a perfect one. In this condition it is only necessary to thoroughly grind or pug it. It is then ready to mould into bricks. In most cases it is not practicable to do this, then machinery must do the work that natural



from the press box. It is necessary to keep the press box clean and well lubricated with oil.

The repress must be kept bright and perfectly smooth. The plunger must fit close in the box to prevent clay from passing between; this leaves a flange on the brick, which when broken off leaves a rough edge. The cap also must fit perfectly to prevent the same fault on top edge of brick. A repress with adjustable boxes on rock shaft is a great help toward keeping cap tight and preventing flange on top of brick, as the rock shaft across the adjustable box is tightened, which prevents lost motion in the press arms and holds the cap firm on the press box.

Another point in the care of the press. In moving the cap on and off of the press box, be sure to raise it clear off of same before moving. If it is allowed to drag, it soon ruins cap and box. All nuts should be kept tight, and journals well oiled. Don't leave the oil hole with plug out and allow it to fill up with dust and clay.

In pressing soft mud bricks they should be brought from hack to press without being marked or scratched. With a soft brush, brush lightly from the brick the surplus sand. The press man should use both hands to place the brick in the press. It should go in without touching sides or ends, then receive enough pressure to make sharp edges and well defined corners. When pressure is relieved, the plunger should drop three-sixteenths of an inch; the brick should follow it, so as to be free from the cap when it is thrown aside. The dropping of the brick also turns any flange there may be upward. When it is delivered and clasped between two paddles, this flange is above the other, otherwise it would come between the brick and paddle and be pressed into the former. The off-bearer lifts it carefully and places it on the floor or pallet on flat. I much prefer a pallet. This can be placed on a rest near the press, and nearly on a level with it, then the off-bearer is not compelled to stoop and place the brick on a level with his feet; this he cannot do without considerable strain on his wrists, as well as the brick. A pallet on a rest is better. He can place five bricks on the pallet, side by side, and, by placing one brick on another, he can put ten bricks to a pallet. Five of these pallets with fifty bricks can be carried to the drying floor on a spring truck, and placed on

the floor without touching the bricks.

This article will be continued until the bricks are on the cars ready for shipment.

### HIGH TEMPERATURE "CONES."

#### An Easy System of Estimating Kiln Temperature.

FROM all that can be gathered, it appears that the pyrometric methods of measuring high temperatures which have recently been devised by Le Chatelier, Roberts-Austen, and others, are only capable of giving reliable results in the hands of scientists or highly trained operatives; they are, in fact, too delicate and too complicated for the average brick or pottery burner. And yet there is undoubtedly a demand for some moderately accurate system of measuring the heat in kilns, and it is believed that were these available more uniform results could be produced, and there would be fewer spoilt goods as well as a reduced consumption of fuel.

The "test-pieces" of the pottery burner are at best but a rough-and-ready way of judging the temperature conditions, and little dependence can be placed upon them; for two different men of equal intelligence and skill will invariably differ from each other in their deductions from the observed behavior of these "test-pieces." Moreover, they are rarely made of uniform size, texture, and chemical composition; and it cannot be wondered at if the results which they yield are conflicting. Now it is known by experience that different glazing mixtures are fusible at different degrees of

heat: some are easily made to "run," whilst others are refractory until the highest temperatures attainable in the kiln are reached, whilst intermediate between these extremes are other mixtures which melt at intermediate temperatures. It is evident, therefore, that by preparing suitable mixtures and graduating their fusibility, it is possible to prepare a kind of thermometric scale by means of which any degree of temperature may be determined with approximate accuracy. Thus, mixtures A, B, C, &c., may be prepared which shall melt at temperatures 1,000°, 1,025°, 1,050°, &c., respectively.

By working on the lines which we have just indicated, the German clay-workers have succeeded in producing a thermometric scale by means of which temperatures may be measured from 1,145° C. to the highest heat of the pottery oven. The glazing mixtures are prepared in the form of small cones or tetrathedra. A series of twenty cones forms a scale. The first cone melts at 1,145° C., and the fusion of each successive cone indicates a rise of 30° C. When the cones are to be used they are fastened to fire clay plates and placed in the kiln, and by observing which cones fuse the temperature may be gauged with sufficient accuracy, and obviously with much greater accuracy than any similar method.

We are fortunately in a position to give the actual composition of each member of the scale of standard temperature cones, and thus to place the most approved continental method of determining kiln heat in the hands of our readers.

| No.     | Chemical Formula.<br>0.3 K <sub>2</sub> O, 7 CaO, and :— |                                |                                                       | Temperature indicated<br>by fusion. |            |
|---------|----------------------------------------------------------|--------------------------------|-------------------------------------------------------|-------------------------------------|------------|
| 1.....  | 0.2                                                      | Fe <sub>2</sub> O <sub>3</sub> | 0.3 Al <sub>2</sub> O <sub>3</sub> 4SiO <sub>2</sub>  | 1,145°                              | centigrade |
| 2.....  | 0.1                                                      | Fe <sub>2</sub> O <sub>3</sub> | 0.4 Al <sub>2</sub> O <sub>3</sub> 4SiO <sub>2</sub>  | 1,170°                              | "          |
| 3.....  | 0.05                                                     | Fe <sub>2</sub> O <sub>3</sub> | 0.45 Al <sub>2</sub> O <sub>3</sub> 4SiO <sub>2</sub> | 1,200°                              | "          |
| 4.....  | —                                                        | —                              | 0.5 Al <sub>2</sub> O <sub>3</sub> 4SiO <sub>2</sub>  | 1,230°                              | "          |
| 5.....  | —                                                        | —                              | 0.5 Al <sub>2</sub> O <sub>3</sub> 5SiO <sub>2</sub>  | 1,260°                              | "          |
| 6.....  | —                                                        | —                              | 0.6 Al <sub>2</sub> O <sub>3</sub> 6SiO <sub>2</sub>  | 1,290°                              | "          |
| 7.....  | —                                                        | —                              | 0.7 Al <sub>2</sub> O <sub>3</sub> 7SiO <sub>2</sub>  | 1,320°                              | "          |
| 8.....  | —                                                        | —                              | 0.8 Al <sub>2</sub> O <sub>3</sub> 8SiO <sub>2</sub>  | 1,350°                              | "          |
| 9.....  | —                                                        | —                              | 0.9 Al <sub>2</sub> O <sub>3</sub> 9SiO <sub>2</sub>  | 1,380°                              | "          |
| 10..... | —                                                        | —                              | 1.0 Al <sub>2</sub> O <sub>3</sub> 10SiO <sub>2</sub> | 1,410°                              | "          |
| 11..... | —                                                        | —                              | 1.2 Al <sub>2</sub> O <sub>3</sub> 12SiO <sub>2</sub> | 1,440°                              | "          |
| 12..... | —                                                        | —                              | 1.4 Al <sub>2</sub> O <sub>3</sub> 14SiO <sub>2</sub> | 1,470°                              | "          |
| 13..... | —                                                        | —                              | 1.6 Al <sub>2</sub> O <sub>3</sub> 16SiO <sub>2</sub> | 1,500°                              | "          |
| 14..... | —                                                        | —                              | 1.8 Al <sub>2</sub> O <sub>3</sub> 18SiO <sub>2</sub> | 1,530°                              | "          |
| 15..... | —                                                        | —                              | 2.1 Al <sub>2</sub> O <sub>3</sub> 21SiO <sub>2</sub> | 1,560°                              | "          |
| 16..... | —                                                        | —                              | 2.4 Al <sub>2</sub> O <sub>3</sub> 24SiO <sub>2</sub> | 1,590°                              | "          |
| 17..... | —                                                        | —                              | 2.7 Al <sub>2</sub> O <sub>3</sub> 27SiO <sub>2</sub> | 1,620°                              | "          |
| 18..... | —                                                        | —                              | 3.1 Al <sub>2</sub> O <sub>3</sub> 31SiO <sub>2</sub> | 1,650°                              | "          |
| 19..... | —                                                        | —                              | 3.5 Al <sub>2</sub> O <sub>3</sub> 35SiO <sub>2</sub> | 1,680°                              | "          |
| 20..... | —                                                        | —                              | 3.9 Al <sub>2</sub> O <sub>3</sub> 39SiO <sub>2</sub> | 1,710°                              | "          |

*The British Clay-Worker.*



Written for the CLAY-WORKER.

## A BRICKMAKER DOWN IN MEXICO.

Fifth Paper.



WE WERE left at our last writing gazing at the ever-lasting snow-capped peak of Popocatepetli, on our way to Puebla. Puebla is a small city, situated in the lovely, rich valley of Mexico, and ought to be an attractive place from its surroundings, but it is not; it has an old dilapidated appearance, with no sign of energy.

The famous Mexican Onyx quarries are about three miles out, and we expected to find them worked to the greatest extent, but were sorely disappointed, as there were but a few men getting out small slabs, in the crudest manner and with the most primitive tools. All they seemed to be doing with this beautiful material, which cannot be surpassed anywhere, was to make it into small, fancy articles to sell to travelers. One or two small mantels were the only articles of real use that we saw.

The valley all the way from Mexico to Puebla is a Mexican brewery, but a Mexican brewery is a different thing from that in this part of the country. Their beer, or pulque, as it is called, is distilled by nature. This valley is a vast pulque farm. The pulque plants are set out in straight rows, about twelve feet apart, and are cultivated for the first two or three years until they get a strong, vigorous growth; at this age the heart or crown is chopped out so as to form a cup that will hold possibly a peck or more. The leaves of the plant are long, pointed and very thick and fat. The inside of the leaf is fibrous and spongy; these fat leaves seem to do the distilling and brewing, and every morning the receptacle in the crown will be filled with pulque, which is gathered in skin bags. The pulque gatherer has a long, hollow stem like a club gourd, with a small hole at each end; he sucks out the air and lets it draw the liquid on the syphon order and then runs it into his bag. There are pulque shops in all the

towns, just as there are beer saloons here, and a fellow can get just as full as a tick if he wants to, and he will, especially at first, if he is not very careful.

To see Mexico, one must see a bull fight, and if you should return without seeing a bull fight, you have not seen Mexico any more than a European has seen the United States without seeing the Niagara Falls. So we took in the bull fight along with everything else; in fact, went to two, one at the City of Mexico and one at San Luis Potosi, a town of about 75 thousand inhabitants, some 600 miles on the road to Monterey. We will describe that at the latter place only, as a bull fight, like a circus, is the same old thing with very slight variations, every place and every year; yet people in Mexico will go to every bull fight, just as we go to every circus, as

given by regular troops, who travel about the country, their standing being governed by the reputation of the Matadores who are the stars.

The day is perfect in every respect; the sun shines bright, and the blue haze hangs with a quiet, dreamy appearance along the edge of the mountains. Just after noon we start for the Arena out at the edge of the town, and every one else seems to be going in the same direction. As we approach the amphitheater there is a noise of confusion similar to that in the vicinity of a circus.

The Mexicans are great gamblers, and all along the walk near the grounds are gaming arrangements of all kinds, from the shell game racket up, or down.

We secure a good position, not far from the Governor's private box, and soon all the seats are filled around the entire Arena. There are hundreds of ladies and gentlemen in the most fashionable attire, as well as hundreds of others with attire not so fashionable, for every body goes to bull fights.

The Governor and friends file into their private box, the band plays a Mexican national air, and quiet is restored and all is ready. The band strikes up again with a lively tune, and in march the Matadores, Banderilleros and Picadores on horseback, all dressed in gaudy embroidered waistcoats and tights, glittering with gold and silver. They come forward, salute the Governor, the band ceases to play, the master of ceremonies dashes to the opposite side of the Arena and with a blast of the bugle, a heavy door flies open and out from the dark stall dashes a bull, and as he emerges into the light a couple of long darts are thrust into each side of his shoulders by a man sitting just above,

to finish the waking up he has already had in his box before the door was opened.

He comes with a rush to the center of the Arena and stops. The multitude cheer and clap their hands. The bull looks around wildly, tosses his head, paws the ground, then spying a Banderillero with flaming red blanket, makes a dash for him, and while you hold your breath, expecting to see the man tossed in mid air, he slips quickly to one side and the bull passes by just a hair's breadth.

The Arena is so arranged that these fellows have a chance to escape when



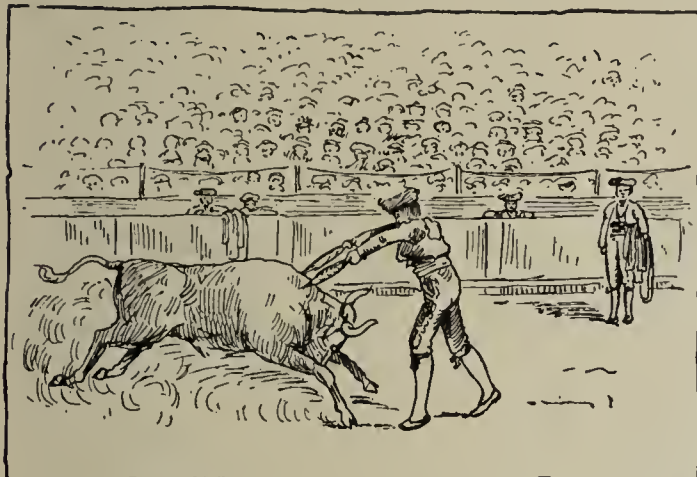
regularly as the spring comes round, although we will protest that we only go to take the children.

Sunday is the holiday always set apart for this most exciting entertainment, and when there is a bull fight on hand you can smell it in the atmosphere; every body knows it, from the poorest street gamin to the richest Don, and every body expects to go.

We happened to be in San Luis Potosi on bull fight day, and there seemed to be extraordinary interest taken on account of some famous Matadore, whose company was to give the performance, for these bull fight entertainments are



close pressed. The amphitheater is raised so there is a high, strong front which effectually protects the audience from danger; the bottom of this wall is open about 16 inches high; about five feet inside of this is a barrier about four feet high all the way around the Arena. When the Banderilleros or Capidors are pressed too close, they vault over this barrier and roll under the outer wall, for the bull often follows right over the fence. The bull having passed the first



Banderillero, sights another who is shaking a red scarf, and makes a drive for him, but he deftly slips to one side and plants a couple of darts in the bull's back, which causes him to snort with pain and rage; about this time he spies a Picadore quietly resting on his blind-folded horse; this being game more suited to his taste, he makes a drive for him with head down and tail straight out. The Picadore has a long, stout lance with an inch iron spear on the end. The science in his part of the performance is to catch the bull in the shoulder with his lance and hold him off until the Capidors detract his attention. This Picadore performance is exceedingly dangerous, and is not always successful by any means.

The horse is protected by a leather apron across the breast, also leather skirts at the sides. The Picadore's thrust is not always sure, or the bull's rush is too strong, and then the chances for that horse and rider are mighty slim.

In one instance the bull struck the horse and fairly raised him clear off the ground, toppled him over backwards with the rider prostrate under him. It was all the Banderilleros and Capidors could do to prevent his goring the man to death, and this is very

often the fate of an unlucky Picadore.

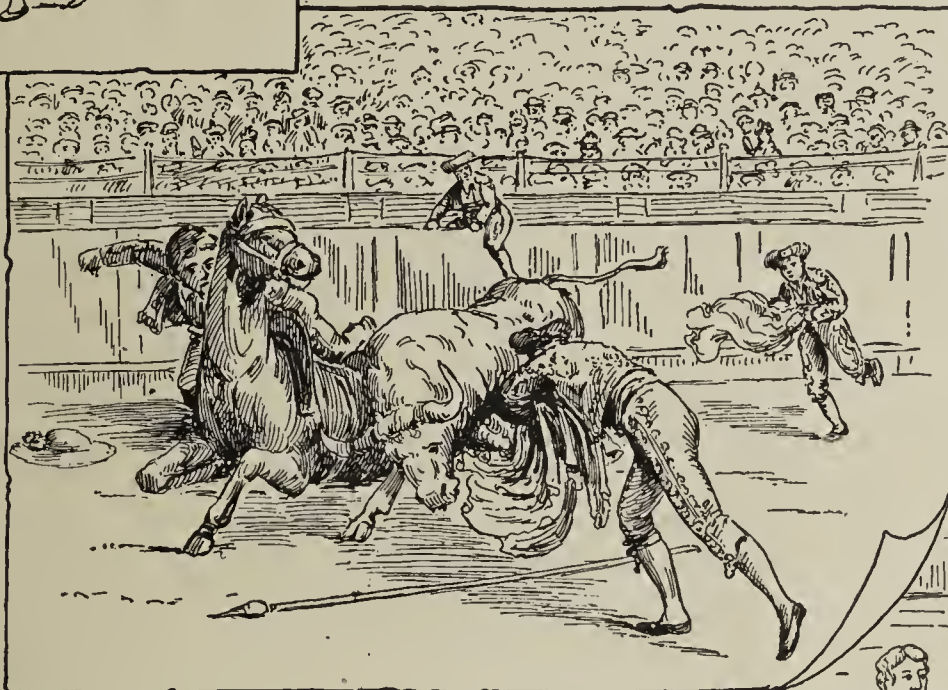
This same bull caught another horse and literally ripped the insides out of him, and he was left to stagger around the ring in this sickening predicament.

After the bull has been played with in this manner to the full satisfaction of the audience, which has cheered itself hoarse at every plucky act of either man or beast, the bugle sounds and the Picadores, Banderilleros, etc., leave the ground. The music begins playing softly and the audience, knowing what this means, leans forward with great expectation, when in marches the Matador, the grand high bull slayer of the Company. The cheering is so long and loud one can scarcely hear himself think. He is dressed in a most gorgeous manner; his jacket and pants with knee buckles, all trimmed

neck and is to one side, the horns barely grazing his jacket.

One of the highly scientific performances of the Matador was, to use a long jumping pole, and when the bull would come down on him at full speed, he would plant the pole to one side and leap high in the air, passing clear over his back. Then another most dangerous performance was to sit in a chair in the center of the Arena and plant the two gaily bedecked darts in the bull's neck from this sitting position and with the quickness of lightning slip to one side out of harm's way. Then the audience would simply go wild.

After playing the bull with these scientific touches to the full satisfaction of the spectators, the band would change from the quick circus music to that of a dirge, which is the beginning of the end. The Matador would then take in his right hand a slender pointed sword, about three feet long, and in his left hand a red flag. With the latter he attracts the bull's attention, who still has the fire of his ancestry reared upon the



in silver and gold—have cost hundreds of dollars. He steps to the front of the Governor, salutes, bows to the cheering crowds, throws his cap on the ground and takes two spears, about two feet long, all bedecked with different colored tissue paper, and stands waiting the pleasure of the bull, who has strolled to the far side of the Arena, wondering what has become of his tormentors. He soon spies this new enemy, and with one look of defiance comes at him with head down and tail in air. The Matador stands firm, seemingly unconcerned, holding one of the gay darts in each hand, pointing forwards. On comes the bull, and just at the instant you hold your breath, expecting to see the man start heavenward, he plants those two spears in the bull's



plains of old Mexico, bounding through his veins, and recognizing a man with a red flag as always an enemy, charges upon him. The music plays softly and on comes the bull, and just as the horns seem to pass into the man's body, that long, sharp sword strikes forward and between the shoulder blades, and sinks to the hilt, then with a lightning jump to one side the man is saved and the sword withdrawn. The impetus of the



bull carries him forward when he begins to reel and wander around the Arena without returning to the attack; he soon lays down, groans, gets up and staggers a few steps, then down again, and with another groan is dead. Then the lassos ride in and drag him out.

We thought we had seen the audience go wild at different stages of the game, but this grand finale capped everything; they stood up and yelled, the men waving their hats and the ladies their handkerchiefs and shawls; they threw in to the Arena for the Matador everything imaginable; hats, handkerchiefs, canes, purses of money, cases of cigars, etc., etc., and so the bull fight ended.

Five or six bulls are usually killed at one performance, and any number of horses, from three to eight or ten; horses, they say, are cheap. Not infrequently one or two men lose their lives.

The Matador does not always come off as well as the one we have described. If he is a novice in the business, or shows fear or nervousness, he is apt to miss the vital spot when using the long sword, and after a mistake or two of this kind he is compelled to leave the Arena by the displeasure most emphatically displayed by the audience, and a fresh artist is brought in. With such a Matador, the bull frequently gets in *his* work, and the man is carried out either dead or not much better.

Having witnessed a bull fight, we felt perfectly satisfied that we had *seen Mexico* and were ready to retire from the field.

Written for the CLAY-WORKER.

#### DRYING BRICK.

BY S. GREEN.

##### CONTROLLING THE CURRENTS OF AIR.

IN THE last article, the control of the air in motion, was partially described in the means to "Make the wind blow," and the position of standing radiators, with steep drainage, was noted as peculiarly favorable in connection with a horizontal current more closely resembling the direction of the wind in drying brick on an open yard.

Increased radiation from heating pipes or surface, as presented by a flue dry floor, may be regarded as accompanying the use of more air—carrying off the heat more rapidly—and directly due to the employment of "volume" wheel fans, arranged to occupy positions at but short distances apart, and near the heating surfaces.

The fans constitute air centers; and

in their distribution throughout a drying room, or the length of a tunnel with rather closely confined enclosures, the air may be made to assume ascending or descending, curved or spiral and forwarding courses, and the most positive control and thorough distribution is secured for uniformity of drying.

Though more fans are required, there is economy in such distribution of their service, they need not run so fast to create as much motion to the air as the drying bricks can fairly bear when in such close proximity, and the results are observed to be much more effective when so placed.

To require more air to move through the fan space, may enable more to be moved at less cost for the fans, yet it costs a greater proportionate expenditure of power to put as much air in motion, and the fan should be placed at considerable distance from the brick to avoid "checking" or other injury, and then much of the desirable, direct "fanning influence" is lost.

Large, easy running fans appear to be desirable for moving the "volume" of air and about as fast as the drying material will fairly bear; they presenting much fan surface to the brick piled, placed on racks, or moved on cars past its face, and with both the drawing and forcing faces about equally effective. A line of fans with their diameters occupying nearly the entire length of dryer (as a dozen fans of four and a half feet, with about five feet allowed for each, will supply a dryer of about sixty feet in length) presents much fan face surface for direct action when cars of brick are moved past them on a track each side of and close to the fans.

In a dryer where eight car tracks were used, four being each side of the line of fans, it appeared that nearly as much time was required, as by other artificial means of drying, yet it was remarked that the standing radiators, placed between the lines of cars, developed about twice as much radiation as from the same quantity of steam pipe as ordinarily arranged, and the engine exhaust steam was advantageously employed.

It was also observed, in this eight-track dryer, that the cars of brick on each outer track, the side where the air was pushed up and from one set of fans, to pass over the ceiling, and in a diagonal direction across the dryer to the other side to descend through the brick on the cars of the track on the other side of the dryer, opposite to the next set of fans to

which the air was drawn, showed at these portions where the ascending and descending currents occurred, the most uniform drying.

Brickmakers of experience, accustomed to take much time to dry brick, lest they become injured in the "forcing" operation, are most liable to hesitate before accepting statements of very quick and satisfactory drying of building brick. Yet when it occurs from more thorough distribution of the air moving means, the conditions seem most favorable, and the practical results are certainly most desirable, and the instance where the quantity of brick on each side of the fans was reduced from those on four tracks of cars to one, there being but two tracks instead of eight, is probably about as striking an illustration as can well be used for comparison.

Though the motion of the fans and the air is not changed, and none of the brick are subject to greater liability to injury, on either of the tracks of the two-track dryer, than the track each side of the fans where they occupy the same position when eight are employed, about as many dried brick are secured from the two tracks, which have been made to dry in as short a period as five hours, under the same "fanning influence," but with only about one-fourth as many brick exposed to it, as compared with the eight-track dryer, requiring twenty hours.

Thus, though about four times as many fans are used in proportion to the quantity of material to be dried under their influence, they cost no more for the same product, there is much saving in room, enclosure and cars, and it is also shown that less piping is used for the same output, and this fact may be attributed to the accompanying increased radiation, as already noted, due to more air passing over the surface of the pipes, as well as the greater supply over that of the brick to insure the increased evaporation of moisture.

This plan of using the fans more fully and yet without increasing the number of revolutions (and it has been found that three hundred and seventy-five are about as many as should be made for fairly effective and yet easy running) is shown to quicken the drying, and yet lessen the proportionate cost for power or fuel, which is unlike the result experienced in running fans faster to exhaust more air from the end of tunnel dryers (seeming to throw off the air at higher temperature, to waste), and thus dry faster at a greater proportionate expenditure of fuel. It seems to be better to control the currents of air in distribution to insure easy running fans and safe drying.



## A NOTED CHICAGOAN.

THE subject of this sketch, Mr. D. V. Purington, was born at Sidney, Kennebec County, Me., January 22, 1841. He was educated in the common schools, and spent one year at Oak Grove Seminary, a Friends boarding school, at Vassalboro, Me. He left home at the age of eighteen and spent two years teaching school in New Jersey. He entered the Union army as a private soldier, in the Fourth New Jersey volunteers, in August 1861, and was honorably discharged January 8, 1866, with the rank of captain. He soon after entered Freedman's bureau, where he remained until April, 1869, when he went to Chicago and engaged in the lumber business. After the great fire of 1871 he became associated with the firm of Straus, Hahne & Co., brick manufacturers, and afterwards organized the Purington-Kimbell Brick Co., with which he has been connected ever since. To Mr. Purington's progressive spirit and enterprise more than to any other one influence is due the great advancement made by the brickmaking craft in and about the city of Chicago. Possessed of rare good judgment and splendid executive ability, Mr. Purington has introduced one improvement after another in the various details of the business and carried them to a successful issue. Beginning with the introduction of the stiff clay process in 1873, almost every year has marked the general adoption of some important improvement first inaugurated at Purington's works. His experiments have been many and expensive but, thanks to his keen business sense, they have almost invariably in the end brought profit to him, his neighbor brickmakers, and the craft in general.

Mr. Purington is now president of the Purington-Kimbell Brick Company, which organization has the largest brick works, under one management, in the United States. He is also president of the Purington Paving Brick Company and the St. Louis Paving Brick Company, of Galesburg, Ill., which have two of the best appointed plants of the kind to be found in the world. Mr. Purington's standing as a citizen and business man is very high, and his social qualities make him a great favorite with all

who know him. In short, Mr. Purington is a type of our best American manhood.

Written for the CLAY-WORKER.

## STREET PAVING BRICK.

## Fourth Paper.

BY ALFRED CROSSLEY.

THE clays suitable for paving brick are various, and include shales, semi-fire clays, stoneware or potter's clays, and common brick clays. By this is not meant that any shale clay or any common brick



D. V. PURINGTON, CHICAGO, ILL.

clay will make pavers. But the idea that paving brick clay is rare, either in variety or location, which has found more or less credence, is quite a mistake. As a well-known paving brickmaker has well said: "The clay that will make paving brick is not as scarce as one might imagine. There is a great deal of paving brick clay all over the country, and it will be discovered as the demand for paving brick arises."

Many clays used for building brick will not make a paving brick at all, while many others will do so, especially if mixed in proper proportions with a different kind. A few years ago nothing was heard of but fire clay (i. e. semi-fire clay) for this purpose, so much so that

from the mis-use of the term much misunderstanding arose, and the writer was one to call attention to the dangers likely to accrue. Now the tide appears to have turned, and shales have become the favorite. From an awakening of the public sense to the unsuitability of real fire clay for paving brick purposes, all that passes under that name is frequently condemned, and one writer has gone so far as to say: "It is not necessary to have anything pertaining to fire clay. The farther away you can go from fire clay, in my opinion, the better brick you will have." In fairness to this material and to correct the wrong impression that this sentence may have given, let it be stated that some of the best paving brick ever made, and that have given and are giving the best of service in the roadway, are made from this material, which for want of a better term, may be called semi-fire clay.

Allied to this low-grade fire clay, is another clay of finer grain, called potter's clay or stoneware clay. As these are practically of the same nature, they may be considered together, in their relation to paving brick manufacture, the difference between what is often called fire clay on the one hand and potter's clay on the other, being actually less than often exists between two deposits of shale.

The success which has attended the manufacture of paving brick from certain celebrated beds of shale has, to some extent, diverted attention from these stoneware and semi-dry fire clays, and it is a notable fact, that in not a few instances, parties on the lookout for paving brick material would go miles to find shale, and pass over these other clays, equally if not more suitable, located closer to hand. Many of these clays possess in a remarkable degree, in their natural state, all the elements, chemical and physical, that go to make up a first-class paving brick. Their relation to fire clay makes them so far refractory that they will not melt at a low heat, and after they are brought to the point of vitrification will bear to be held at that point while the whole kiln is being brought up to the required heat. In this they possess a large advantage over many shales.

These clays also possess the physical



properties, enabling them to make a strong, homogeneous brick, and when properly prepared are easy to work into brick. They are usually plastic without being sticky, a condition favoring the largest percentage of output by the machine. Of course the clays of this class are not uniformly good, and some require much more care in manufacture than others.

These semi-fire clays are found in the coal measure formations, and the supply is both abundant and widely distributed. The best known brick of this class are the West Virginia or Porter brick, and while the overwhelming demand upon the firms manufacturing them has no doubt led to inferior brick being put on the market, yet where these brick are thoroughly burned to the point of vitrification, and carefully annealed in cooling, they make a roadbed whose durability is beyond question. Nearly every coal mine has a vein of clay either above or below the coal, which, in many cases, has to be mined and brought out in order to give head room, that would make paving brick in no sense inferior to the Porter brick, and be a source of profit instead of expense to the operators.

Shales and shale clays, as already mentioned, are largely used in the manufacture of paving brick. Some of these are highly suitable, and when the immense deposits of this material throughout the country are considered, it will be seen that the supply of raw material for vitrified brick is practically inexhaustible, no matter how great the demand. The best shales for this purpose are those having similar fire properties to those possessed by semi-fire clays, and for the same reasons. The fault with many shales is that they are too easily fused. They do not possess the staying qualities when they reach the point of vitrification, and a very little extra heat runs them to a shapeless mass. For this reason great care should be exercised in the selection of a shale for paving brick purpose. It is not wise to trust any clay on sight, but it would be safer to trust a semi-fire clay on sight than a shale clay.

One advantage that shales have over semi-fire clays is that they often occur in much larger deposits, and hence are cheaper to work. It is possible for trouble to arise in burning these weak shales that was not anticipated when the preliminary tests were made. A quantity of clay was probably sent to

some machine maker, or possibly to two or three different firms, who each made brick of the clay, burned some of them, and returned excellent samples to the parties interested, which fail to be duplicated *in brick* when the works are built and in operation. The reason is that it is much easier to burn a few brick, with little or no weight on them, in a small test kiln where there is only a small body of heat, and hence under easier control, than in a kiln holding perhaps two hundred thousand, set thirty or forty high, and where the heat is in too large a body to be played with like the other case.

In many cases where trouble is experienced in burning these weak shales to the vitrifying point, it would be found of great advantage to mix with the shale a certain proportion of some strong semi-fire clay, and thus enable it to stand up in the kiln without melting. In doing this, great care should be exercised to grind both clays thoroughly fine and temper them well, so that the clays shall not merely be *mixed*, but thoroughly amalgamated and blended together. This brings us to the question of using common clays for paving brick. There are a few well-authenticated instances of this being done, but they are exceptional. As a rule, these clays do not possess the strength and toughness required in paving brick. And yet it is quite possible that there are many common clays that are available for this purpose. As one of the most popular members of the National Association has said: "Do not give up your clays too quickly; do not make up your mind too quickly, that you cannot make paving brick. A man that has clay that does not fuse easily, that stands a high heat,—has a fruitful field for experiment before him."

The remarks already made relative to the mixing of low grade fire clay with weak shales, applies with equal force to common clays. It is on this line that common clays are most likely to be manipulated with success. Just how much of the refractory clay may be required depends entirely on the nature of the common clay, it may be one-eighth, a fourth, a third, or even a half that is required, but whatever the proportion that is added let the clays be thoroughly blended, as before mentioned. The writer has succeeded in producing an excellent paving brick in this way.

A friend of the writer, and one of the most prominent and best informed

writers on clay subjects generally, is quoted as being responsible for the statement that, "You can often get good paving brick by mixing number one fire clay (that is non-plastic or flint fire clay.—A. C.) with common clay, providing the latter will also stand a high degree of heat in burning." This idea is very erroneous. Number one fire clay is entirely devoid of plasticity, and on this feature depends largely its value as a fire clay, hence it will not blend or unite with common clay so as to form a homogeneous body, which is indispensable in a paving brick. The only fire clays that can be used as a mix of this kind are the low grade or semi-fire clays already spoken of, which are highly plastic and will form a paste readily with other clays.

Such in brief is a description of the material capable of producing brick combining the required qualities of hardness, toughness and vitrification. In general terms the clay for paving brick should contain sufficient fusible elements to admit of being vitrified at a medium high heat, but should not be so fusible as to melt and collapse at such a heat. A recent writer has criticised the oft repeated statement that paving brick clay should be able to stand a high temperature without melting, arguing that a clay that would assume the vitrified state at a lower temperature, would answer the same purpose. In theory this would be true, but in practice a clay that will stand the higher temperature gives less risk in burning, and in the writers opinion will make a stronger and more durable brick.

In regard to paving brick clays a veteran brickmaker gives a good general rule when he says: "A clay that will make good sewer pipe is good clay from which to make vitrified brick." Nothing herein has been said about color, for the reason that color in a paving brick is a non-essential. The wearing qualities are the ones to consider, and allow the color to take care of itself. The brick made from shale are either dark red or of a chocolate color, while those made from semi-fire clays are of a very dark buff and stand more or less with the fire.

(To be Continued.)

#### THEY BE, THEY BE!

The leaves are falling one by one,  
The days are sad and drear;  
But every cloud is silver lined,  
And pumpkin pies be here.



## AN AMERICAN STYLE OF ARCHITECTURE.

HERE it is. The origin of all styles of architecture, Gothic Classic, architecture of any kind, has always been through constructive methods. The method of construction has fixed the style. Greek architecture had its own peculiar methods of construction, the Roman architecture its own, and the Gothic was entirely distinct in its constructive methods from anything which had gone before. The variations which have followed through different periods have maintained, so far as they belonged to that style, the con-

struction nearly completed, the third and fourth stories completed only so far as it concerns the frame work of steel, the fifth and sixth surrounded and finished with terra cotta, the steel work of the ninth story completed, and the tenth and eleventh in progress. The character of this construction and the manner in which it is carried out, is generally understood, and nothing can more fully impress the reader as to the general principles surrounding this method than the picture which we here give. The upright steel columns, the horizontal joists and supports, and the covering of all with the fireproof material which

can architecture. The reason this building was built in this particular way is because the material for the third and fourth stories was not at hand and because of the short time allowed for the completion of this structure. The contractor found it necessary to go ahead with the terra cotta, which was ready, without waiting for that belonging to the intervening stories. Truly, a remarkable exhibition of American energy, ingenuity and push. The fifth to the eleventh stories may be finished and the third and fourth remain unfinished until the material is at hand. This indicates something else. It shows that each particular bit of covering of terra cotta is not dependent upon the other structural material of this character which comes below it. The terra cotta is secured directly to the iron work, and does not rest constructively upon other terra cotta or stone.

There are various methods of bringing about this construction, of thus securing the terra cotta, or brick, as the case may be, to the steel. Formerly this general style of construction was designated as being shelf construction; that is, the brick or terra cotta was anchored to shelves which were bolted to the steel. But architects and engineers have methods varying only in matters of detail, for securing the outer covering to the structural steel work. The general principle, of course, is always the same. It practically amounts to bolting the terra cotta or brick, as the case may be, to the frame work itself.

This building is located at the corner of Monroe and La Salle Streets in Chicago, and will well repay any one who may have time to visit this locality within the next few days.

## A NOVEL ADVERTISEMENT.

An advertiser in the Nantucket (Mass.) *News*, whose business it is to take Summer visitors driving, is responsible for the following novel card:

SURREY.

I'm sorry to part with the Swiftsure (which could tell volumes could it talk,) but have procured another and better vehicle, in which I expect to carry souvenir and other spoons during the season. I will lie at the old stand, at H. S. Wyer's, Federal street, where I shall be ready to trade carriage hire for cash with any who may desire. I'm deader than ever this season. Yours, meekly,

WILLIAM BAXTER.



CHICAGO CONSTRUCTION—THE AMERICAN IDEA.

structive peculiarities. While different names may have been given, according to the period, the general style of construction remained the same in each particular class.

An American style of architecture will be built around, and become a part of, an American style of construction. Here we have it,—clay and steel,—a self-supporting, rigid framework,—steel, surrounded with a fireproof product. This is a method of construction peculiar to America. Hence it is natural that we should say that through such means we may develop an American style. The picture which we give illustrates in a most graphic manner this method of construction. We have a building with the mason work on the first and second

we have named, are clearly shown. There is nothing else like it in the world's history. It is a method peculiar to our own country. The architects have devised a perfectly rational system of construction, and are now enclosing it and decorating into artistic lines with the fireproof material. This is the method which has been adopted in all successful architecture. Methods of decoration which imitate certain other decorative methods without regard to the construction which is behind them have never been successful.

Here we have a frame work of steel, which in itself would stand for all time, and which carries the material which surrounds and protects it. This is veritably a rational architecture—an Ameri-

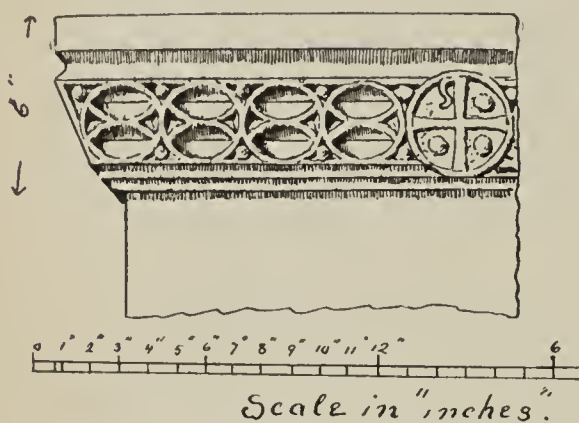


Written for the CLAY-WORKER.

## DOMESTIC CLAY WORK.



**T**HE LARGE number of frame buildings which are erected is suggestive of the Pioneer spirit. The habit of building in France has outlasted the necessity for this kind of work. Buildings were originally erected in wood merely because a protection at a low cost could be thus secured. As it is, we now find frame buildings erected at an expense which would easily compass a brick structure. True it is that they are



covered with towers, elaborate dormers, porches, with jig-saw work, torrets, balconies and a profusion of everything which has the tendency to make them expensive and short-lived. The instinct which leads to this sort of building is born of a desire to imitate, in a cheap, showy manner, the more substantial structures of picturesque character which had their origin in the military and other necessities of earlier times. It is true that few or none of these buildings are direct copies from these old time buildings. As far as the artistic result is concerned it is the greater pity. The idea has been handed down from one to

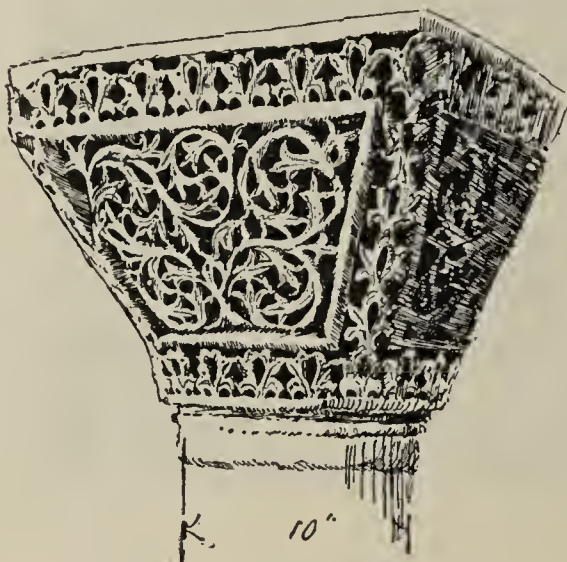


another until we now have only a tradition of a better past.

The same money, which was used to

build these tawdry structures would have developed a brick building infinitely more artistic, because it is substantial and true, speaks its purpose in presenting a permanent substantial home. A few of the wiser heads in every community see and understand this. They are building substantial brick structures and building them in a way and of a material which will last long after the equally expensive wooden structures have returned to the earth which produced them.

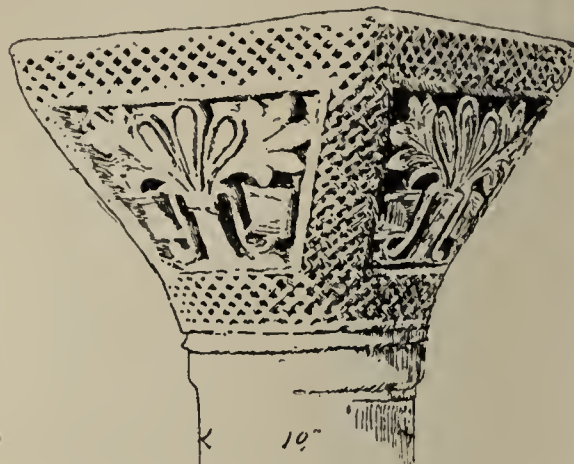
Herewith is presented an illustration giving the front of a building which could be constructed with clay products. The walls are shown of building blocks. They could be of brick. The decorative material is terra cotta. A large proportion of what is here shown might be adapted to molded brick. The roof is of terra cotta. Thus we have a building with no weak points. The cornice is of the same material as the rest of the structure—burned clay. The same idea could be carried into the foundation. That part which is exposed to the earth below grade could have a soft glaze



and the surface which comes immediately above ground, even as high as the water table, could be glazed. The interior cellar walls could have the same kind of surface. Nothing could be cleaner or purer than a cellar of this kind. Nothing so foul can touch a glazed surface but what it can be immediately removed. With the glazed brick, laid on a concrete base for the floor, glazed brick for the interior walls, and a hard plastered ceiling there would be a combination, which for sanitary conditions, would be absolutely perfect.

The great fault with people who propose reforms in constructive methods is, that they give so much attention to construction alone that the idea of appearance is wholly neglected. Reformers of this character are usually so much

interested in the practical character of their work that they neglect that which is pleasing to the eye. The public needs



sauce with its pudding. No one can deny but that the sauce is very nice. Houses should be made beautiful. One which is well constructed, inconvenient and ugly will not meet with sympathy. People will say: "If we must have a house ugly in order to have it so well constructed, if we must have it inconvenient to have it of this excellent material, we will undertake to do without it."

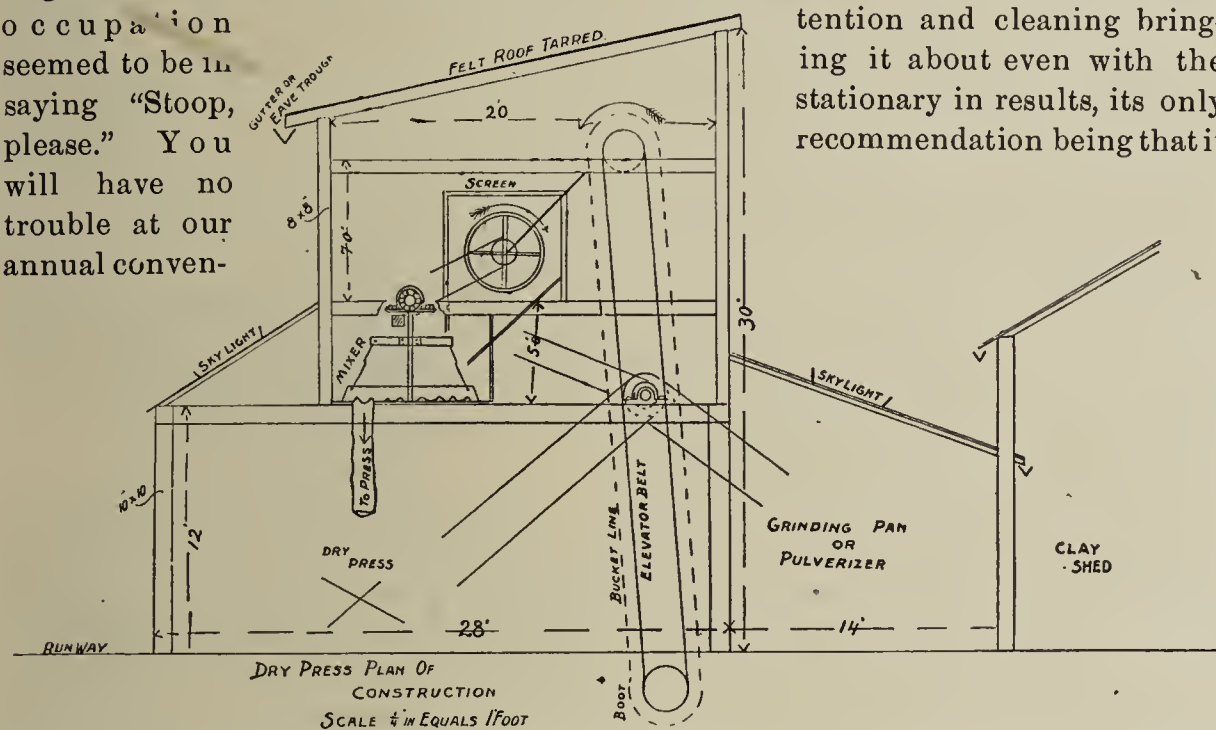
## DRY PRESS HINTS.

## Ninth Paper.

**J**UDGING from some of the buildings I have seen, a few words in this particular may prove of assistance to new beginners, and to make my words clear I have included a sketch of same, drawn to scale and also marked in "plain figures" as merchants say. We neither want it too small or too large. If too large we have capital in the shape of lumber and land standing idle, nay worse than idle, because both might be used to advantage in other branches of the business. If too small everything is "crowded," operations are impeded, and the hands in each others way, a palpable blow to economical production, so it must be our aim to strike the happy "mean." The material used in its construction must be governed by circumstances. If you can afford brick and they are in reach, by all means build the outside walls of that material, but don't do it because you have a lot of soft brick on hand or can get them cheap, it will only be an aggravation to you and an eyesore to to would-be customers. "Let your light so shine that others seeing your good works may," etc. Remember that a poor advertisement is worse than none at all. By building the walls of brick, you lessen cost of insurance, are taking pre-



cautions against the loss of your buildings by fire, and are putting up something that will give satisfaction, by being solid, substantial and not a constant drain on your purse for repairs. If not possible to do the foregoing, try and make it possible to build your boiler course of brick and pare it with the same material. How often do we see brick works that convey the impression that the machinery was first set up, and then a shed built around and over it, or it might be the shed was built first, and then when the machinery began to get into position, it was found that this window came in the way of that belt or that post in the way of this belt, or after going to a lot of trouble putting in braces, it was found they would have to "come out" to let something else in. I have seen works where it was positively dangerous to go about without a guide, whose chief occupation seemed to be in saying "Stoop, please." You will have no trouble at our annual conven-



tions in picking out the regular attenders of such places, men who could easily (if it were not for excessive modesty) have won the prize in the missing word contest, recently advertized in the CLAY-WORKER. You will find it money in your pocket and a load off your conscience to give these mistakes a wide birth.

#### CLAY SCREENS.

Of course it is a matter of personal opinion, to be passed upon by each man for himself, but it certainly appears to me a mistake to go skyward about 50 feet to make room for a long inclined stationary clay screen, when 30 feet is ample by using a revolving screen. There have been in the past serious objections to this latter class of screens, but with their accustomed energy and skill our manufactures of clayworking machinery have gradually overcome

these, and got the machine in first-class shape. Another feature they possess is, increased capacity in less space than the inclined stationary screen. Figure it out. A revolving screen four feet in diameter, eight feet long, gives one hundred (100) feet of screening surface ( $4 \times 31.416 = 125.6 \times 8 = 100$ ). To equal this would require a stationary screen forty feet long, two and one-half feet wide. But still another feature is that all the surface of a revolving screen is brought into use, which is not the case with the stationary. There is another class of screens that gives good satisfaction in some cases, and that is the inclined vibrating screen. I have got clay for 24,000 bricks (in 10 hours) through a vibrating screen ten feet long, two and one-half feet wide with three thirty seconds mesh, and the clay not any too dry, but it required constant attention and cleaning bringing it about even with the stationary in results, its only recommendation being that it

takes up less room than the long stationary. The vibrating mechanism can be worked from the top elevator shaft and consists of a shaft with crank of small throw say  $\frac{1}{2}$  to  $\frac{3}{4}$  in., a light arm connecting screen and shaft, four pliable suspenders, and a small chain or sprocket wheel. Speed of shaft about 200 revolutions per minute. The inclination of screen will depend on the nature of the clay to be screened, some clay sliding "freer" than other, but one foot in 10 feet will I think meet the average. As success in this process depends to a great extent on the proper preparation of the clay, we will now turn our attention to the question of

#### CLAY BIN OR MIXER.

After the clay leaves the screen, it can either be fed direct to machine from the clay bin, or by the aid of a self acting mixer. As every brickmak-

er by the dry-press process knows—sometimes to his sorrow—the particles of clay as they roll or fall into the bin become separated to some extent, or in other words the fine clay will "mass" and the coarse run down and into the mould separately, making an ugly brick I have frequently seen bricks with one elegant end, and the other spongy and coarse from the above cause, or it may—and often does—run along the faces making them very unsightly and considerably lowering their market value. Consider for a moment that it costs as much to make and burn these as if they were A No. 1, and you will conclude that a remedy is absolutely necessary. Such a remedy has been found in the self-acting mixer and feeder. Another fault I have found with the bin is, that on account of its necessarily sloping sides, the clay packs and gradually banks up until only a small hole is left in the center for the clay to pass through to machine. The clay thus left dries out considerably by atmospheric action in a short time, consequently when it breaks loose, or is broken loose by the attendant, it goes to the machine drier than the general run, and changes the density of the brick and also endangers the machine which would be adjusted to the "moister" material fed previously (Let me say right here in explanation that there are no absolutely dry-clay machines.) Suppose you are using two machines taking clay from the one screen, then a mixer is decidedly necessary. In using a double bin, the "lump trouble" appears in an aggravated form. Again in making the "mottled" bricks so much in demand, or mixing certain different clays to get a certain effect or shade, you will find a mixer just what you need to obtain uniformity of color and texture. The action of the mixer is to thoroughly incorporate the particles and varieties of clay before passing it into the down chute to machine. It also ensures a steady even feed. Should the screen deliver more clay than the machine is using, the blades are made to rise on the upright shaft, and when the feed slackens they fall again—like the brick market regulated by supply and demand. The mixer upright shaft should make about 20 revolutions per minute.

The sketch I enclose is a cross section of building showing location of machinery. The length of building must be governed by the number of machines, 12 feet of length to each machine being



ample. The elevator is driven from line shaft, mixer from line shaft, and screen by sprocket gear from mixer shaft.

PRESS.

Written for the CLAY-WORKER.

### BRICK WORK.

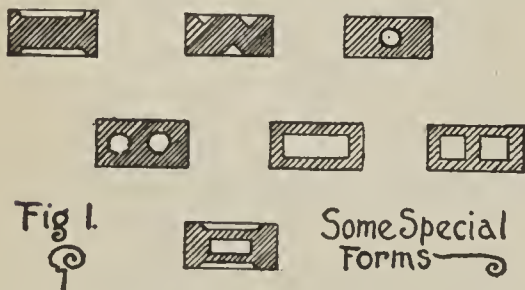
AS very many brickmakers are contractors and builders as well, it has often occurred to me that they should know more than some of them do about brick setting.

When I look at some of the modern work of the craft, my heart grows sick at the thought of such flimsiness being palmed off upon the public. Brick as a material has advanced steadily toward perfection. Since the introduction of improved machines and presses there is little excuse for poor building brick. But the brick layers have, to a great extent, deteriorated in the quality of their work. Up to within a few years, in our country, brick have been used for little else than the most ordinary and commonplace work. The German architects have learned to produce work of great decorative characteristics. They have made great public buildings, and other magnificent structures. We seldom get beyond the dwelling house.

Before saying anything about how to lay brick, a word as to what to lay is of importance. Cheap brick are a failure. Sound brick ought to be chosen at all events; it pays in the end. The composition of brick is a very material feature of successful production, but more good brick are spoiled in the burning than in the mixing and pressing.

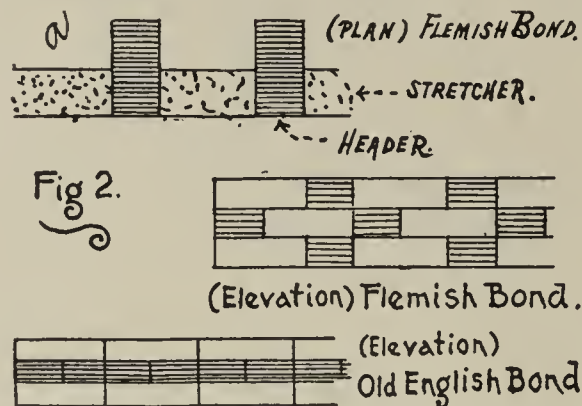
#### AN OLD ENGLISH CUSTOM.

It seems very odd to us upon this side of the water, but it is a fact that in England for many years, the manufact-



ure of brick was confined to a single size and form by the Duty Act, and although sensible people could see wherein changes of form would be of great benefit, yet this antiquated law prescribed a 9 by 4½ by 2½-inch brick as the *only* shape lawful to manufacture, thus cutting out all idea of ornamental form. And when in late years this law was at last repealed, the custom had become so fixed that

changes in shapes and forms are slow to develop. The principal modern addition to the shape of the building brick is perhaps to furnish it with a recess of some form, this affording an increased bond after the mortar has been introduced. Hollow brick of many forms are also made, the saving in weight of material being an item, as there is at the same time no loss of strength. How-



ever, the chief use for this latter style is to build the "damp proof walls," a few courses of these brick laid near the ground level operating to prevent dampness rising from the soil up into the wall. The circulation of air through the hollow portions of the brick carries away the moisture that may collect in the material.

Other common forms of brick for ordinary use are the bull noses, and the splayed brick. The former has rounded corners, either one or both. It is useful for the door opening, while the one with both corners rounded comes in good place in pillars for supporting shelves, and for the coping of walls and drips. The splayed brick has the corner cut off at an angle, and is useful in changing the line of the wall.

During the last few years, however, the manufacturers of brick have awakened to the fact that brick is a splendid material for ornamental architecture, and the designer is now busied in constructing beautiful forms either in elements or portions of elements. With the advent of an artistic material, the work of the mason takes on much of the esthetic character, and the craft is elevated to a considerable degree.

#### BRICK VERNACULAR.

In the craft, there are a certain number of terms that are technical. Brick lying upon their broad side are termed *brick on bed*. Those upon their narrow sides are said to be *brick on edge*. *Bond* is the placing of the brick into such a juxtaposition that they assist each other materially in forming a wall of cohesive strength.

A brick that is placed parallel to the

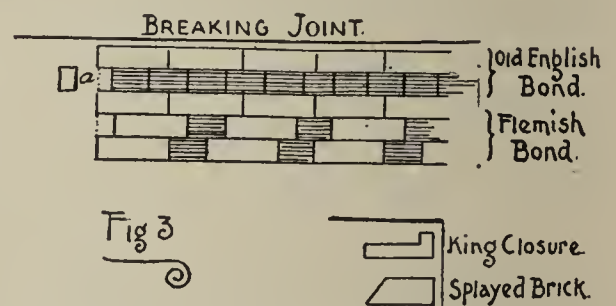
line of the wall that is being built is called a *stretcher*, and if at right angles, the term is *header*. Now, a brick is half as wide as it is long, this proportion being the result of experience. Now let us build up a few courses of brick. Suppose we place a stretcher, then a header, then a stretcher, and so on, as in Fig. 2. It is noticed that space A remains unfilled, and that it is the size of a brick. Fill it in, and the course that results is in Flemish bond, the plan and elevation both being shown. It is a one brick wall, that is, as thick as one brick is long.

Start another course of headers. Lay it a course of stretchers two deep, and above it a course of headers again. This illustrates Old English bond. It is shown in Fig. 2 as an elevation.

Thus far, examination and consideration will show that while these two bonds will prevent the movement of the bricks in the direction of the length of the wall (except as a mass,) there is as yet nothing to prevent movement of the brick at right angles to the line of the wall, or to prevent the sinking of one end of the wall slightly, from causing a crack from top to bottom, other than the mere strength of the cement used. Fig. 2 shows the eye the defects that have been hinted.

#### BREAKING JOINTS.

The latter defect is cured by what is commonly known as the *breaking of joint*. While this will not save a wall where there is a great settling, it will, however, strengthen it very much. The breaking joint is one of the *vertical bonds*. The Fig. 3 shows how this is accomplished in both Flemish and Old English bond. The edges of the brick at their joints are said to butt or bear against the one that



lies above and covers the joint.

The using of a vertical bond however, results in an odd thing; that is, that it will become impossible to finish a wall with an even number of headers or stretchers. In the prior figures of Old English and Flemish bond, it will be noticed that the walls may be finished with an even number of brick. Fig. 3 in Old English bond, will show that if



the stretchers finish with even ends, the headers will show vacant spaces A. To fill these voids, what are technically known as *closures* must be used. In the illustration, it will be seen that in each case the void is the half width of the brick. The closure is made by splitting a brick on its broad side, producing two closures. These are sometimes further divided into quarter closures.

If it always occurred that the closures were placed at the ends of the courses, it would be rather unsightly, and not so very strong. So it is a rule among masons, to place the closure brick next to the last brick in each course.

Where a closure is made from a brick by taking off one quarter of its length, the remaining portion is known as a *bat*. The name, however, has come to be applied to any brick or piece, the break being across the brick. What is known as a *king closure* is shaped as in Fig. 3, but is not often made, as it is a hard cut to make without breaking. It is usual to make the splayed brick also shown in figure 3. This is sometimes called a beveled brick. NIMBUS.

Written for the CLAY-WORKER.

#### FIRE CLAYS AND THEIR PROPER APPLICATION.

##### Third Paper.

WHAT a help it would be to fire brickmakers and many people who handle refractory materials, if, in order to understand beyond a doubt all the properties of their products, they might apply certain tests either chemical or physical with *complete* satisfaction. It is not possible yet, nor will it be, till more men wake up to the fact that before such a scheme can be reached, we must understand the nature of many substances which thus far have not been studied to any great extent.

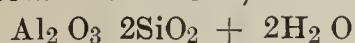
It is not only the so-called accidental impurities, such as lime, magnesia, iron and alkalies, which demand our strictest attention but other substances; for in many clays they appear in *very* slight quantities and often times in two varieties which act quite differently at a white heat, the totals of such impurities in both are the same.

In searching to find the reasons for these things, the most delicate points must be considered with care, for there may be many of them, and in the aggregate their effect may be very destructive. True, to be sure, a fire clay cannot sur-

pass certain limits in its percentages of lime, magnesia, iron, alkalies, etc., but the question arises, Are not the *best* fire clays restricted still further?

The fact that fire clays are not altogether uniform in composition, even after excluding the accidental and foreign constituents, is an important one, and one of many which receives little or no thought, when judging of its refractory properties. Some clays will show by analysis a very large quantity of silica, while others will yield about what silica and alumina is necessary to form the normal silicate of alumina.

It must be that either the essential constituent kaolinite or,

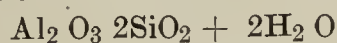


varies in chemical composition as regards to its silica and alumina, or else that fire clay consists of kaolinite mixed with different proportions of other higher silicates of alumina.

The analyses of several clays seem to indicate that the latter idea as being the correct one, though such an assertion could not be read with any degree of certainty and with sufficient proof to verify it beyond the possibility of a doubt.

Take, for instance, a *very* sandy blue clay. It runs low in lime (CaO), Magnesia (MgO), iron ( $\text{Fe}_2\text{O}_3$ ), titanic acid ( $\text{TiO}_2$ ), combined alkalies ( $\text{Na}_2\text{O} + \text{K}_2\text{O}$ ) etc. By reason of its excessive quantity of total silica we find the combined water and alumina ( $\text{Al}_2\text{O}_3$ ) unusually below the normal.

By careful examination we find also that a large part of the silica ( $\text{SiO}_2$ ) appears to be quartz and quite as great a percentage exists combined with the alumina to form the normal silicate of alumina or kaolinite:—



while a very limited portion has come from the silicates of lime, magnesia, etc.

There still remains silica unaccounted for. What is it and whence does it come from? Analysis proves that it is in the clay, but just how it exists then, whether in the free state or combined with other substances, cannot be proven to the complete satisfaction of scientists. It is *hydrous* (soluble) silica acid, as such would seem to be combined with alumina, forming higher silicates of alumina.

The quantity of such silica in different clays varies, but it is not possible to determine, now at least, the composition of these higher silicates.

The fact that such silicates are of interest to us becomes apparent when

we consider that the higher silicates are less refractory than the normal silicate of alumina. They certainly would be more susceptible to the action of metal-oxides at a high heat, for the reason that the higher silicates of alumina, being less stable than the normal silicate, would give up their excess of silica very readily to form the silicates of the metals.

So much for the *hydrous* (soluble) silica in fire clay, and which, whether in the combined or free state, plays an important part in refractory materials, and should be classed among the impurities. Quartz, though silica and of the same chemical formula ( $\text{SiO}_2$ ), is very different as it appears in fire clays, both physically and chemically, from the substance which we have just considered.

CHARLES FERRY.

(To Be Continued.)

#### HERE'S A STATE OF THINGS.

An Ohio Brick Plant Shuts Down Because the Proprietor is Threatened With Assassination.

THE Fish Pressed Brick Company's Works stopped work Nov. 5th, under very sensational circumstances. It was the only brick plant running in that vicinity, which fact seems to have aroused the animosity of some of the idle men who were previously connected with other works in that neighborhood.

The first of the month three men called at the works and asked for Mr. Fish who was absent. They left word for him that if he did not shut down at once the works would be burned, as they did not propose to be idle while others worked, and that Mr. Fish would be killed if he attempted any prosecutions.

As the works were burned a year ago under somewhat similar circumstances, Mr. Fish decided to heed the warning and closed down, throwing more than fifty men out of work.

#### THE PROPER SPIRIT.

Now, be thankful! Yes, even this year, 1893; this hard times year—this year of financial stringency—this year of depression. As the old lady used to say, "count up your marcies;" you'll find them if you sit down and think. You can at least do as the down-easter is reported to have done in the midst of an overwhelming disaster—

"Kneel right down in all the muss,  
And thank the Lord it ain't no wuss."  
The Helper.



Written for the CLAY-WORKER.

### THE PASSAGE OF THE MIDWAY.

We Welcomed the Coming, and Now  
Speed the Parting Guest.



VALE! Plaisance. Go, and may an accelerated speed attend you. For six, more or less, weary months you have been demonetizing us until our financial vessel is dry-docked for repairs. You have hypnotized us with strange odors and oriental breezes while going through our lockers on the installment plan, cozening us into the belief that the stuff you stored aboard of us was sufficient apology for the robbery.

That was very nice of you, and was the true Eastern style. But we take the liberty to hint that a less tedious style obtains in the West. We have some clever specialists who could in five minutes undo your six months work. If your ancient theological theories are not telescoped into eternal facts by the machinations of a wandering cow or misplaced switch, you may have the opportunity of seeing how dextrously you can exchange your stock of silver for a cargo of lead.

"The best of friends must part, though parting gives a pain," as old Bowser said to the tick. Your exit from us has not precipitated any nervous shock on our part, because our nerves have been so cowed down by your competition, that



our dilapidated and lowly systems have been running only from the momentum of a brilliant past. Nevertheless, we have bravely prepared ourselves for the

trying ordeal by the organization of a sanitary corps of brawny soldiers, who, armed with water, soap and scrub brush, have stormed your germ reeking citadel with subchloride of lime courage. Tents are struck, and as your long caravan fades on the horizon, we turn our eyes in studious contemplation of the large tracks left in our financial sand—eloquent proof of our hospitality.

Farewell, Mageed! Farewell, Hagassan! Take a bath, and don better raiment.



You are wealthy now. Move with the elite, and with amorous breath, fill fair ears with fairy tales of the Fair. Go give your flea-bitten donkey to the fellaheen. Your camels re-upholster and deposit in some prosperous sand-bank, subject to draft. And, Egyptian musician, whose notes unendorsed go to protest against being taken from the staff of antiquity to fill the base clefts of a march of modern civilization, return your cafe pie and tunes to their erstwhile home, the catacombs. And, poor old Nadi! Go, erase the mucilage from your eggs, and if they are half as stale as your tricks, have a care while so doing. And you, most wonderful females of the Kootah dance! While your mazy vertebral undulations, ventral vibrations and visceral convulsions won our highest meed of praise, we sincerely hope your spiral fantasy may not be added to the list of feminine accomplishments in America. And, Oh, El, Shiek Allah, Arab Aman! Your gum drops were not worth licking, but your schoolboys were. And, while the rod was used with liberality, and your call to prayers from the mosque

had a metallic ring, we like you just the same. On the strength of your broken English mended for you, we will call when in Cairo and board with you, attend your mosque, hear you preach and at offertory, place in the hat that punched quarter you left with us.

And, Zellabia! Your voice will be missed, along with the gravel in your waffles, although we do not forget the bounty per pound on our sugar. And, Old Vienna and the Germans! You showed us your "Graben" and "Schloss." Your music was, metaphorically speaking, "out of sight." Your beer, pretzels and wurst literally became so.

And you, Damascenes, have shown us your yellow-fingered beauties, your Hadar and Bedouin housekeeping and flapjack cooking, your famous horses and daring riders. But, we must honestly admit that our confidence is still in our American girl, her housekeeping and cooking, and our bronco and cowboy when it comes to endurance. Dahomans! We would fain keep you under the legation roof until diplomatic meditation could be arranged between you and your anxious sovereign, whose secretary has by imperial order collected and tabulated certain cable descriptions of sundry nocturnal festivities and divers jags, undertaken by his imperial representatives to the Fair. Without special convention of Congress or violation of senatorial courtesy, he has appropriated the sum of \$1.35 for the expense of striking off several heads as a commemorative souvenir of the Fair. And, upon each of his representatives, place a mark of distinction, in a similar location to where the barnyard fowl got the woodman's implement.

And last, but greatest of all, our hand



lingers in thine, Oh, Buffalo William I We acknowledge value received. We have no criticism, King Bill, al-



though admitting we did not think you could get a representative troop of every tribe of Indians in America out of Pine Ridge Agency. We cheerfully award you the medal for what you have accomplished. In their vermillion and ochre tinted cosmetics they would appear alike behind a man on the run, and he would not be fool enough to be much of a stickler for pedigree, under such circumstances. Pay the boys their wampum, Bill, and let them go home.



The soldiers out there are listless, the old ghost restless, and the nocturnal wail of lonely, masterless canines go hurtling in long tortuous streaks through a congealing atmosphere. Dusky maidens of the dance impatiently await the tepee coming of their partners, master of ceremonies and musicians, for the grand march.

And, let the orange-coated Cossacks go back to their Czar and his protective police, to a place where tariff and silver are not political issues; to a people injured to tyranny and acclimated to famine. Perhaps, if they hustle, they can catch enough champagne froth in Paris to whet their appetites for Albion's gore. And, make the Mexicans leave a sworn statement as to where they got that hat.

To the Arab, strong man, who has grown conceited over his holding up nine men, show the cowboy who has held up an express train.

Again, to all—Irish, Java, Johore, Fiji, German, Austrian, Egyptian, Japanese, Chinese, (if you must go,) Indians, Soudanese, Turks, Algerian, Tunisian, Persian, Hindoo, Laplander, Hawaiian and French, we wish a safe journey home and a permanent sojourn there. We want a rest. C. M. TUTTLE.

Written for the Clay-Worker.

## BRICK BURNING AND SETTING.

Serial No. 4.

BY J. W. CRARY, SR.

### UP VS. DOWN DRAFT KILNS.

I HAVE been trying to study the advantages claimed, by burning brick in "down-draft kilns," and every time I get to a conclusion, I get right where the fellow was when he started to make cheap power, by pumping up water to run a water wheel.

I find that it costs more to build one down-draft kiln, than it does to build four or five up-draft kilns, and that a given quantity of fuel will produce no more heat in a down-draft kiln than in an up-draft. I then try to see, that it is better to heat a brick kiln from the top, but here I met with the objection that unless the kiln be thoroughly dry, the water smoke descending from the top to the bottom of the kiln, will have the effect to soften the bottom, so that there is great liability to "water settle," because the bottom of the kiln must sustain the whole weight of it, whereas, if dried off from the bottom with proper care, there is never sufficient weight to crush a water smoking brick.

I then try to see that a better distribution of heat can be had by down-draft, but here I am met again by the patent fact, that all brick burners know, that there must be a certain number of flues and dampers, and these must be watched and skillfully moved, quite often, to control the draft and heat, so as to get a uniform circulation of it throughout the kiln. If I find this can be done, then I try to see how I can make hard brick at the bottom of the kiln. Here another puzzle turns up, for I see that if I try to retain the heat at the bottom of kiln, so as to equalize it with the top, and thus harden the brick, I cut off the draft, and combustion of fuel and the draft is so retarded, that the heat falls below the proper temperature for making hard brick, and so I go on, though all the processes, and manipulations of down-draft brick burning. The cost of building the kiln, the setting of the brick, the burning of them, the getting them out of the kiln, etc., leaves me with the conclusion that I have failed to understand the advantages of the down-draft, or else that

there is nothing in it, only a new way to do an old thing at more cost, and less efficiency than the old thing.

*I have no patent for brick burning to sell,* and no prejudice against patents for that purpose, and whether I have or not, it will make no difference with the final success of any new way of burning brick. All new ways must be tested, and the one that gives the best and most profitable result will take the prize I have been constrained to write on this subject, both by special request and from the mistaken idea that many have, that I set and burn brick in the old way.

If any one will take the trouble to find what I have written on "Brickmaking and Burning," in the CLAY-WORKER they will see that my way of setting and burning brick, is almost entirely different from the old way.

### THE OLD WAY

Of setting and burning, was to set arches with benches two brick or about 18 in. in width, and five brick or about 22 in. high, the top course was set tight. The arch was closed with four hangers. These were set about one-half inch apart, and the spaces were closed by setting the next top course with brick over the spaces, thus preventing all free draft of heat up through the kiln. The kiln above the arches, was set three brick over three, transversely. The top of the kiln, was covered with salmon brick, one-half inch apart laid on the flat.

There was no furnace, projecting from the kiln, only the thickness of the clamp wall, or casing. One "head" or side of kiln, was slowly fired, until it was nearly to a red heat, and the water smoke off back to the middle of the kiln, then the hot "heads," of the kiln were closed tight, and the cold heads, opened and fire started, of course the draft was strong to the "hot heads," and as soon as they began to "settle" "dampers" were set up at the open furnaces, occasionally, so as to draw the heat to the middle of the kiln, and by the time the first "hot heads" were "settled," the middle of the kiln, would be nearly at a settling heat. There the firing was changed, and the open heads closed, and the hot closed heads opened, and the firing of the kiln continued from that side of the kiln, until all was settled, or burned. The settling of the kilns burned in this way, was always very uneven, and a good burn was the exception, not the rule. In fact, an even, well burned kiln, was a rare sight with the old fogies, a thing to brag of. The moon and the



stars, and all the charms and mysteries of astrology, were paraded in brick kiln parlance, to prove that such a kiln *happened to be in luck*.

Now, such was the skill and practice in brick setting and burning generally, up to fifty years ago; and now, many brick setters and burners of fairly good respect, think that brick burning No. 1 comes by lottery. All these things I once thought good, best and true, and I was taught to follow and practice them, until I got into new fields of experience that proved their falsity. It was then that I saw the great necessity of studying principles before practice, and to find some certain rule or law, by which brick could be set and burned, with uniform hardness and perfection.

The very best combustion of fuel, and control of heat, was my object; with these at my command, I knew that I could succeed at all times and places, after having a correct knowledge of the clay, I had fully and fairly tried all the known ways of working the fires in a kiln, so as to equalize the heat, and get a uniform hard burn; but I found no rule or principle in those ways, that could be made a correct formula, or simple scientific rule for burning brick, and so I started out on a new principle, with which, I have been uniformly successful in burning brick under all circumstances. Although I have pretty clearly explained my mode of setting and burning brick in former writings in the CLAY-WORKER, I will in my next article more explicitly describe my mode of setting and burning brick and at same time contrast it with the down-draft, and other ways now in use for brick burning.

As I have before stated, I have no opposition to any modes, or patents, for burning brick, I only reserve my right to give my views of the progress of the art, and craft to which I belong. As to down-draft kilns, I am of the opinion that a brick kiln could be constructed to burn the bottom of the kiln by up-draft, and the top by down-draft, and do it successfully, but I am not prepared to say that it would be desirable, only in clay that is fusible, and shrinks under a low heat. I can not see that the principle of down-draft could be profitably applied in burning refractory or infusible clays.

There are a great many brickmakers, who cannot afford to build down-draft kilns, and my purpose is to show them how to burn brick well, until they can afford it, if desirable.

Written for the CLAY-WORKER.

## CHEMISTRY FOR CLAYWORKERS.

Paper No. 16.

**M**Y OBJECT in placing before you those curious and unaccountable phenomena producing colors, odors, tastes, and physical changes from such unlikely sources, was not simply to excite your astonishment, not to satisfy an idle curiosity, but to impress you with the difference between mixtures and chemical combinations. I am repeating this too often for ordinary reading, and to such as only skim over what they read, it will, no doubt, be wearisome, and very dry. My own experience of the bother it gave me, and of the difficulty I usually encounter when trying to make my non-chemical friends comprehend it, is the only excuse for my repetition and persistence with it. Many think they comprehend it at once, but they don't. It requires time and considerable thinking over, to grasp it in a general way even. I may give you a score of examples of chemical combination and the same number of mixtures, yet, probably the very next substance that presented itself to your mind for examination would puzzle and perplex you for a week or more.

If I lay before you a few of the things that gave me trouble it may assist you, to some extent, but you must always remember that the discoveries you make for yourself give the greatest pleasure, and make the deepest impressions on your mind, therefore, ordinarily, you will never forget what you discover, while you may very soon forget that which has been only told to you.

Alloys of metals used to be rather perplexing to me, and whether to class them as mixtures or chemical combinations I did not know. Solutions, infusions, etc., used to puzzle me too, and I suppose they will continue to embarrass the minds of beginners in chemistry.

Alloys of metals, take, for example, brass, and babbitt metal, are only mixtures, but they are such intimate mixtures that they impress one with the idea of a chemical compound; infusions and solutions are apt to produce similar impressions.

If we take a couple of ounces of clay and put into a bucket of clean water and stir vigorously for a short time, we get what is known as "roily water", this is an intimate mixture of clay and water, but, it is not a solution, for clay is in-

soluble, and we have only to quit stirring and let the bucket stand still a short time when the clay will all settle to the bottom, and the water will become quite clear again. If, instead of clay, we take the same quantity of salt, or sugar, they disappear in the clean water, and it is still clear, although the particles of salt or sugar are in much closer contact with the water than the particles of clay were. If we make the clay and water "roily" again by stirring, then pour it on a filter paper the water will run through in a pretty clear state and the particles of clay will be held back by the paper; now, with sugar or salt it is not so, they pass through the filter paper with the water. There is then, clearly, a difference in these mixtures, with the water and clay it is clearly a mechanical mixture, but, with the salt or sugar it is a mixture of dissolving, and the salt or sugar is said to be *held in solution*. The sugar and the salt are said to be *soluble* in water, and water is said to be *solvent* of sugar and salt; but, as I have said above, clay is *insoluble* in water.

Dissolving substances, or, as we say, putting them in solution is a great aid to chemical affinity, you may mix as intimately as possible dry carbonate of soda and tartaric acid, but you cannot make the contact close enough to start the force of chemical affinity, however, we have only to put them in solution to develop a force that has killed and maimed several chemical and scientific experimenters who endeavored to curb or control that force by confining it in strong metallic receivers.

Chemical affinity with the aid of heat and solvents is the basis of chemical analysis, and you must bear in mind that water is not the only solvent we have, it is a pretty general one, but it is sometimes necessary to use alcohol, naphtha, and other liquids, for a substance may be insoluble in water, but soluble in alcohol or naphtha, or the reverse. Substances have also different solubilities, one may be very soluble, another may be medium of solubility, while a third may be sparingly soluble. The chemist takes advantage of these different properties in separating them, when they happen to be in the same solvent. Temperature of solvent has much to do with the solubility of some substances; sugar, you all know, dissolves quicker in hot than in cold water.

Liebig says: "*All minerals, without exception, may be dissolved in liquids, by proper*



choice of solvents." (The italics are mine—W. W.) By altering the nature of the liquid, by the addition of other matters, the chemist modifies the solubility of the constituents of the mineral in this liquid, and in this manner he succeeds in separating all its constituents one by one. This is one method of analysis; the other consists in adding to the solution of a compound, consisting of five, six, or more constituents, successively, other substances, which enter into combination with one or other of those constituents, forming insoluble compounds. This is done in a certain definite order, just as if each constituent was contained in a different drawer, the opening of which required a particular key appropriated to itself.

Let us now summarize what has been said about chemical affinity; of course several side issues crept in, but affinity embraces so much, and has so many diverging branches, allowing one considerable latitude without leaving the tree.

We have several times mentioned the force, or power of chemical affinity, it might be called attraction, but it is very different from the attraction of gravitation and electricity, these act at measurable distances, but affinity acts only far within the bounds of measurable distances, and not only generates compounds, but transforms them; by transforming I mean it will decompose a compound to form a different one, and this action and reaction is constantly at work giving us power, odors, flavors, colors, etc. It gives us nutritious food or a deadly poison with very little change in the formula of either. It will with the aid of heat cause two gases to combine and give us a drink of delicious water; then with the assistance of more heat cause that water to split up into gases again. Next, it will, under proper conditions, cause two solids to combine, giving us a liquid as limpid as water, but of a most disgusting smell—bisulphide of carbon—and withal very poisonous to breathe. It will cause two colorless substances to combine and give us a beautiful color and by the by it entirely ignores our rules for the production of tints by mixing.

WM. WAPLINGTON.

There is a good opening for an enterprising brickmaker at Sault Ste Marie, Mich., as the two brickmaking firms there cannot supply the demand and brick are being shipped from Detroit.



### WHAT SHALL THE HARVEST BE?

#### PERTINENT SUGGESTIONS AS TO THE MAKE-UP OF THE PROGRAMME FOR THE EIGHTH ANNUAL CONVENTION.

To Be Held at Chicago in January 1894.

Under the above head there appeared in the October CLAY-WORKER several communications from members of the Executive Committee of the National Brick Manufacturers' Association relating to the programme of the eighth annual convention to be held at Chicago in January, 1894. The ideas advanced seem to meet with much favor from the general membership, especially the suggestions for a more considerate and intelligent use of the Question Box. The Programme Committee desire to carry out the plan suggested by Mr. Purington, and to that end request that craftsmen who wish information on any special feature or detail of the business, write to the Corresponding Secretary, Mr. T. A. Randall, Indianapolis, on or before December 15th, in order to enable the Programme Committee to arrange with some one of experience in the particular line to be considered, to lead in the discussion of the question.

The following letters bearing on the subject will be read with much pleasure and profit as well, if the suggestions are acted upon:

TREASURER SIBLEY WANTS EXTEMPORANEOUS SPEECHES CAREFULLY PREPARED.

COALDALE, ALA., Nov. 3rd, 1893.

Mr. T. A. Randall, Cor. Sec'y

INDIANAPOLIS, IND.

DEAR RANDALL:—Your circular letter is before me and also copy of October CLAY-WORKER.

I concur generally in the views expressed by the other members of the Executive Committee and believe that the former plan of programme should be adhered to, though the topics suggested in your letter can be embraced in the programme.

My friend Eudaly has struck the key note in his suggestion as to "Short papers and more of them," and Bro. Purington's emphasis on the importance of the Question Box is well placed.

In this way I trust a great many of our learned experienced "Button Hole" men can be induced to give the Convention (and the entire craft through published proceedings) the benefit of their ideas and experiences. The question should be published in advance or announced at the earlier session of the Convention, in order to give us time to convert our crude ideas into intelligible and edifying language.

I think we should continue to vary the monotony of "Threshing over old straw" by a wise insertion of "outside issues," along the line previously followed, and as suggested by Bro. Gates.

The papers in this channel we have had in the past are a strong argument in favor of continuing this policy. Notably, the able paper by our New York Bro., on the "Labor Problem," at the Washington Convention.

There is one subject that I think the Convention should give due consideration. Our organization is now old enough and strong enough to let the world and posterity know that our calling is one of art and science, and as such, a history of the advances and progress it has made and statistics (as approximate as possible) of the annual production of clay industries in the Union and other facts that are valuable should be compiled and preserved in our archives. A committee for such a purpose could be appointed and report progress at the next Convention.

I have no further suggestions than have already been made by the other members.

In conclusion, however, let me add that I trust all members and those desiring to become allied with us, be present at our Chicago Convention. Put aside dull care and the reflection of hard and unprofitable times of the present year and come have a good and enjoyable as well as edifying time.

Those who were unfortunate in not seeing the World's Fair will feel amply repaid for their trip by the wonderful sights in the grand metropolis of the West, and see the works of the most successful and expert brick manufacturers in the country.

JOHN W. SIBLEY, Treas. N. B. M. A.

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VICE PRESIDENT BLAIR'S VIEWS.

CINCINNATI, Oct. 31st, 1893.

T. A. Randall, Cor. Sec'y N. B. M. A.:

DEAR SIR:—Your letter in reference to programme for the next meeting of the National Association came duly to hand, but absence from the city prevented an answer sooner. In fact, my mind is so filled with the wonders of the "White City," its scenes of dazzling and bewildering beauty, that I can scarcely concentrate my thoughts on any other subject. The National Brick Manufacturers' Association has always been one of my hobbies, not only for the good fellows I meet there but the



useful information I have received in attending its meetings, and in listening to the interesting papers read by the members. Those papers have passed into history and the records of the organization and form its literature, bright gems of thought, worthy of anybody.

Now, for the reasons above stated, I am in favor of certain members of the Association preparing papers on given subjects and reading them before our worthy body. These papers form the text and a nucleus for the discussions that are to follow. As I said before, they are the principal feature of our meetings. If papers are *not* prepared, and we depend on certain members to lead the discussion the sessions of the Association will drag and become unprofitable. None of the members will prepare themselves unless assigned a paper; they concentrate their mind upon the subject, and the consequence is, we always have interesting treatment of the matter under consideration. While Ittner, Eudaly, Alsip, Purington, et. al., have contributed largely to the spice of the occasion, there is plenty of new blood to prepare papers and infuse new life in the organization and start the old guard into new trains of thought. We *always* like to hear McCain and J. C. Adams J. A. Blaffer and the *two* wits of the body, those two young men, Crafts and Gates. The flood—"Gates" of oratory are always opened when he speaks and the "Crafts"—men hear with pleasure the sage utter *his* thoughts. All the members have become very close to me by our long and pleasant association.

I cannot close without a word of sympathy and sorrow for the sudden demise of my friend and our beloved Secretary, Charles P. Merwin. I had learned to like him and met him often at our national meetings and also at the National Builders' Association. He was a lovable man, so kind, so gentle and so companionable, neat and scholarly in his appearance. We found that in his business he was correct and methodical.

While I write I look up at the picture of our members taken in Washington in 1892, and I see in the front, Ittner, McAvoy, Randall, Pearson, Adams, Pike, McCain and C. P. Merwin with his kindly smile, looking down upon me, and I think, never again in this life will I hear his cordial greeting, but I have in that picture preserved his sunny disposition in his cheerful countenance. Two others in that picture have gone to the great beyond, viz.: Judge Oldfield and Thomas Moulding. They should all "have died hereafter," but it is our common lot—"Out! Out brief candle. Life is but a walking shadow—a poor player that struts and frets his hour upon the stage and then is heard no more." They filled their position and destiny well; they did their good work, and will always be held by the National Brick Manufacturers' Association in long, and loving remembrance.

B. W. BLAIR, Third Vice Pres.

#### MORE PAPERS AND LESS TALK.

GRAPE CREEK, ILL., Nov. 6, 1893.

DEAR FRIEND RANDALL:—I have no doubt but that in answer to your request for suggestions, relative to the coming convention, you have been inundated with same, and it is almost superfluous to add "yet another."

If, however, my voice can be heard in the crowd, I would say, give us short papers, practical ones, on every branch of the clayworking industry, *without debate on same*.

Encourage the stuffing of the Question Box with sensible, practical questions, and devote more time to this part of our programme.

Each convention has so far been an improvement on the last. Let us hope that every brick manufacturer attending will lend his individual effort to put this of 1894 ahead of the honorable procession. Hoping to meet you there,

JOSEPH FAIRHALL.

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#### PERT AND PERTINENT SUGGESTIONS FROM A CHARTER MEMBER.

T. A. Randall, Cor. Sec'y N. B. M. A.

DEAR SIR:—

I have read with interest your letter to the Executive Committee with reference to programme for our January, '94, meeting, also the several replies, one from our honored president, and others from distinguished members of the Executive Committee.

Permit me to elaborate these elaborate suggestions a little in an unofficial capacity. As to threshing over old straw for the chaff, that is a waste of energy and time. I mean straw, nothing is said about grain. If there is any grain in it, it might pay, but some subjects need a rest, as they have been threshed until there is nothing in them.

Mr. Ittner's idea to get some of those quiet "button hole" fellows to talk on the floor of the convention hall is good. This ought to give new hope to my friend Purington (D. V.) and also to my friend "Keystone" McGraw. Some means may be devised by which their reticence may be overcome, then they will not be compelled to talk through their "buttonholes." Really, I hope some means may be found to carry Mr. Ittner's suggestion into practice. We might devote one hour at one or more sessions for an informal talk, an experience or query meeting where any member may arise and ask another a question and then take off "the muzzle," suspend parliamentary rules for that hour and let the answers be free and easy, so that the speaker need be in no fear of being called down. This is entirely practicable.

It would seem that the question box ought to do this work, but its use in the past has been little. It would be a good idea to have the questions sent in a month ahead and have them in the programme, but, I have no idea they will be sent in.

This suggestion might be amended in this way. Let the members be urged at each session to put their queries into the box. At the close of the session, or near the close, let the secretary read the questions to the convention, then announce that they will be discussed at the beginning of the next day's session. This will give Bro. Purington time to collect his scattered thoughts, as well as the balance of us who are slow of speech. In gathering our thoughts, however, let us remember the five minute limit. A question sometimes may appear trifling when the discussion of it would bring out much of value, so that any question, however simple it may appear, if asked in faith should be discussed. If the question does not interest us directly or individually, let us not try to smother it, but let others who are interested answer. It might be well to have 50 or 100 men on the programme prepared to speak or read a short paper. I believe, Mr. Secretary, it has been rather hard for you to secure ten men to prepare papers. The most criticism in the past has been the length of some papers. A paper that can be read in from ten to twenty minutes takes best.

Now, as to talking about hard times that has put wrinkles on us already. Let us put that subject in the category (as Bro. Chambers said about the kiln, men) with Pharaoh, Egypt and the children of Israel, and impose a fine of five hundred cents on any member mentioning the subject. I have heard it discussed from every possible and many impossible standpoints for a whole year. I go to the convention for rest and a change, and hope I shall not be afflicted by hearing discussions on this subject.

Now that I have had my say, I feel that the programme will be safe in the hands of your honorable committee.

CHARTER MEMBER N. B. M. A.

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#### WANTS A FRATERNAL BUTTON.

Friend Randall:

Please allow me to concur in the remarks of Bros. Purington and Gates in advocacy of a better use of the "Question Box." Hitherto questions through the box have been treated as a good joke, or "one on" the enquirer. Some answers have been little short of ridicule and very few indeed are answered intelligently, or given any fair consideration. Now I would suggest, that as our meeting is for the avowed object of disseminating craft knowledge, we raise the "Question Box" to a higher plane. Make it an important branch of the business of the convention. If this was understood it would be taken advantage of by many who hitherto have thought it little better than a "fake." One way to do this would be to have a bulletin board on which to post or write the questions, and announce that these would be brought before the convention in the early part of the last session. Members could then pass in the suggested slip,



bearing name and question he would answer. Another thought. Why can not we have an association "button," something appropriate and that could be constantly worn. Our Chicago badge could be made to this end and I think would be the means of many an introduction and profitable chat on the railroad and indeed many other places.

WILL.

#### WE ARE GLAD OF IT.

Mr. Fred H. Vander Heyden, of Ionia, Mich., has succeeded to the brick business formerly run by his father, Mr. W. H. Vander Hayden. In renewing his subscription to the CLAY-WORKER, he says: "I would not be without the CLAY-WORKER for many times its price," and adds that business has been very good with him this season, having had all the business he could attend to. He now runs four machines and expects to put in another in the spring.

Mr. V reads the CLAY-WORKER and is prosperous, see

#### MEDAL AND DIPLOMA FOR THE BOYD BRICK PRESS.

**B**RICKMAKERS will be interested to learn that the Boyd Brick Press exhibited at the World's Fair received the only award on dry press brick machines. The Judge's reports awarding a Medal and Diploma, approved and recorded by the Executive Committee on Awards, and now on file in the Department, reads as follows:

"The Boyd Brick Press has great simplicity of design, enormous strength and great durability. It is compact, the adjustments are convenient, it operates quietly and smoothly, it is adaptable to a wide range in the shape and character of the product. The workmanship is excellent, the design ingenious, and shows the most perfect application of scientific and mechanical principles to the art of brickmaking."

This high encomium from such eminent authority is only another expression of the superlative merits of the Boyd Brick Press. Its triumph at the World's Fair was inevitable.

Still another honor was conferred upon the Boyd Press. It was selected by the Commissioner of Patents as the highest type of machines of its class, illustrating the greatest advance in the art of brickmaking. Under his direction a complete working model was con-

structed and exhibited in the United States Government Building.

While the praise of eminent engineers and mechanical experts cannot be otherwise than gratifying to us, yet more than all do we appreciate and treasure up the many warm words of praise we are constantly receiving from those who are using the Boyd Presses in practical every day work.

CHISHOLM, BOYD & WHITE.

Chicago, Nov. 4th, 1893.

#### STEEL VS. BRICK CHIMNEYS.

**W**E understand that several firms are seriously contemplating the utilization of steel in the construction of chimneys. It is said that the structural weight and space required for erection would not be anything like so great as in the case of masonry, and we are confronted with the extraordinary statement that a steel chimney would cost less to build than a similar chimney of brick, a statement that will not for one moment bear examination, for, although steel is moderately cheap, brick are infinitely cheaper, as is also the cost of brick construction.

In point of stability no deduction can be drawn, for no steel chimney of any height has yet been erected. But the stability and elasticity of well-built brick chimneys is well known. We say well-built chimneys, for it is certain that a number of chimney stacks are in a very risky state, and sudden disturbances render them exceedingly dangerous to persons employed in the works, and others who happen to be near the buildings. The question of stability is, of course, a most serious and important one. According to the *Building News* the only rule to insure stability is to take moments about the centre of gravity of the shaft where the wind-pressure acts.

The stability of a chimney stack depends on the weight of the brickwork, above the joint at the base, being such that it preponderates over the wind pressure at the centre of gravity of shaft to such a degree that the resultant of the two forces shall fall within the base of stack at the said joint, sufficiently to prevent crushing of the material on that side, or tension on the opposite or windward edge. For the sake of stability the line of pressure, or resultant of the weight and wind pressure, should fall within the shaft thickness at the joint level by at least one-quarter of the whole

width of chimney. Methods for insuring stability are always valuable, and a recent disaster ought to cause owners to carefully examine their chimneys, especially if there is any suspicion of weakness.

But to return to steel chimneys. As we have said, there are no means of judging of their stability as compared with those of brick. What of their usefulness? There are two important points which must not be lost sight of in considering the question. Steel is a great conductor of heat, and also a good radiator. Therefore, up-draughts may be easily minimized by undue loss of heat. If chimneys are made of steel they must be provided with asbestos packing, or with some other equally good non-conductor. However, even then there must be too great loss of heat in a chimney constructed of steel. Brickwork is a non-conductor of heat, neither does it radiate well. These properties, we think will insure its continued use in the construction of chimneys. But the bricks used must be sound, and cemented with imperishable mortar.—*British Clay-Worker*.

#### OBITUARY.

Mr. Chas. B. Siner, one of Philadelphia's best known brick manufacturers, died at his home, in Frankford, a suburb of Philadelphia, October 24th, in his sixtieth year. Mr. Siner was the largest of the "Big Four" who have been among the most conspicuous groups at the annual conventions of the N. B. M. A. for several years past. He was a great good hearted man, who figured largely in public affairs in his immediate locality. His death will be greatly mourned by all who knew him.

Samuel Baggett, of Baggett Bros., East Liverpool, Ohio, one of the oldest potters in this country, died the 24th ult. He was 79 years of age, and came here from England in 1848, since which time he has been engaged in the pottery business.

Benjamin Franklin's body was buried beside his wife's in Christ Churchyard, Philadelphia. He wrote this epitaph for himself when he was 23 years old:

The body of Benjamin Franklin, printer, like the cover of an old Book, its contents torn out and stripped of its lettering and gilding, lies here, food for worms.

Yet the work itself shall not be lost, for it will, as he believed, appear once more, in a new and more beautiful edition, corrected and amended by the author.



## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## Mr. Donohue's Record Beaten.

*Editor Clay-Worker:*

We have noticed Mr. Donohue's statement in the October CLAY-WORKER that he made 6,550 six-inch tile in one day, and his query, "Who can beat it?" We can, for on the 19th of April we made 8,100 six-inch tile in ten hours on one of the Anderson Foundry & Machine Works "New Departure" mills. Our records show that three days in June when running on six-inch tile, we made 6,500, 7,400 and 6,900. We call 8,000 a day a good run for one machine. Since the dates referred to, we have been running on large tile. RANKIN BRICK CO.

Bloomington, Ill., Oct. 19, 1893.

## The Enameling Problem.

*Editor Clay-Worker:*

Permit me to assist "Opake" in criticising the paper written by "I. H.," in the September issue on the subject of "Enameled Bricks."

Now Mr. Opake, let us first shake hands and then look for our adversary. He must be an Englishman, judging from his mysterious or, may I say confused way of writing on the subject in question. We know that the process of enameling has always been regarded as a secret from the beginning. The Egyptians, Arabians, Persians, Romans, the Moors and last but not least, the English have jealously guarded the secret. But why the latter should resort to giving us entirely wrong ideas as to the method, that I cannot understand, but such is the case. Let us look up the last part of "I. H.'s" paper, which is the best part of it. "The proper enamel of brick will not flow or run at all, no matter what position it may have in the kiln, or how hard it may be burned."

This I will endorse heartily; because it is true, but why does he previously speak of the brick first being dipped in an enamel and then into a glaze? This is what is confusing. He refers to a "slip and glaze" but is calling it something else. If this is what he means, he cannot by that process produce the durable enamel mentioned in the last part of his paper, but simply a majolica glaze, which he cannot guarantee against

cracking. Another thing he seems to sneer at, is what he pleases to term: "frit glaze craze." Does he mean to say that true enamel does not need fritting? If it does, why is it called a craze? The fact is that it must be fritted and cannot be used in the raw, nor on green brick either.

By the way, another writer on this subject is advertising recipes for enamel which can be put on the "green brick." Surely he cannot mean that an enamel can be produced in that manner, or his article is of little value, but on the contrary the article is easily the very best one that has been written thus far on the subject so I conclude that the "ad" is wrong. Indeed I felt good in reading the paper as there was a good deal of truth in it, of course no one can compel a man to tell "the whole truth," unless he wishes to, but all that is said ought to be the truth. Mr. Opake, let us not be "mixed up" by the different writers, even if they come out and say that it is impossible to make a good enamel unless dry enamel is sifted on the brick while the latter is in a state of white heat. This I read about not long ago. This writer must be one from the hot regions if he could crawl into the kiln and perform this feat, and I do not see how he could do it outside the kiln. Do you?

I hope that "I. H." is feeling better now. He should not be fretting (fritting) too much for lack of criticism, but see everything "transparent" and not "opaque." And Opake should feel as though a "Clay-ton" had been lifted off his shoulders.

Wishing for myself that I am not "crushed and ground" next time, I am

Yours truly,

S. L. deROTH.

## Large vs. Small Brick.

*Editor Clay-Worker:*

In a letter recently received from the publishers of the CLAY-WORKER I read: "We do not, personally, take much credit to ourselves for the progress which has been made by the craft, but think that the CLAY-WORKER, as a medium of exchange of ideas, has been a very important factor."

While not agreeing with the first portion of this paragraph, I am in hearty accord with the last part of it, and with this idea ("the exchange of ideas") I ventured to take exception to some remarks of Mr. Crossley's in regard to the best size for bricks, as I look upon him as an authority on all matters relating

to the business, whose opinion, therefore, if deemed wrong, should not be allowed to go unchallenged. I had no intention, however, of drawing Mr. Crossley into a lengthened discussion of the question, as I know he is a very busy man, and I am myself by no means an idle one, and having succeeded in engaging the attention of the craft to the subject, I would have been quite satisfied, even at the risk of being considered "away off," to have let the matter rest there, were it not that Mr. Crossley seems to imply, in his letter, that I misquoted him. Acting on his suggestion I have re-read his letter, and I find that my quotation was perfectly correct. It was the pressed brick, which Mr. Crossley said were "on the whole equal to the English."

To prove the advantage of small brick to the manufacturer, Mr. Crossley compares the cost of their production with that of large, and for this purpose, very cleverly (I use the word in its English meaning,) selects a modern brick plant, where shale, after being mined, has to be fed to a dry-pan, passed through elevator, screens, pug mill and auger machine. The brick are then automatically cut off, loaded on cars, and passed without further handling, through a tunnel dryer to the permanent kiln. It will be seen at a glance that here by far the largest percentage of the labor, is expended in the preparation of the clay, which, of course, costs equally in proportion to the size of the brick.

To be quite impartial, however, let us rather take the average brickyard (which unfortunately, is still enormously in the majority—over a hundred to one I should think) where ordinary brick clay is "dumped" direct from the clay bank into the soak pit, disintegrator or brick machine, and where the brick have to be cut off, placed on trucks, and wheeled to the drying sheds or open yard, where they have to be handled two or three times before being again wheeled to the kiln. I hold that in all of these operations the saving in labor is very greatly in favor of the large brick.

In setting also there is a decided advantage, much larger than Mr. Crossley admits; while in burning there is a relative saving both in kiln room and fuel, and I cannot see why there should be more waste, with proper attention. (Even if they break, the "bat" is almost as large as the American standard, and, if small size is so very desirable, why



not utilize the "bats" even of the small bricks. Laid as headers the effect ought to be very "artistic," it is only carrying the thing a little further.) In discharging the kiln there is, also, most certainly, a saving, and the cars and wagons can be more expeditiously loaded and emptied. The bricklayer, too, can most assuredly lay a greater quantity (cubically) and there is a saving in mortar, which, in districts where lime and sand are scarce, is quite a consideration. In fact, in my opinion, there is, except perhaps in drying, a decided saving in every shape from the clay bank to the finished building.

The greatest advantage, however, is in "the greater stability of the building." There can be no doubt that a nine inch brick will give a better bond, and make in every way, a stronger wall than a seven and a half or eight inch one. This is a question which Mr. Crossley (prudently I think, for the success of his argument in favor of small brick) took no notice of in my letter.

Some brickmakers may say, I don't care what is done with the brick after they leave my yard. This is taking a very narrow view. Every saving which can be effected in the handling of brick at every stage, and which tends to improve and lessen the cost of brick buildings, re-acts directly in favor of the brickmaker. It is not large versus small brick. It is brick versus stone, iron, wood and every other building and paving material.

All these calculations are, of course, made upon the basis that the brick sell according to their cubic contents.

Mr. Crossley says: "If Mr. Greer's hypothetical contractor were a reality, and would pay for brick according to their size, then I would admit that his argument was sound." He is a reality. It is quite impossible for him to be otherwise. These things are like water; they find their own level. The contractor who would pay double price (cubically) for small common brick to fill in and back up with, to say nothing of extra labor and mortar, would be a veritable "Simple Simon" who would not long survive in the business. Such men are certainly not to be found in England, and "if the small brick could be introduced there," the price would be no more than warranted by their cubic contents, if as much.

Mr. Crossley says, it would actually pay to import the large brick from England (presuming that they would sell,

as there, at their cubic value) were it not that custom is so strongly established that they would not sell at all. This, I consider, the very strongest argument which could be used in favor of their manufacture.

If it could be demonstrated that the manufacture of large bricks was more advisable, and that custom alone stood in the way, it would be for the "craft" to decide whether or not that custom should be changed. A technical college, such as is advocated by many of your principal contributors, including Mr. Crossley, would be invaluable for investigating and deciding many vital questions connected with the trade.

There is no doubt in my mind that the large standard for brick will ultimately be adopted in the United States, and perhaps at no very distant date. The users of paving brick favor, and in many cases demand a large brick, which is being supplied to them in the shape of various patented "blocks." It is well known that paving brick can be made to much more advantage the same size as building brick, in order that there may be a ready outlet for any which fail to come up to the required standard. If the paving brick interest attains the proportions it is almost certain to do, and a large brick is demanded, it will at once be a vital question if the building standard should not be immediately raised to suit it.

I will watch with interest to see what Mr. Crossley says on the subject of size in his series of papers on, "Street Paving Brick," at present being published in the CLAY-WORKER, which I have no doubt will, like his essays on sewer pipe, be a valuable addition to the current literature on the subject.

Mr. Crossley refers in his letter to the fire brick trade. If the manufacture of small brick is such a desideratum, why is not a reform in this direction attempted by the American manufacturers of this article?

Mr. Crossley also says: "Throughout the United States there is quite an appreciable difference in the cubic contents of brick made in different sections and if Mr. Greer's theory were correct, those making the largest bricks should be getting the largest profits." Not at all necessarily so. The profit on brick, quite irrespective of their size, is altogether governed by the price at which they sell, the cost of labor and fuel, etc., and the skill and management displayed in their manufacture; in other words,

their value and cost of production.

Perhaps some of the manufacturers of large bricks, above referred to, could give us some practical information on this subject.

Personally I am not by any means "wedded" to large brick (in fact, as a matter of taste, I prefer the small) but I am convinced that they are more productive of those nice shining dollars, referred to by Bro. Gates, which are so easily "dropped" and so hard to "pick up," and which, I am sure all will agree are much more "beautiful and artistic" in the pocket, than any brick, large or small can possibly be in the wall.

And now, Mr. Editor, if I have not already completely exhausted your patience, I would like to say a word or two on the question of machinery. I find here also Mr. Crossley seems to have forgotten what he said in his first letter. I am, of course, aware that brick machinery was in use in England before the States, but it was the recent improvements, which Mr. Crossley said in his first letter had been copied from England, while in his last letter he admits that the machines have been so improved upon in the States, that it would not now pay to use the originals, even if obtained for nothing.

I note what Mr. Crossley says about a "strong effort" having been made, without success by at least one firm to introduce their machinery into England. I am aware that attempts were made some time ago, but I would not, certainly, call anything a strong effort which had not the help and hearty co-operation of some trade paper like the CLAY-WORKER or its co-temporaries. Besides it is the very recent improvements which have added so peculiarly to the value of American machinery, and there is now, certainly, more interest shown in the business in England and more desire after the best, than was even a year or two ago.

Mr. Crossley speaks of "the land of my birth" as if he fancied I wanted to "go back on it." Nothing could possibly be further from my thoughts, though truth and justice both compel me reluctantly to admit that she is behind the States in the matter of clayworking machinery.

What Mr. Crossley says about the land which is yet, in many respects, superior to the States, which is still most dear to him, and where the happiest days of his life were passed, touches in me a responsive chord. There are



very few Englishmen who will not, in moments of candor and forgetfulness, "let this cat out of the bag." Englishmen who have never left her "dear old shores," are very fond of abusing their country, her climate, manners, customs, etc.; but those of her sons who have had the misfortune to reside anywhere else, *know*, that there is no country which, in any respect, begins to compare with her, *or ever will*. I yield to no one in admiration for the United States, but it has a long, long way to go before it catches up on the old mother country, and it is making no faster time to-day than she is. The British Isles are so fixed with regard to soil, climate, etc., that they naturally produce a race hard to equal and impossible to surpass. No other land is so favored.

Mr. Crossley, in closing, is kind enough to express the hope that I will accept his remarks in the spirit of candor and good feeling in which they are written. I assure him that I do so, and trust that he will extend to mine a like favor. Mr. Crossley's writings are always a source of enjoyment to me, as I am sure they are to the entire "Craft," tho' on the subject of "The Size of Brick," I cannot say that I consider him a "cleaver mon," "hae naw thenks as aw thenk."

R. M. GREER.

Tuxpam, Mexico.

#### Philadelphia News.

*Editor Clay-Worker:*

The brick manufacturers of Philadelphia and vicinity do not at present intend to anticipate the next spring's business by running full time. Circumstances may render it advisable to do differently, however. Present prospects are not very good. All who have been consulted upon probabilities for 1894, talk conservatively; yet every one recognizes the possibility of a rushing demand for brick and all kinds of building material.

The Bourse Building has been begun, and it is intended to lay this year, about 3,500,000 brick in the foundations. This will be the largest building here, excepting the City Hall.

Murrell Dobbins, the Peerless Brick Company, and the Jarden Brick Company, have now but very few brick to offer, outside of their regular trade. These are the largest concerns in this section of country, and turn out a very large share of the 525,000,000 brick made here annually. These people do not care to be quoted as speaking definitely upon

next year's prospects; but they incline to the belief that there will be such an enlargement of building operations as will absorb about all the brick that can be turned out.

Building operations are about at an end. Last year, the outlay in new buildings was \$26,000,000; so far this year, the estimated outlay is \$18,000,000. This may mean that the \$8,000,000 which ought to have been expended this year, will be used 1894. One thing that will help next year's building operations, will be the trolley system, which is being extended all over the city, and into suburban localities. Heretofore we have had nothing but horse cars, and one or two cable lines; but these facilities have been miserably inadequate. With trolley lines which will shoot passengers into the suburbs in 30 minutes, builders believe they will have plenty of work. The probabilities are, that this trolley system will give builders a great deal of work next year. The lumber dealers recognize this fact, and the building trades generally are pleased at the prospect. Then, the Reading system has opened its terminal, at 12th and Market streets, and this also will serve to attract residents along its line. The Pennsylvania line attracts the more wealthy; the B. & O. line attracts the middle class; the Reading will attract the average wage working class; and it is probable that thousands of houses will be built in the northern end of the city, within the next two or three years.

Chas. B. Siner, a member of the firm of Siner & Brother, brick manufacturers, died at his residence in Frankford, last week, in his 60th year.

Prices for building material of all kinds have declined, and this will be an inducement to enlarged building operations next year. Wages of labor remain the same in the building trades. Reductions may, however, be attempted, before the new work opens; but attempts of that kind will be fraught with danger. The workers are pretty well organized, and will not tamely acquiesce in reductions.

General business conditions are not very good. We look for an improvement, of course, during the winter. Money has been driven into idleness, and investors are fretful. If confidence is restored, there is no doubt but that we will next year make up for the losses of this year.

#### What is the Trouble, and How Can It be Prevented?

*Editor Clay-Worker:*

As the brickmaking season is over here I would like to ask the readers of your valuable journal just one question and hope to get a little light on a dark subject (to me). I have a clay bed ten feet thick, 18 inches black prairie soil, 18 or 20 inches jointly yellow clay, two feet of solid yellow clay, then the rest of the way down it gets lighter colored and shorter until it reaches the bottom full of red rings and bulls eyes and all kinds of shaped pieces of iron rust, or something that looks like it; it all spades very easily, I mix all these together in a round pit, holding 10 M. brick, then add water and temper with a Raymond wheel four hours, let lay over night, wheel to a Old Reliable brick machine, and lay the brick on the yard to dry. I am located on the prairie on the highest point in the county 12 miles from the Mississippi river, where wind and rain have a fair swing at me.

I do not lose a single brick of the flat or on the edge in the windiest days unless a large lump of hard clay gets into a brick, then I hack them eight courses high double on two hacks together, and cover with temporary covering and they dry in about five to seven days; then they are wheeled to the kiln and here is where my trouble is, a great many are broken (no dry lumps in them but 40 or 50 brick in a M. will be broken, and nine times out of ten it will be just two inches (or close to it) from one end, they appear to be clear in two, only wanting a touch to separate them. Then comes the queerest thing as both pieces are very solid and will stand quite a lot of pounding before they break any more now I want a remedy if possible, and any information will be very thankfully received through your columns, or by letter.

GEO. H. JENKINS.

Monona, Iowa.

#### Ohio Valley News.

*Editor Clay-Worker:*

The sewer pipe and brick manufacturers report a fair demand for their product, and they are having much less trouble in making collections. While the brick and pipe business is not booming in the present depressed period, yet there is no other business that made as good a showing in the way their trade has kept up.

The mammoth continuous kiln of the John Porter Co., at their Clifton Works



in New Cumberland, is undergoing its first firing. It was erected at a cost of over \$20,000, and at present contains 484,000 brick. It is being fired very slowly in order to thoroughly dry it out. It is being watched very closely by all the brick men in this vicinity and its success will mean the general adoption of it.

The plant of the New Cumberland Fire Clay Co. at Brown's Station, Ohio was offered at Sheriff's sale Oct. 21, but there were no bidders. 200,000 paving brick were sold that same day by the Sheriff at \$3.00 per M, to Newton Boren, the well-known paving and sewer contractor of Steubenville, Ohio. The property was appraised Oct. 24th for the third time, at \$3,200, a reduction of \$1,600 from the second appraisement.

The trestle used for running the clay cars and dumping the contents at the Excelsior Sewer Pipe Works, in Toronto, Ohio, gave way and James Murphy, a clay miner, who was pushing a car laden with fire clay, fell with the car and received most serious injuries, and much doubt is expressed as to his recovery.

McMahan, Porter & Co., New Cumberland, W. Va., were the only sewer pipe manufacturers in this valley who had an exhibit of their products at the World's Columbian Exposition. They were given an award for fire clay brick and sewer pipe, a collective exhibit.

The New Cumberland (W. Va.) *Independent* for some unknown reason has taken every opportunity to assail the John Porter Co. of that place through its columns. The following appeared in a recent issue:

"The following item is going the rounds of all the papers: 'Indications point to a general shut down of the brick plants of the John Porter Co. As this company has done more than any other concern in the Upper Ohio Valley to bebase American labor by the importation of besotted Hungarians and pauper Dagoes, there will be few tears shed over any misfortune that may overtake them. It is to be regretted that such a feeling exists against any corporation in New Cumberland, and a wonder that any firm will cling to such pauper labor to any extent, more or less, when factories all over the country are letting loose of this class of labor, fully realizing it is no good.'"

As to the general suspension of work at this company's plants, your correspondent is of the opinion that it is with-

out foundation, and who ever started the report, with him the wish was father to the thought, and his story never originated from the headquarters of the company.

Once more the threatened consolidation of the sewer pipe manufacturers was paraded in the newspapers in this region, stating that within the next ten days all sewer pipe manufacturing concerns in the Upper Ohio Valley, including East Liverpool, Toronto, Empire, New Cumberland, Calumet and Freeport, were to unite in one joint stock company, being incorporated under the laws of the State of Ohio, and will have a central office at either East Liverpool or Toronto. This immense deal involves three quarters of a million of dollars.

Members of many of the firms mentioned in the deal were interviewed by your correspondent and they claimed that it was news to them, and said some enterprising reporter had attempted to make a sensation out of the old "combine chestnut," which has been discussed for several years. This deal was almost effected last spring, and was only prevented by three firms out of twenty-six refusing to be members of the consolidation. Those in favor of the combination have been discussing the advisability of making the same without the three dissenters, but nothing definite has been decided upon, and thus it remains, and they are as far off the settlement as they were in the spring. They are all of the opinion that such a combine would be of great and lasting benefit to the sewer pipe industry. BUCKEYE.

#### A GOOD MACHINE.

**U**SERS of the Boyd Brick Press soon get enthusiastic in its praise, and with reason, in the light of such splendid testimony as the following, from well-known firms:

The Jarden Brick Co., of Philadelphia, state: "Seven Boyd Presses in operation for sixteen months, no repairs, haven't had occasion to use a wrench."

National Brick and Tile Co., Bradford, Pa., say: "We have used a 4-Mold Boyd Press since the spring of 1891; cost of repairs to date, Oct. 1893, one dollar and forty cents."

Genial and hearty D. L. Stevens, Manager Grand Rapids Brick Co., Grand Rapids, Mich., gave his experience to a party of brickmakers at the World's Fair, as follows: "I have used a 4-Mold

Boyd for nearly four years, making never less than twenty thousand shale brick daily, with seven hands, and never a cent of expense for repairs."

Brush & Schmidt, of Buffalo, N. Y., say: "We have used a 4-Mould Boyd Press since '91; cost of repairs to date, Oct. 1893, eight dollars."

#### ANNOUNCEMENT.

We will give a second annual exhibitional burn in our "Diurnal Kiln," filling on the 28th day of November, 1893, and start fires the same evening. All who are interested in the burning of any clay products are requested to be present, and will be entertained free while with us. We earnestly request samples of clay products from all. Those who cannot be with us are requested to send samples, which we will burn and return, paying charges one way.

STEWART BROTHERS.

Mt. Victory, Ohio.

#### SECRET OF SUCCESS.

One of the great secrets of the success of the famous New York merchant, A. T. Stewart, was that whenever times were hard and business was dull he doubled and trebled his advertising. He reasoned that there were thousands of people who had money to spare for real bargains, and that he had but to convince them that they could find them at his store, and their money would be forthcoming. The result invariably confirmed the shrewdness of his judgment. Human nature has not changed, and there is far more money per capita now than there was in Mr. Stewart's days, as every merchant will discover who will adopt this practice, and as those shrewd merchants are now discovering who are not sparing printer's ink in announcing the bargains they can offer to patrons.—*Ex.*



AN UNMIXED EVIL.

—Truth.



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
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from practical men will always be welcome.  
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## THANKSGIVING.

The President of the United States has said we should give thanks, and has named the day. The Governors of the various States echo the proclamation. There are those of us who look at this question inquiringly and without good reason. There are those of us who cannot dissociate a question of this kind from that which is immediately material. There are few who think of this question of Thanksgiving without recurring to the recent periods of business depression. To be sure, there are many who can give thanks because it is not worse, but their number is not great nor is their confidence secure in their position.

Thanksgiving comes very properly after the harvest time, after a period of activity, when one has the opportunity for a little repose; a period of thoughtfulness, when one can look back over what has transpired, and read and heed the lessons of the year. In truth, there is not a business man in America who may not, if he chooses, profit by the experiences of the past few months. If viewed in a philosophic way, the average business man may find much in the passing year—this year of depression—for which to be thankful. If he has learned not to go too far from the business shore in a light boat with heavy sail, he is a better business man, and should be thankful for that.

With the clayworkers of America generally business the past season has

been fairly active. To be sure, the demand has fallen off materially and prices have ruled low, still a moderate amount of business has been transacted, and the vast majority of our readers will close the year with a balance on the right side of the ledger, notwithstanding the financial flurry.

There are signs of better times ahead, so dear reader be thankful for the little good you have done and the greater good in store.

## INFLUENCE OF THE WORLD'S COLUMBIAN EXPOSITION.

"Though lost to sight,  
To memory dear."

The World's Columbian Exposition is no more, its gates are closed. The exhibits are being removed. The buildings will be taken down. But the spirit of the Fair, its educational influence, and all that it has meant for good, continues. The Fair exists in the minds of the people. It is as substantial, as far as that is concerned, as though it were permanent. It has marked an epoch in our progress and its results are without end. It is moving on, like all good things. Those who have been interested in it and those directly connected with it have tried to think of some plan to make it last a little longer in its substantial form. There were discussions as to the probability of carrying it through November. There was talk about making the buildings permanent. While all this would have been very pleasant, very satisfactory, it, in truth, is not necessary. The buildings were constructed as they were, of temporary material, in order to show the people the outlines and the details of good architecture. It would not have been possible to have made this appearance of artistic excellence in a more substantial material. In truth, it is in a way substantial. It has penetrated the minds of the people who have witnessed this great show. They carry it to their homes. They live it. They build it in their houses, in their stores, and in their public buildings. The artistic taste of the people of this country has been immeasurably advanced, by the character of the structures which were to be seen within the enclosures of the Columbian Exposition. The Fair, its art, and its architecture, exist where they will do the most good—in the memory of all who have seen them, those who have read about them, those who have been

inspired by what has been said about them. We have gone through a great educational process. We have already realized great good and will continue to derive greater benefits as time goes on, in the higher development of the people throughout the country.

There were great strides in all branches of manufacturing and liberal arts, and in the fine arts themselves, after the Philadelphia Exposition, though the display then made, great as it was, is not to be compared with the wonderful exhibition at Chicago where was shown a collection of manufactured products never equaled in the World's history.

The Columbian Exposition may be closed without regrets. It has done its work. From it will develop ideas which will add great wealth to our country. Like the spirit of John Brown, it goes marching on.

## AMERICAN VS. ENGLISH FLOOR TILE.

Nearly every story is a continued one. Particularly is this true in the records of happenings in real life. Several months ago we said something about the English tiles which were put down in the Denison house, one of the largest and best hotels in Indianapolis, and spoke of their generally unsatisfactory condition, and mentioned this as being true not on account of the workmanship but rather on account of the tiles themselves. Their color, form, and texture was bad. Following that statement sometime later came a notice of our remarks through the *British Clay-Worker*. This was critical if not pointed and took exception to our statement that "Education will develop the right thing and the English product will stay on the other side of the water." The *British Clay-Worker* replied: "As it happens, however, that particular kind of education can hardly be said to be making very rapid strides."

We never completed the Denison House story. After our criticism was made, the proprietors of that hotel, refused to make settlement with the company who did the work. The matter was arbitrated, and a very substantial cut was made from the bill. Now we have another point to recall. The Denison House subsequently enlarged their building, made additions to their lobby requiring more tiling. They had had "the education which developed the right thing" and the English product, as far as they are concerned, "stays on the other side of the water." They



had had their experience; they profited by it. They purchased American tiling. The two jobs now may be inspected and compared one with the other. Those making a careful comparison will have no difficulty in distinguishing the American from the imported tile for it is superior in every way.

#### LAYING BRICK IN THE WINTER.

At this time of year there is always more or less question among those who invest in buildings as to the advisability of doing winter brick work. In the sections of our country where the most building is done, this question is discussed the least.

In New York, Chicago, and other cities, there is no hesitancy about doing winter brick work. In the sections of the country where relatively less building is done, that question is discussed inversely in proportion to the amount of work done. The German government gave this question serious, practical consideration several years ago, and it was settled beyond all question that brick work quite as solid and substantial could be done in the coldest weather as during warmer periods.

#### TESTING CLAYS.

It is gratifying to learn that our way of making brick and working different clays is attracting attention across the water. They are looking to America for the latest and best machinery for making brick, and more especially dry press machinery for making front and ornamental brick by the dry clay process. We are advised that there has been shipped to a practical dry press brick-maker twelve barrels of clay from the Berlin Clay and Pottery Company, Berlin, Germany, to be tested with American machinery, kilns, etc. Our German friends did not make the mistake that so many embryo brick men make by sending a small parcel of their clay to a machine man, or clay expert(?) but sent enough to admit of a thorough test in all the preparing machinery, crushers, dry pans, pulverizers, screens and mixers. Thus they make it possible to obtain what they want—a thorough test. If the result is satisfactory they propose to buy machinery and build a complete American plant including kilns.

The party having in charge the testing of this clay has written Mr. Anthony Ittner, the worthy president of the

National Brick Manufacturers' Association, for the privilege of trying the clay at his large Belleville plant, together with some clays from Riverside, Cali., and Minneapolis, Minn. The last two clay samples will be a car load each. By supplying such large quantities of clay a practical test of real value is possible, which is not the case where a small box or package is submitted, pulverized in a mortar with a pestle, dried in a bake oven or by being spread out in a thin layer on a board and left in a warm place, pressed into diminutive brick by hand power, and burned in a sagger or small china kiln. Such tests prove but little, while the proposed experiment, if carried out thoroughly, as we hope it will be, will demonstrate the real value of the clay in a practical manner.

The gentleman having the matter in charge is an experienced brickmaker, is not interested in the sale of machinery, and says if the clay proves satisfactory all of the machinery manufacturers will have a chance to bid for the work. We are promised a full report of the tests when done.

#### TRADE LITERATURE.

THE STANDARD DRY KILN Co., Louisville, has issued a handsome new catalogue fully describing and illustrating their forced and natural draft brick driers. The latter feature (the illustrations) is very elaborate and makes the book peculiarly attractive, embracing, as it does, not only each separate portion or feature of their driers, but also views of many of the brick works where the "Standard" is in operation. Any of our readers interested in brick drying can secure a copy of the book by writing them, mentioning the CLAY-WORKER.

MORRISON'S IMPROVED KILN RECORD, is the title of a neat little pamphlet, composed chiefly of testimonial letters from brickmakers who have been burning brick in Morrison's Kilns during the past seven years, and their name is legion. If you want to know where they are located and what they think of it, write to R. B. Morrison & Co., Rome, Ga., and a copy will be mailed you free.

AN ODD CIRCULAR comes from the Platt Brick and Fire-Proofing Co., Des Moines, Ia. It asks prospective builders how and of what they are going to build? urges the use of brick as the best possible building material, and discourses at some length on the superior

quality of pressed brick they are making on a Simpson Press. They also make common brick by the stiff clay process (Freese & Co's Mammoth), and fire brick by hand. We commend their enterprise.

THE DOVER FIRE BRICK Co., Cleveland, Ohio, are sending out a pretty 20 page pamphlet, illustrating the various forms of fire brick and furnace blocks, which they have been making for a quarter of a century. They will cheerfully send a copy to any one on application.

WE ARE INDEBTED to J. W. Penfield & Son, Willoughby, Ohio, for an exquisitely executed circular, devoted to their Imperial Friction Clutch. It contains some interesting matter, relative to the use of Friction Clutches, and fully describes the "Imperial" and its many points of superiority. A copy will be mailed free to any one writing them.

THE ROSS-KELLER Brick Machine Co., St. Louis, has issued a circular giving a fine view of their new Triple Pressure Dry Press Brick Machine. The distinguishing features of this powerful press are fully set forth. They request our readers who are interested in the dry press process to write them for a copy.

STEEL CABLE CONVEYORS are the latest things out in their line. The Jeffrey Mfg. Co., Columbus, Ohio, are the inventors and manufacturers of these and other labor saving devices. Write them for illustrated circulars if you want anything of the sort.

WE ARE INDEBTED to W. H. Walker, Secretary of the Hong Kong (China) Brick and Cement Co., for a copy of their illustrated circular, including a price list in the Chinese alphabet. It is very picturesque and quaint to our own eyes, but to "John" it no doubt presents a very ordinary and business-like appearance. We can only read the pictures, but they tell the same story as our more familiar trade circulars printed in plain United States.

#### A GENTLE HINT TO SUBSCRIBERS.

A GEORGIA editor, in a fit of desperation, dashed off the following: "The wind bloweth, the water floweth, the farmer soweth, the subscriber oweth and the Lord knoweth that we are in need of our dues. So come a-runnin' ere we go a gunnin,' this thing of dunnin' gives us the blues."—*Inland Printer*.



## EDITORIAL NOTES and CLIPPINGS.

D. E. Wilds, Lacona, N. Y., will put in a brick machine.

John Holmes, Dennison, Ohio, will erect a new brick plant.

T. F. Quinn is establishing a new brick plant at Springfield, Ohio.

Brick pavements will be laid at Seattle, Wash., in the near future.

R. A. Milam will soon open up a new brick yard at Harrisburg, Pa.

Wenona, Ill., is to have a paving brick factory with 30,000 daily capacity.

The Fort Dodge (Ia.) Clay Works have added a tile machine to their plant.

Mess. Ellice & Every of Santa Fe, New Mexico, will erect a large brick plant.

Gideon Burdette has purchased the Partridge brick yard at Barnum, Minn.

The Huntington Paving Brick Co., after being idle some time, have resumed work.

The Rantoul Brick and Tile Co. Bloomington, Ill., is enlarging their plant.

The Weis & Schmidt Pottery, Milwaukee, Wis., burned recently. Loss \$4,300.

The Pittsburgh, (Pa.) Terra Cotta Works were slightly damaged by fire the 30th inst.

The Ridgway Press Brick Co., of Ridgway, Pa., has been incorporated. Capital stock \$50,000.

A fire in one of the sheds at Thos. Oliff's brick yard, at Clio, Mich., caused \$200 damage.

The Wooster, (Mass.) Brick and Clay Co. has been incorporated with a capital stock of \$20,000.

The brick manufactory of Jos. Soisson & Son, Rankin, Pa., was destroyed by fire on the 7th inst. Loss \$15,000.

The Groomsville Terra Cotta Co. has been incorporated at Groomsville, Ind., with a capital stock of \$10,000.

Mr. John W. Priestly, the senior member of the pottery firm of Tulper Bros. & Co., of Flemington, Pa., died the 16th ult.

M. E. Jacobs, Berlin, Conn., has been elected president of the New England Brick Exchange to fill the vacancy caused by the death of Mr. Chas. P. Merwin.

The Darlington, (S. C.) Brick Co. has been incorporated with a capital stock of \$50,000. The incorporators are, C. S.

McCullough, J. J. Ward and Geo. H. Edwards.

W. H. & Geo. S. Craven have purchased the brick plant of S. Foglesang, Milton, Iowa.

Fred Schrader has purchased the Jonesboro Brick plant at Gas City, Ind., from Monroe and Jas. Seiberling.

On the 7th inst, the office building of M. V. B. Wagoner's brick works at Albany, N. Y., was destroyed by fire.

Fire in the stock brick shed of the St. Louis (Mo.) Hydraulic Press Brick Co., did damage to the extent of \$600.00.

The Summit Sewer Pipe Co. and Week's Pottery, of Akron, Ohio, have both resumed operations with full force of employees.

G. E. Roberts, Columbus, Ohio, writes that after having been out of the brick business for two years, he will commence anew in the spring.

The brickmaking firm of Reuther & Roberts, Braytonville, Mass., has been

dissolved. Mr. Reuther will continue in the business alone.

The Jefferson City (Mo.) Brick Co. have increased their capital stock to \$15,000, and will take steps toward enlarging their capacity.

Mr. J. Emlen has purchased the Atchison Vitified Paving Brick plant at Atchison, Kansas. Mr. Emlen will operate the plant himself.

The Evansville, (Ind.) *Courier* is authority for the statement that the Lant & Morris Brick Co., of that city received first premium on their display of paving brick at the World's Fair.

It appears that the Boyd Press has carried off the honors at the Columbian Exposition, it being awarded a Medal and Diploma. This honor is a merited tribute to a splendid machine and to the energy and mechanical skill which have steadily advanced it to the front rank of brickmaking machinery. We congratulate.

*Continued on Page 474.*

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and  
Belleville, Ill.

ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity.

Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER,

Telephone Building,

ST. LOUIS, MO.



## THE THANKSGIVING TURKEY.

BY LIZZIE BURT.

**I** KNEW a little turkey who  
 Was never satisfied,  
 He ate and ate, and grew and grew,  
 And wanted more beside.  
 His parents reprimanded him,  
 And said he'd come to grief.  
 Said he: "Old folks are very prim,  
 And that is my belief."  
 He robbed the chickens of their share;  
 Assaulted Mrs. Hen;  
 And killed her only son and heir,  
 No bigger than a wren.  
 He challenged Mr. Chanticleer,  
 When he was but a youth;  
 Then greedily beside his bier  
 He ate, and that's the truth.  
 He ate the farmer's corn and wheat,  
 He ate the peas and beans;  
 He was a greedy, greedy cheat,  
 And lived beyond his means.  
 He grew so very corpulent  
 The farmer wagged his head;  
 The barnyard gossips said it meant  
 That fowl was good as dead.  
 And when to gobbler's high estate  
 He did arrive, at last,  
 They warned him ere it was too late  
 To pause and think and fast.  
 He gobbled all their words to scorn  
 And went his greedy way,  
 Until one cold and frosty morn  
 Before Thanksgiving Day.  
 The farmer, Oh! he did appear,  
 And with an axe he slew  
 That gobbler; but not a single tear,  
 His death-bed did bedew.  
 The fowls within the barn-yard beat  
 Their wings and quacked and crew;  
 The farmer's relatives did eat  
 That turkey—so did you.

## THE MEN WHO DO NOT LIFT.

The World is sympathetic; this statement none can doubt,  
 When A.'s in trouble, don't we think, that B. should help him out?  
 Of course we haven't time ourselves to care for any one,  
 But yet we hope that other folks will see that it is done.  
 We want the grief and penury of earth to be relieved;  
 We'd have the battles grandly fought, the victories achieved;  
 We do not care to take the lead, and stand the brush and brunt,  
 At lifting we're a failure, but we're splendid on the grunt.

And there are others, so we find, as on our way we jog,  
 Who want to do their lifting on the small end of the log;  
 They do a lot of blowing, and they strive to make it known  
 That were there no one else to help, they'd lift it all alone.  
 If talking were effective, there are scores and scores of men  
 Who'd move a mountain off its base and move it back again.  
 But as a class, to state it plain, in language true and blunt,  
 They're never worth a cent to lift, for all they do is grunt.

## CIRCUMSTANCE.

LURED by the beauty of some bright, golden day,  
 The poet writes his jovial Indian Summer lay;  
 And, fired with thought, he sends it on its way.  
 And then a blizzard comes, the skies turn gray,  
 The rain falls down, the wild winds sport in play,  
 The Editor's feet are wet, a cold makes him its prey;  
 And so he howls with rage to see before him lay  
 Those jocund lines that sing of Autumn gay,  
 And this reply he sendeth without long delay:

*The Editor regrets that he can not make use of this contribution, which he returns with thanks.*

R. L. M. in Puck.

## A SONG OF THE CRUISE.

O the sun and the rain, and the rain and the sun!  
 There'll be sunshine again when the tempest is done;  
 And the storm will beat back when the shining is past—  
 But in some happy haven we'll anchor at last.

Then murmur no more,  
 In lull or in roar,  
 But smile and be brave till the voyage is o'er.

O the rain and the sun, and the sun and the rain!  
 When the tempest is done, then the sunshine again;  
 And in rapture we'll ride through the stormiest gales,  
 For God's hand's on the helm and His breath in the sails.

Then murmur no more,  
 In lull or in roar,  
 But smile and be brave till the voyage is o'er.

James Whitecomb Riley—"Poems Here at Home."

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## "BRICKMAKER'S MANUAL,"

Morrison and Reep, \$3.00

## "BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

## "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

## "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of  
 them to one address for \$5.50. Address T. A. Randall  
 & Co., Indianapolis, Ind.

## Christmas Time Is Coming.

And these books would make a splendid Christmas offer-  
 ing for brickmakers old or young. A yearly subscription to  
 the CLAY-WORKER also makes a very pleasing holiday gift.

All of these books and the CLAY-WORKER one year to  
 one address for \$7.00. Order early and avoid delay.



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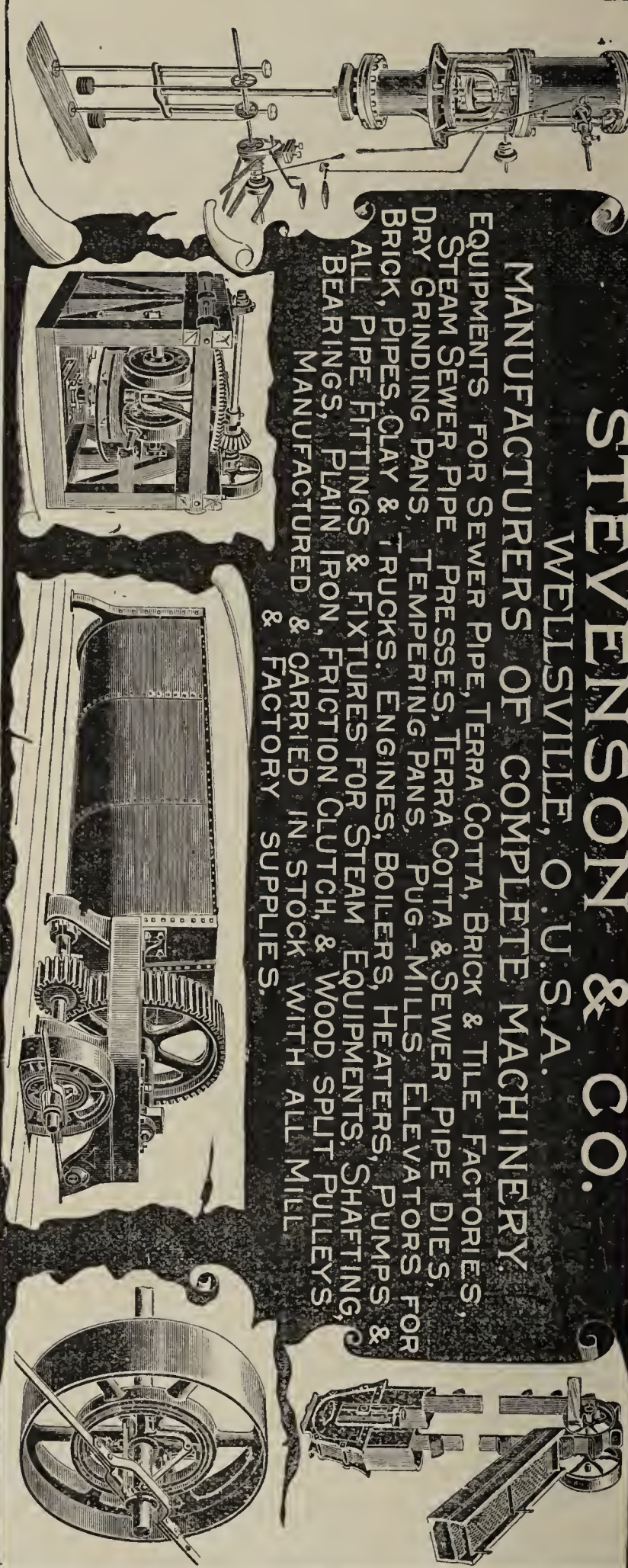
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**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS, ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS,  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



THE LARGEST LINE AND GREATEST VARIETY OF  
RE-PRESSES IN THE WORLD.

## The Columbian Re-press.

Its Record is Its Recommendation.

**READ!**

C. W. RAYMOND & CO.

DEAR SIRS :—

Enclosed you will please find order for repairs. You will ship by freight soon as you can and oblige.

Yours truly,  
JAMES FLOREY.

P. S. This is my first order for repairs. I have run your Press two years and pressed about 2,000,000 bricks. The machine has not cost me one cent for repairs. Would not be without it, no matter what the cost would be.

Yours truly,  
JAMES FLOREY.

These repairs amounted to \$27.50.

The No. 1 Perfection,  
The No. 2 Perfection,  
The No. 3 Perfection,



The Columbian,  
The Columbian Special,  
The Columbian Grand.

C. W. RAYMOND & CO., Dayton, Ohio.

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## Editorial Notes and Clippings.

*Continued from Page 468.*

late Messrs Chisholm, Boyd & White on their success in producing a machine of such superior excellence.

The Wisconsin Brick Co., Milwaukee, Wis., has been incorporated by J. W. Bingham, A. B. Myers and Richard Thomas. Capital stock \$50,000.

The demand for brick at Superior, Neb., this fall became so great that Cotton & Co. opened up their yard again and will burn several more kilns.

The St. Louis Paving Brick Co., works at Galesburgh, Ill., has been consolidated with the Purington Paving Brick Co.; to be called the Purington Paving Brick Co., with capital increased to \$500,000.

Mr. Irving Estey, Society Hill, S. C., has resigned the superintendency of the Spain Brick Plant at that place, and will return to his old home in Massachusetts. He will be succeeded by Mr. Blackwell.

The new works of the Enterprise Brick Co., St. Louis, Mo., started up on the 15th ult., and up to date have made several kilns of exceedingly fine brick. The company purchased the Ross-Keller Brick Machine, of which Mr. Pahl the manager speaks in the highest terms. He says that the press was guaranteed to make only 30,000 brick per day, but that they were making 36,000 per ten hours, and in quantity equal to any in the market.

During one day in September, Chisholm, Boyd & White at their Machinery Hall exhibit entertained brickmakers from Spain, from the Phillippine Islands, New Zealand, Japan, Germany and England; a remarkable day's record even in so cosmopolitan a place as the Columbian Exposition. The Boyd Press has won golden opinions from all for its compactness, simplicity, and mechanical excellence.

F. E. Frey & Son, Willoughby, Ohio, report that recently they took an order for a repress while visiting the World's Fair. They also state that further improvements have been made on their repress, which is illustrated on page 484, which includes a cleaning device that automatically cleans and oils both plates. The feeding apparatus is now made continuous or reciprocating as desired. Their double die machine will soon be ready for the market.

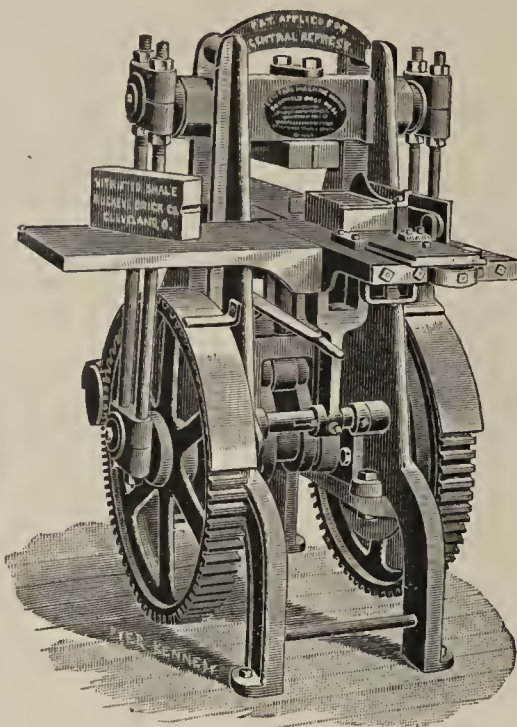
J. C. McClain, General Manager Furnace Fire Clay Co., Salineville, Ohio, writes, that they have their new plant almost ready to start. It is much larger and more complete than their former plant which was burned. The Bonnot Co., of Canton, Ohio, is fitting up the machinery. Prospects for future business is good. There is a splendid opening there for a good tile works. The clay is exceptionally fine for hollow ware. Mr. McClain will give information of value to any person seeking an eligible location for a plant.

# CENTRAL MACHINE WORKS,

226-236 Abbey St., CLEVELAND, OHIO.

—MANUFACTURERS OF—

## The CENTRAL Power Repress.



It is the most complete ever offered to Brickmakers.

The capacity is from 12,000 to 15,000 brick per day.

It does the same work as others of two and three times the weight.



ALSO MANUFACTURERS OF

### Brick Machinery of all Kinds.

Write for Discriptions.

# FIRE BRICK.

Below are analyses of the PLATT BRICK & FIRE PROOFING CO.'S  
Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

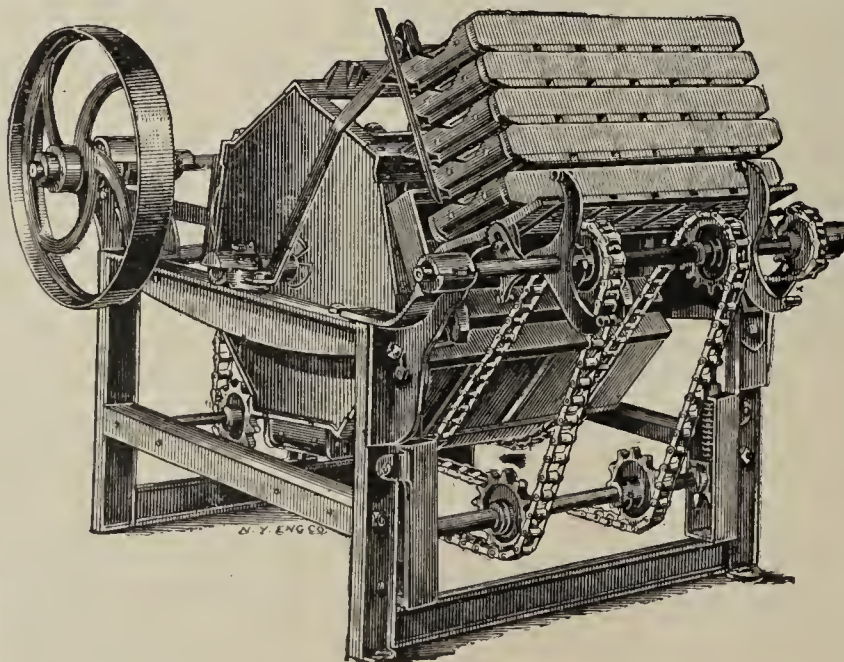
Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick.

Address

PLATT BRICK & FIRE PROOFING CO.,  
706 Youngerman Block, Des Moines, Iowa.

## J. A. BUCK'S NEW CHAMPION BRICK MOULD

### SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine—having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letter patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications to

J. A. BUCK, No. 78 Oneida St., COHOES, N.Y.

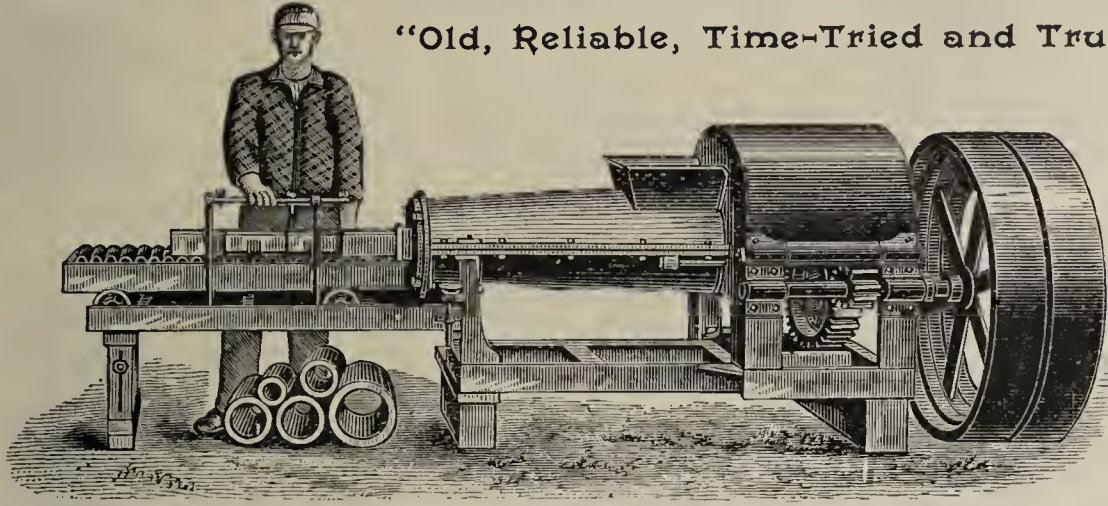
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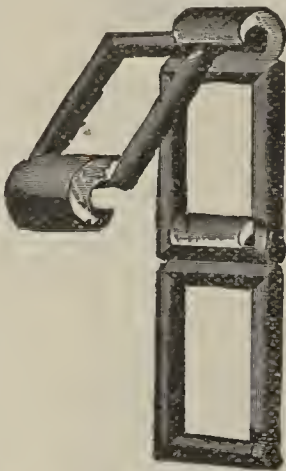
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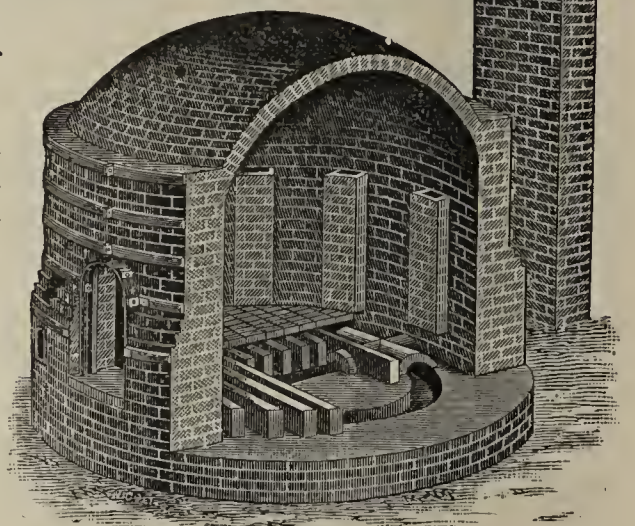
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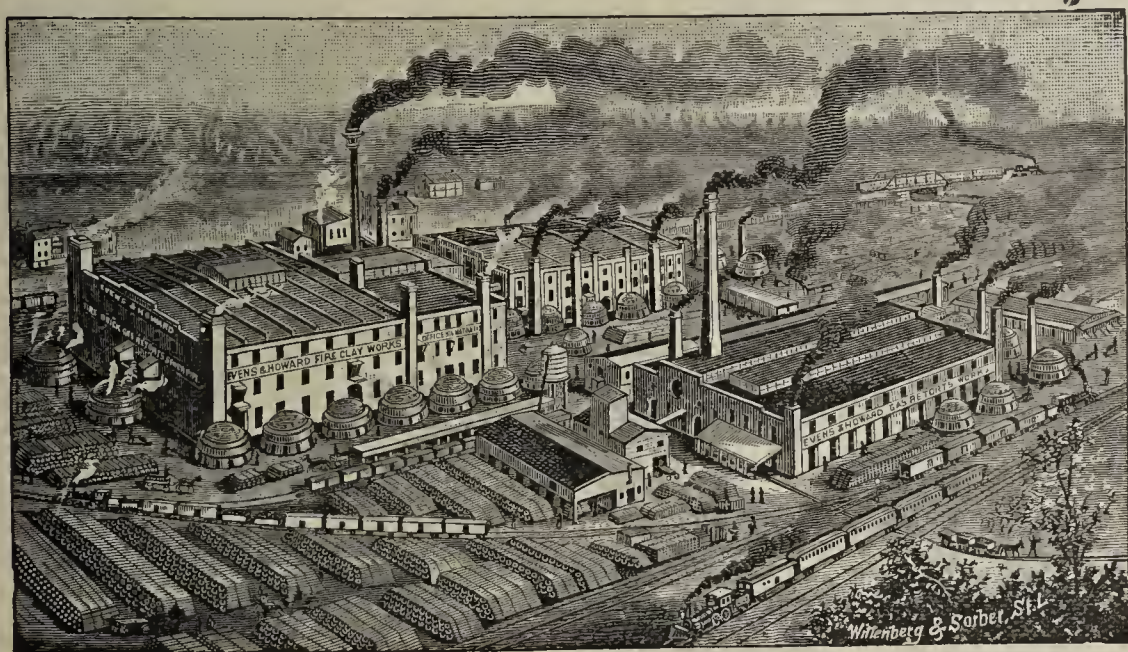
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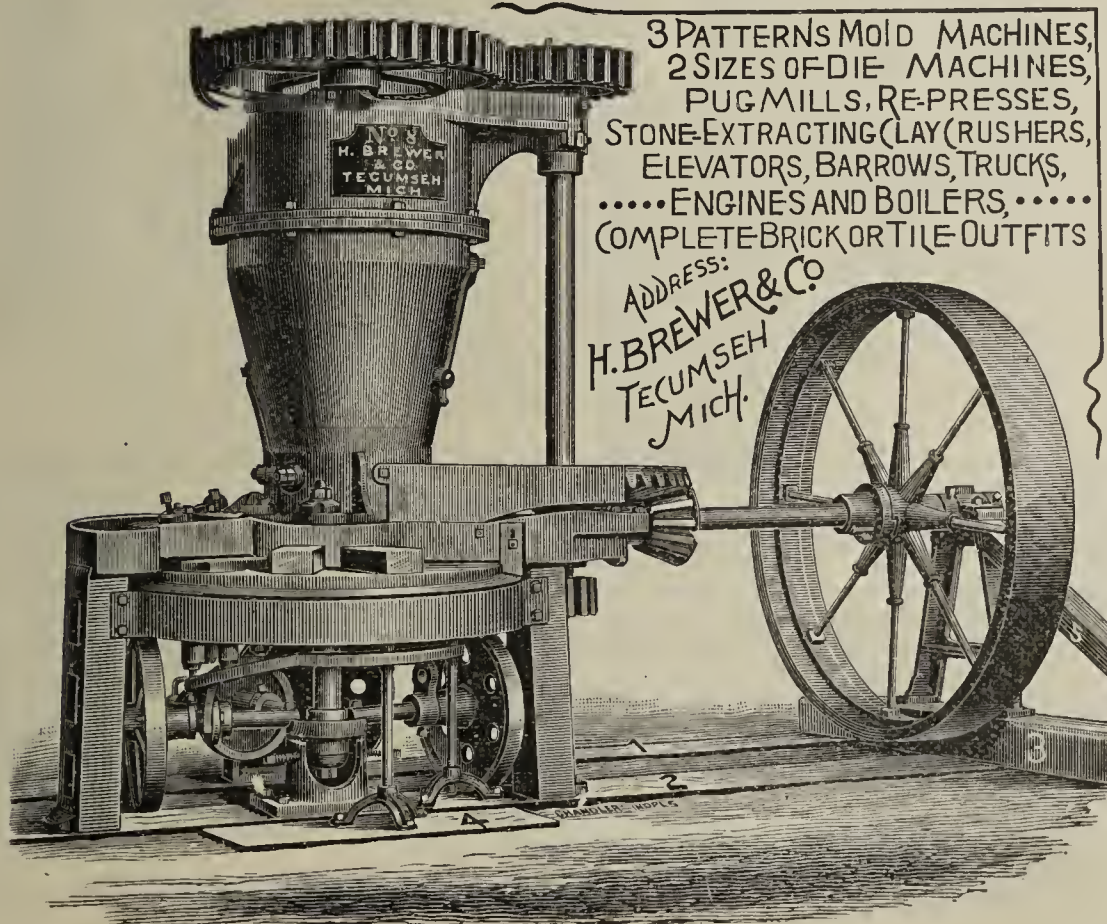
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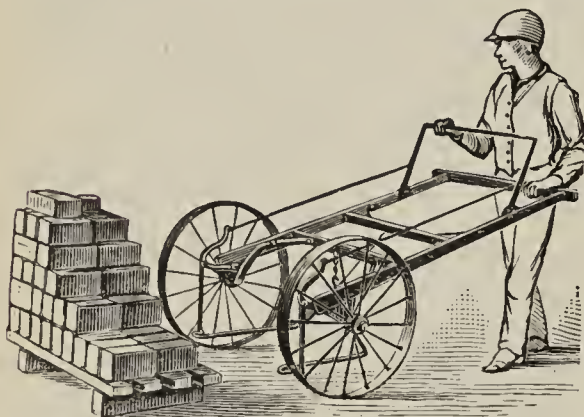
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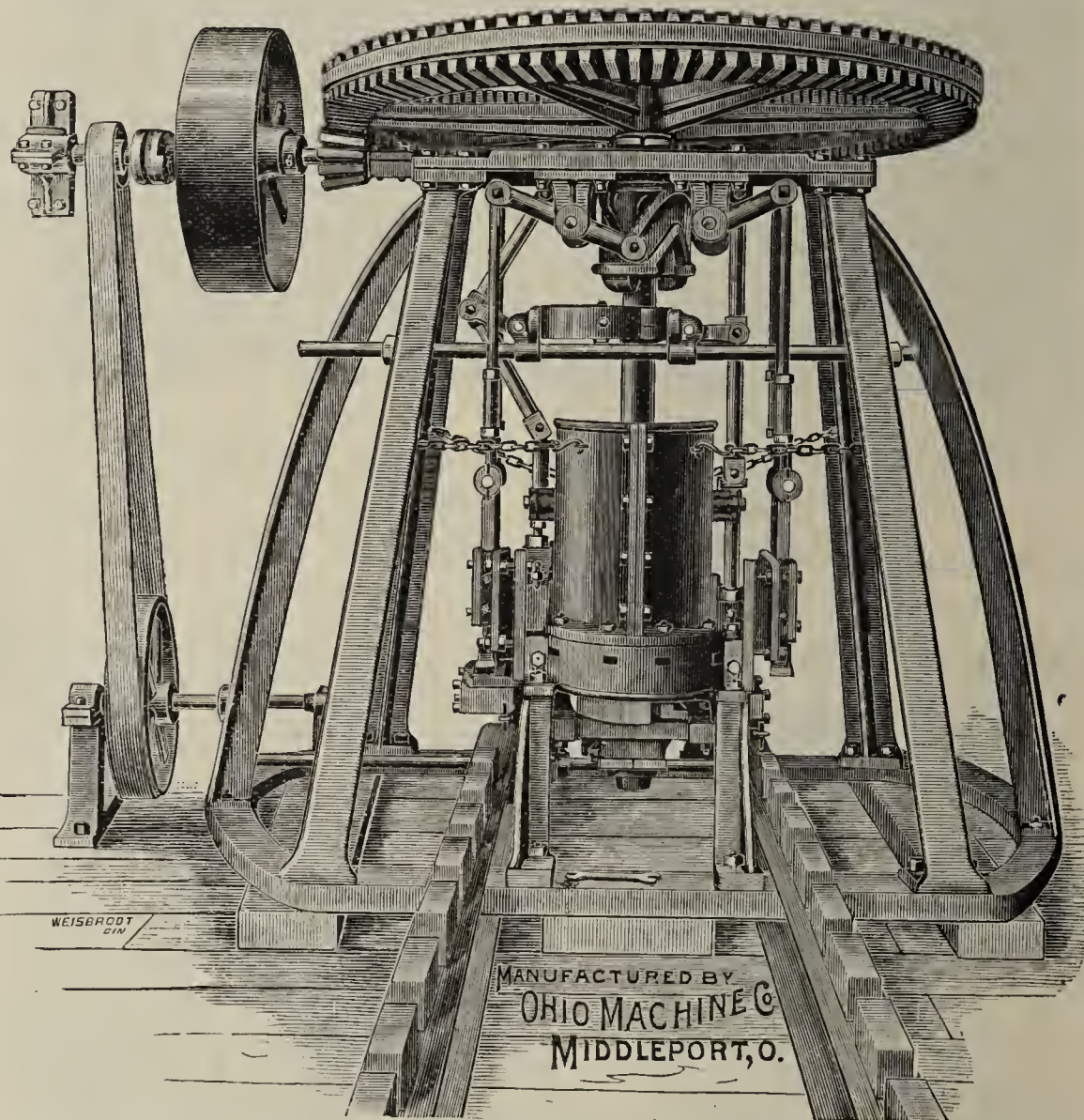
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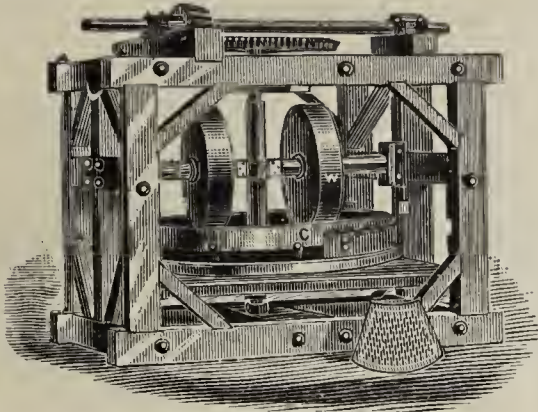
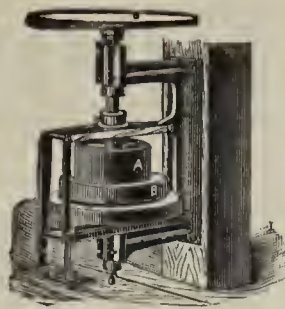
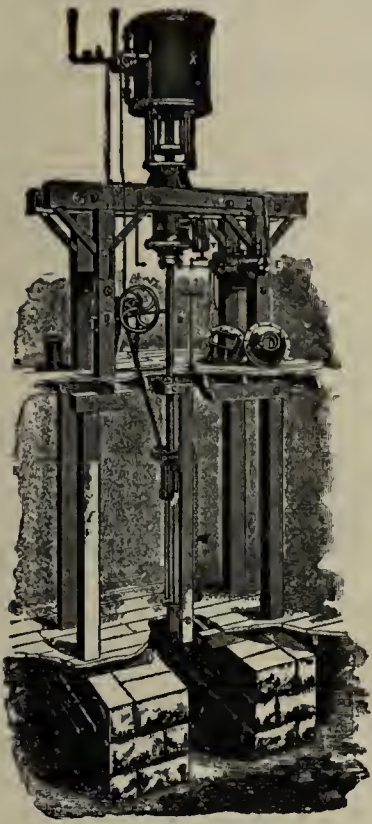


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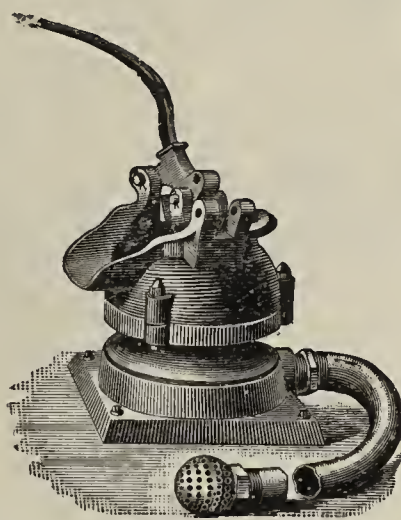
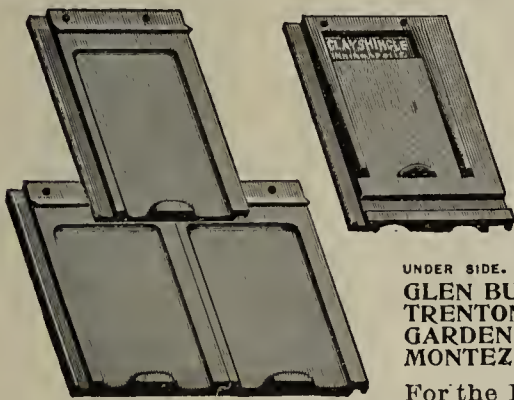
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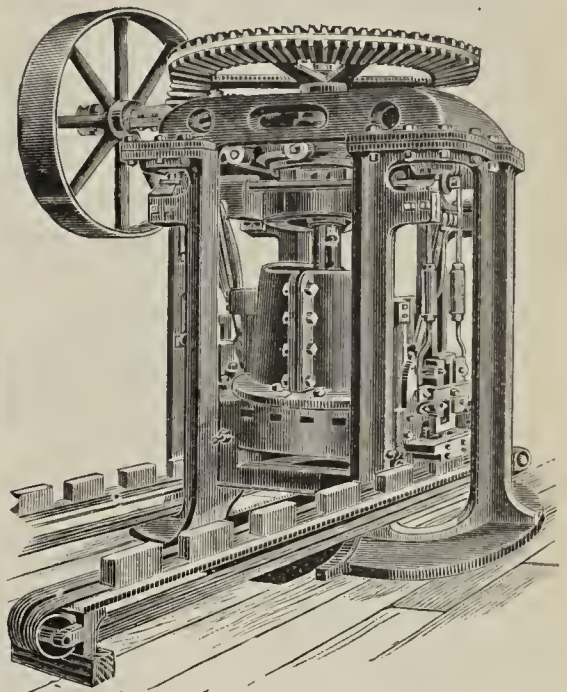
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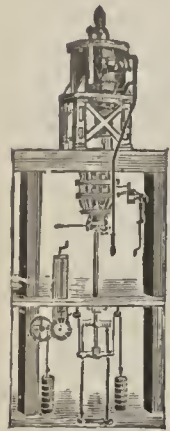
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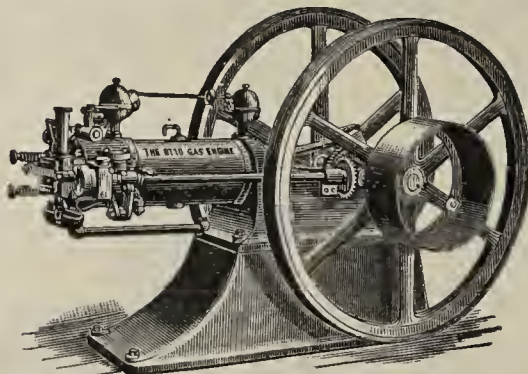
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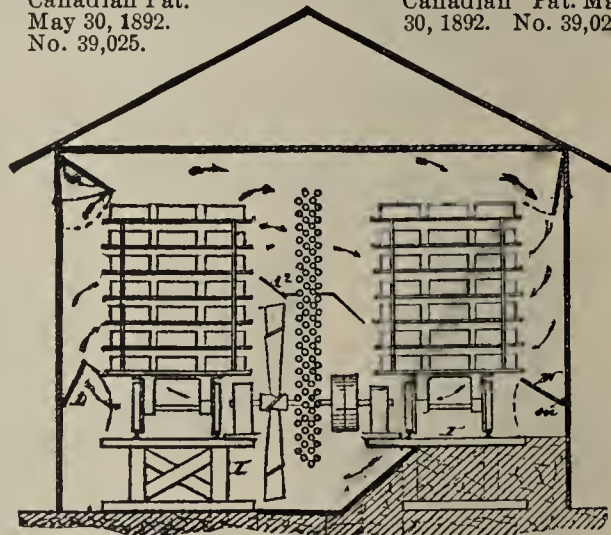
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Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.



U. S. Patent August 16, 1881. No. 245,742.

U. S. Patent March 31, 1891. No. 449,170.

U. S. Patent March 31, 1891. No. 449,231.

British Patent March 31, 1891. No. 5,520.



## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

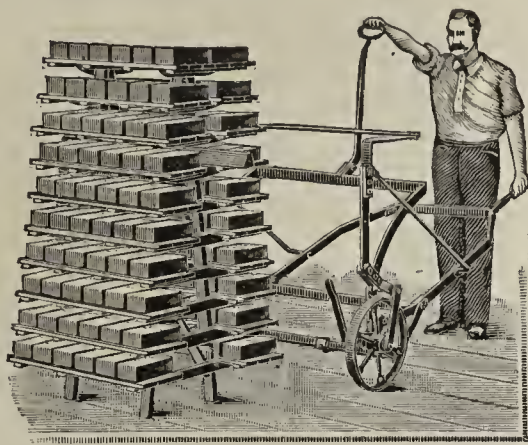
The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

**IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.**

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

### WHAT USERS SAY OF THE MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

**MOCK BROS.,**  
**MUNCIE, IND.**

Mention the Clay-Worker.

## EAGLE BRICK MACHINE.

Steam and Horsepower.

THE BEST MACHINE IN THE MARKET.

The Horsepower Machine will make 17,000 to 20,000 brick per day; the Steampower Machine, 25,000 to 30,000.

These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

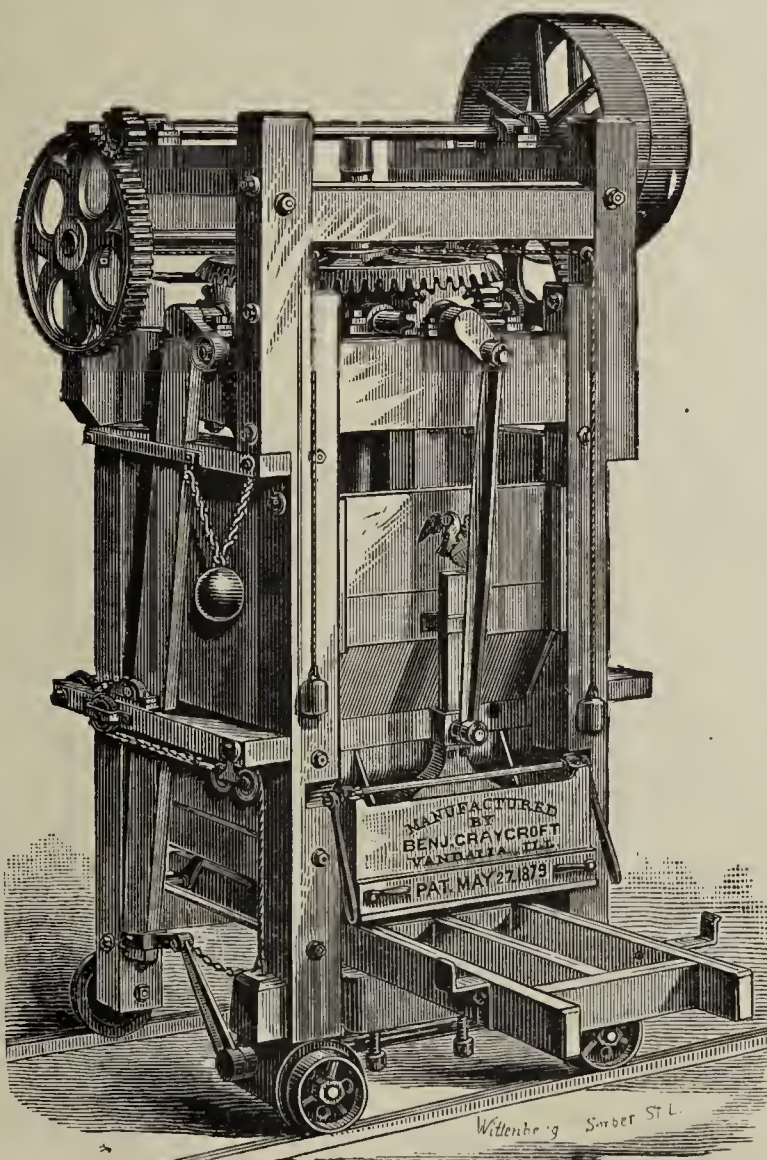
Send for Circular.

**BENJ. CRAYCROFT**

Manufacturer,

**Vandalia, Ills.**

C. J. CRAYCROFT, Fresno City, Cal., Gen'l Agent for Pacific Coast.



## M. V. B. WAGONER'S SLIP CLAY { For Glazing of Pottery } WORKS

ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

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Is the direct and shortest route from Indianapolis to St. Louis and points in Missouri, Kansas, Texas, Colorado, California, the West and Southwest. It affords magnificent train service and superior facilities for the transportation of passengers. The physical condition of its property is fully up to the standard, making a journey over this route highly enjoyable. Prompt and sure connections are made with Western lines at St. Louis and other junction points. Trains for the West leave Indianapolis at 8:10 A. M., 10:45 A. M., 12:10 P. M. and 11:00 P. M. Arrive at St. Louis 5:15 P. M., 5:30 P. M., 7:30 P. M. and 7:00 A. M., respectively. In considering the many advantages offered by this popular route you will find it materially to your advantage to ask for, and see that you get, tickets over the Vandalia Line. Rates are always as low as by less important routes. Baggage checked through.

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District Passenger Agent,  
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## 100 CITIES AND TOWNS WANTING INDUSTRIES

Is the title of a pamphlet issued by the Illinois Central R. R. Co. If you are thinking of making a change in location and are not well-informed as to the advantages of locating either in the West or South, write for a copy. If you want in a nutshell the

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on the line of the Illinois Central and Yazoo & Mississippi Valley Railroads, giving the population, city and county debt, death rate, assessed valuation of property, tax rate, annual shipments, raw materials, industries desired, etc., apply to the undersigned. Our line is in the shape of the figure "7" and runs from Sioux Falls, S. D., and Sioux City, Ia., to New Orleans, passing through South Dakota, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi and Louisiana, and has

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used in manufacturing, together with populous sections which are large consumers of the manufactured product. To sound industries which will bear investigation, substantial inducements will be given by many of our places, and they will be welcomed heartily by the different sections traversed by the Illinois Central and Yazoo & Mississippi Valley Railroads. For all information on the subject, address GEO. C. POWER, Industrial Commissioner I. C. R. R., Central Station, Chicago, Ill. 11 5 T.



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The only line running Solid Pullman Perfected  
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**D. G. EDWARDS,** Gen. Pass. Agt.  
Cincinnati, Ohio.

## THE YATES IMPROVED DOWN DRAFT KILN FOR BURNING BRICK OF ALL KINDS.

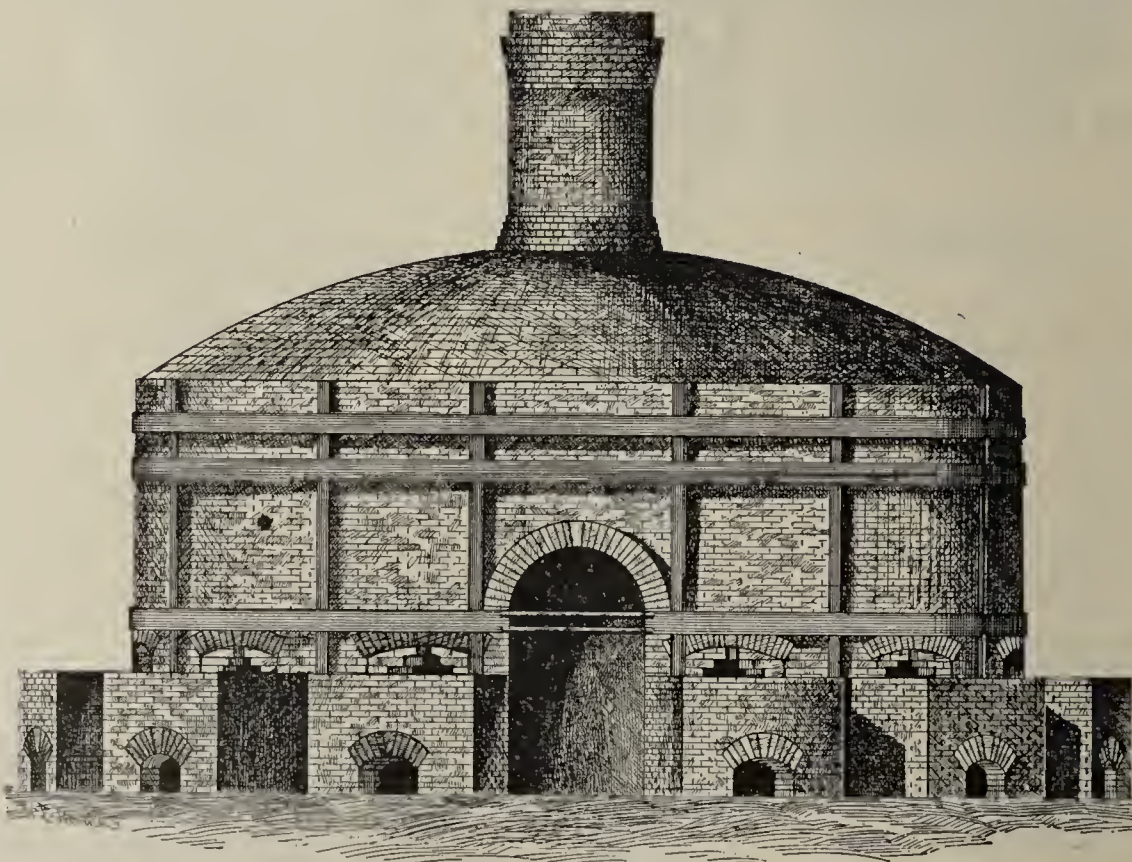


FULLY PROTECTED BY PATENTS.

We use no dampers, but burn on draft, and get an even distribution of heat which ensures perfect burns and good color, as dampers hold in the kiln that which should be allowed to escape. High class fire clay goods or vitrified paving a specialty. Waste heat utilized in watersmoking green kiln, and arranged to work continuous. Kilns built under guarantee at our own expense for responsible parties.

The YATES SAFETY and IMPROVED FURNACE HOT AIR DRYER in operation at the Anchor  
Tile and Clay Co., Sparta, Starke Co., Ohio.

❖ WE STAND ON OUR MERITS. ❖



**ALFRED YATES,**

Write for full description. **NORTH CAMBRIDGE, MASS**



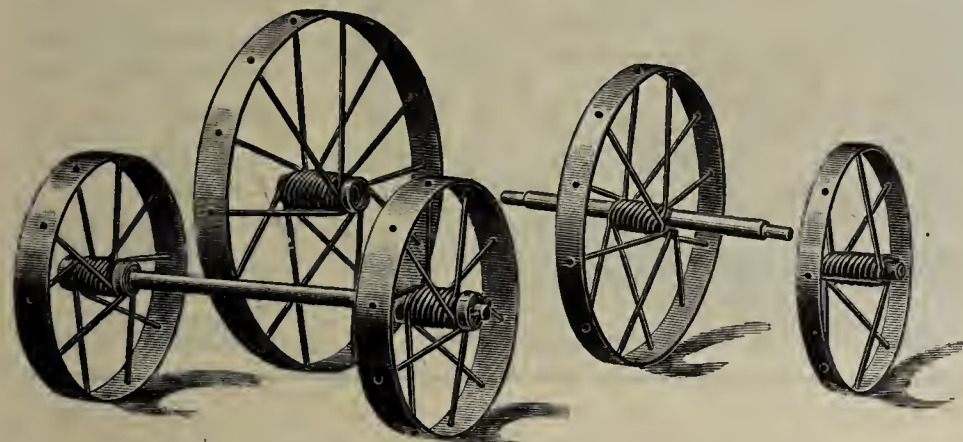


EDWARD C. WEAVER, LL. M.,

900 F. St., Washington, D. C.

ATTORNEY and COUNSELLOR in Patents, Trade Marks, Revenue Claims, and all claims against the United States. Make a clear statement of your invention or claim, and I will advise you without charge. Send stamp for my pamphlet.

## The :- Arnold :- Metal :- Wheel :- Co.,



Make the Wheels  
that are the  
best for BRICK  
and TILE  
TRUCKS and  
BARROWS.

Repair your old ones with them and when you buy new ones, see that they have "The Arnold Wheels." Circulars and prices sent on application. Address,  
**THE ARNOLD METAL WHEEL CO., New London, O.**

Headquarters for Brickyard Supplies in 1893 will be at the same place it was in 1892, at

**New London, Ohio,**  
**ADDRESS. D. J. C. Arnold.**

Moulds, Trucks and Wheelbarrows in the greatest variety of designs, and all of the very best quality. Besides these he has Revolving Dumping Tables (all iron), Furnace fronts, Kiln doors and Frames, Grates, etc. Tile Trucks and Barrows, Kiln bands, Band Tighteners, Kiln Covers and Ventilators. Complete outfits for round down draft kilns.

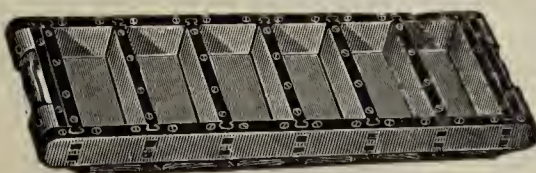
## MOULDS.



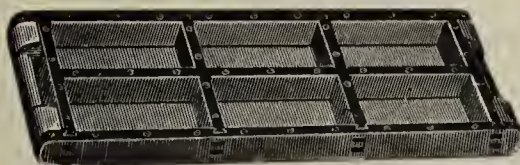
**See!** You can buy them for less money now than ever before. Prices reduced but the standard of quality is maintained. Order now for future delivery. Satisfaction guaranteed. Standard sizes carried in stock.

Some odd sizes at about half price. Send for list.

B. MACHINE MOULD.



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GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

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H. W. FULLER, Ass't Gen'l Pass. Agent.  
Gen'l Pass. Agent, CINCINNATI, OHIO.  
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In Effect April 15, 1893,  
Solid Train Between

**Sandusky and Peoria**

—AND—  
INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

| DEPART.                |             |
|------------------------|-------------|
| No 10 Passenger.....   | 7:15 a. m.  |
| *No. 12 Passenger..... | 1:20 p. m.  |
| No. 14 Passenger.....  | 7:00 p. m.  |
| †No. 16 Express.....   | 11:10 p. m. |

| ARRIVE.               |             |
|-----------------------|-------------|
| *No. 9 Passenger..... | 10:30 a. m. |
| No. 11 Passenger..... | 2:50 p. m.  |
| No. 13 Passenger..... | 6:20 p. m.  |
| †No. 17 Express.....  | 3:20 a. m.  |

Trains not marked run daily except Sunday, \*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west. Trains Nos. 16 and 17 have elegant free reclining chair cars to all passenger making direct connection at Peru with the Wabash fast trains for Fort Wayne, Toledo, Detroit and Chicago.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass Agt Traffic Manager, Indianapolis, Ind.



## Frey's Re-press

Delivers and takes Brick on edge.

Less working parts than any other Re-press.

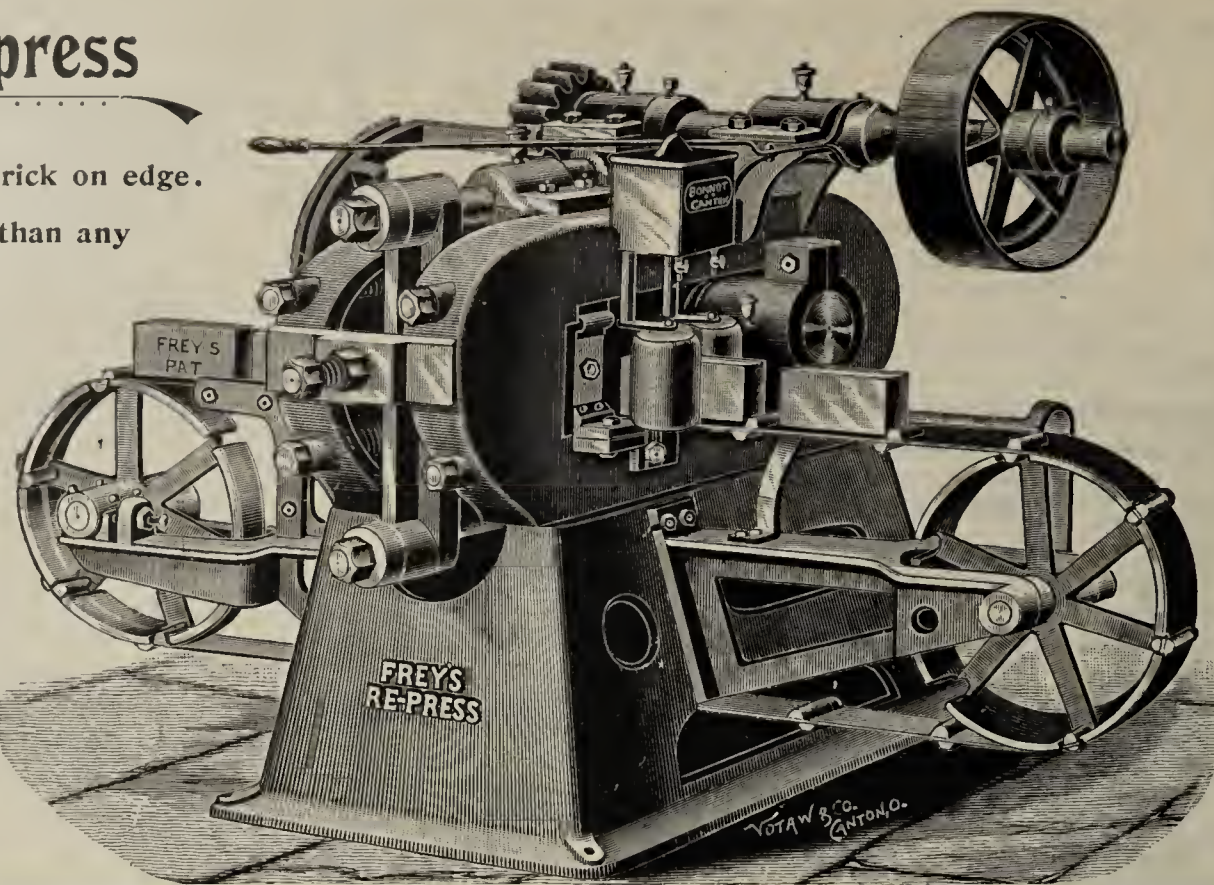
Takes Brick same size of die.

No working parts under the die for dirt to wear.

Send for Circular giving 12 Reasons Why this Re-press is the best, address

Single and Double Die Machines with either Continuous or Reciprocating Feeds as desired.

The latest improvement wipes the pressure plates clean at each operation and oils them.



**F. E. FREY & SON,**  
MECHANICAL  
ENGINEERS.....

And Designers of

**Clayworking  
Machinery**

WILL.....

Take contracts for new Brick or Tile Factories.

Examine Clays and furnish plans for outfits.

Over Thirty Years' Experience.....

**F. E. Frey & Son,**

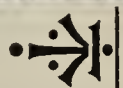
WILLOUGHBY, - OHIO

## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed

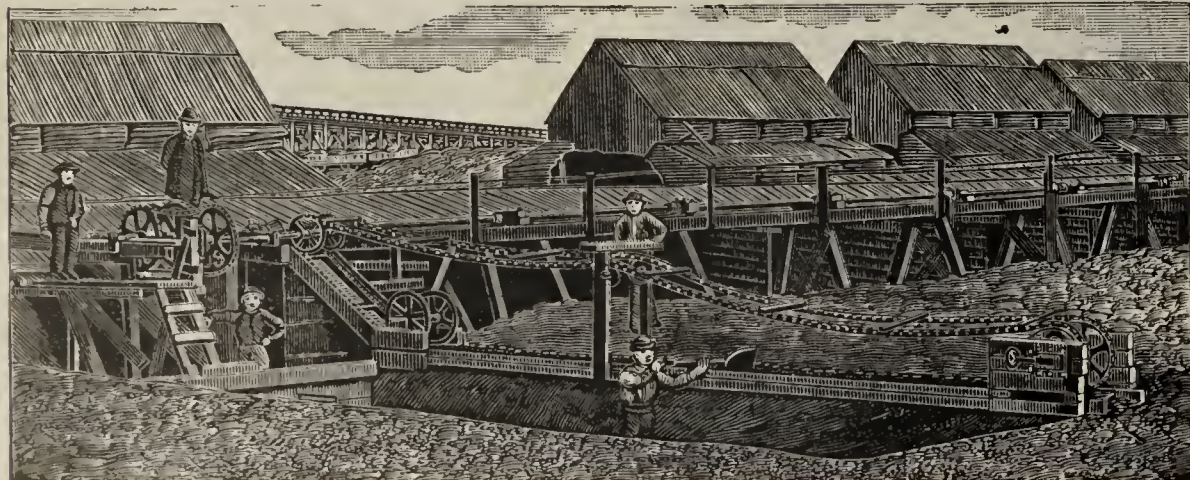
at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



Mey Patent Clay Elevator.





# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,

Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



**BRICK**

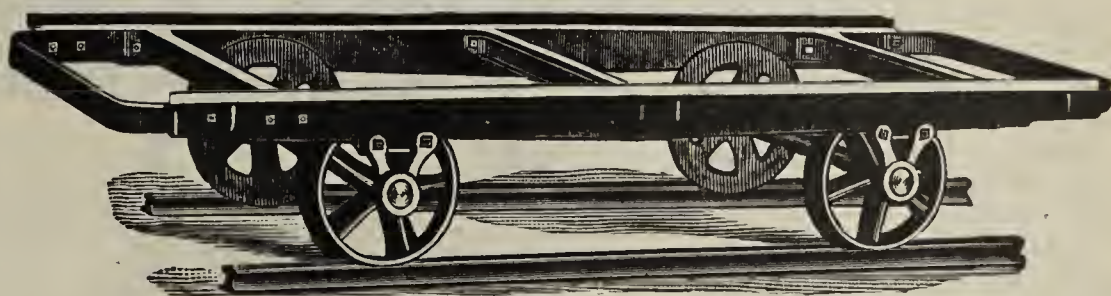
**48 Styles.**

Also  
Turn Tables,  
Transfers  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



**MAKERS**

Send For Price List.

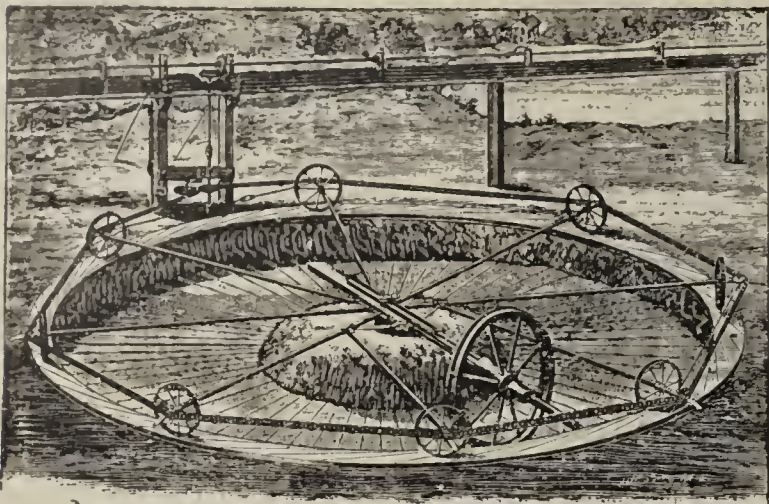


STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,

Cleveland, O.





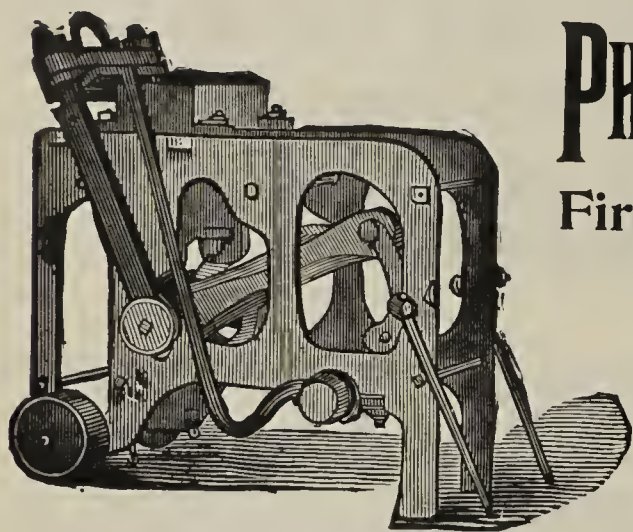
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,

PHILADELPHIA, - - - PENN.

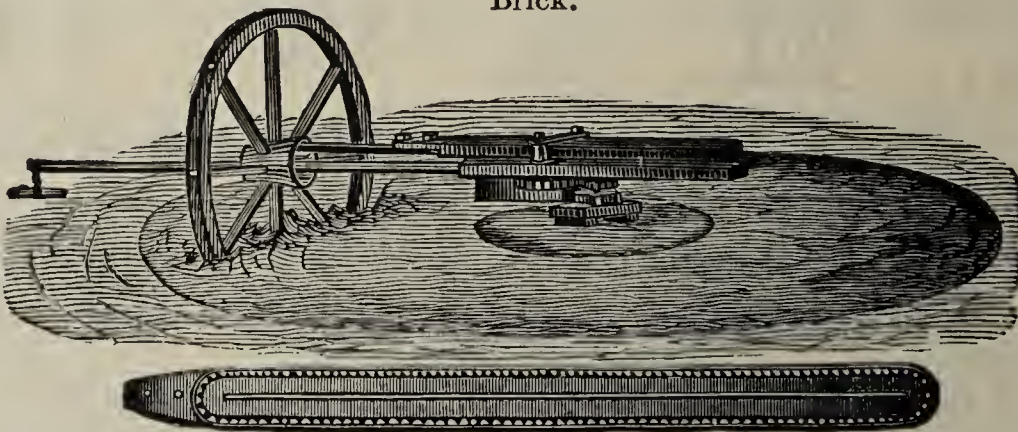
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



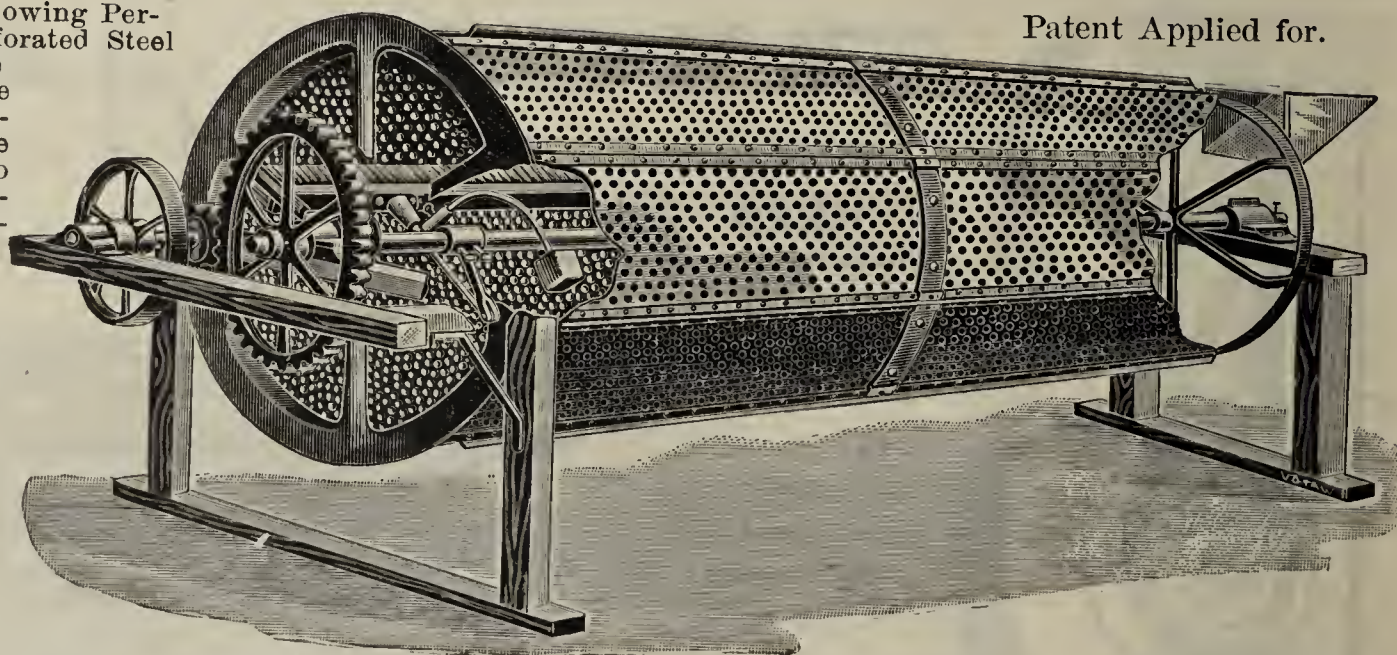
These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

## REVOLVING SCREENS.

**Interior View**=== Showing Per-  
forated Steel  
Sheets. The iron heads are  
turned perfectly true. The  
Sheets are supported on the out-  
side by steel cross bars. The  
self-adjusting Brush requires no  
attention, being always in prop-  
er condition. A complete suc-  
cess.

MANY of the best plants  
are supplied with them.  
The Cleveland Brick Co., re-  
cently placed one of these  
Screens in their plant. They  
say: "We would not be with-  
out it for twice its cost."

Many others have the same  
opinion. They are sold on a  
broad guarantee. Have you  
seen illustration of Iron Frame Screen? Write for particulars.

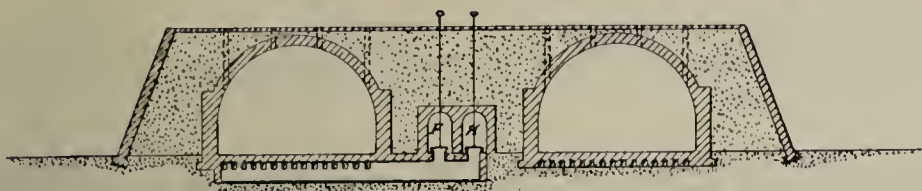


Patent Applied for.

THE BONNOT CO., Canton, Ohio.



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



**Marks a Great Advance in the Art of Continuous Burning**

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

**PETERSEN BRICK COMPANY,**  
MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E—downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,  
Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,

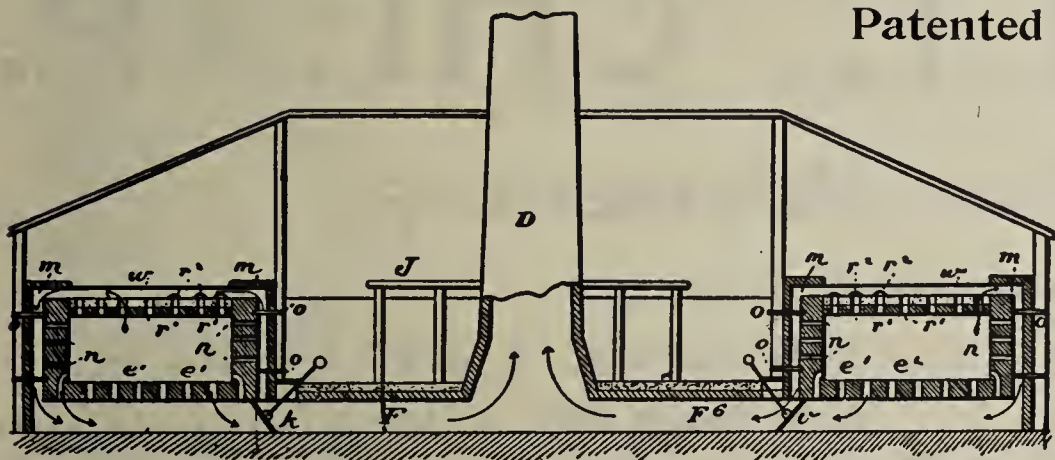
Per H. M. STAMMER, Superintendent.

For particulars address

**P. L. YOUNGREN, Oakland, Cal.**

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

**CARL F. KAUL, Madison, Neb.**

Mention the Clay-Worker.]

# A LONG FELT WANT SUPPLIED.

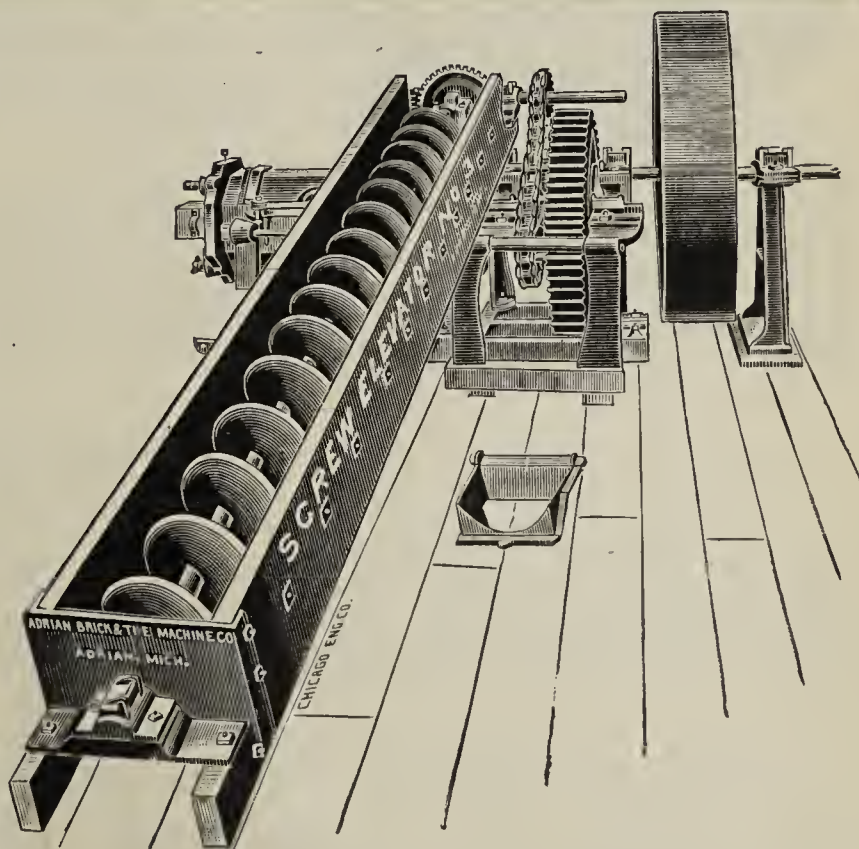
**A SCREW ELEVATOR FOR ELEVATING CLAY.**

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

**ADRIAN, - - MICHIGAN.**





# WHEELING MOLD AND FOUNDRY CO.,

Dies of All Kinds  
and Glass House Molds.

WHEELING, W. VA.,  
.....MANUFACTURERS OF.....

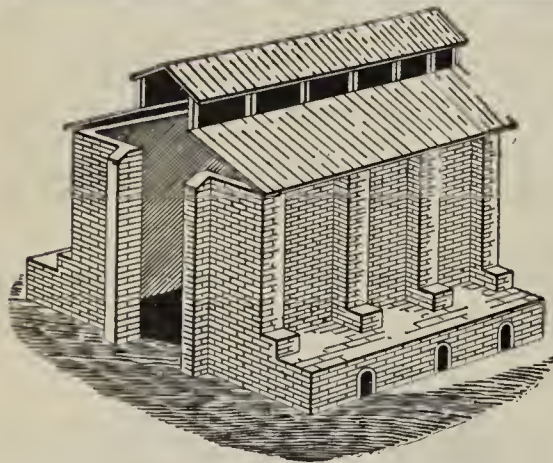
Models for all kinds of Inventions  
of small machinery a specialty

**Brick Molds. Machinery Castings**  
*And Machinery From Specifications.*

# 150 DOUBLE DECK BRICK DRYER CARS FOR SALE, CHEAP.

•➤ Ready For Shipment. •➤

**THE BALL-BEARING CAR WHEEL & MFG. CO.,**  
Successors to CLEVELAND WHEELBARROW & MFG. CO., 961-981 Hamilton Street, Cleveland, Ohio.

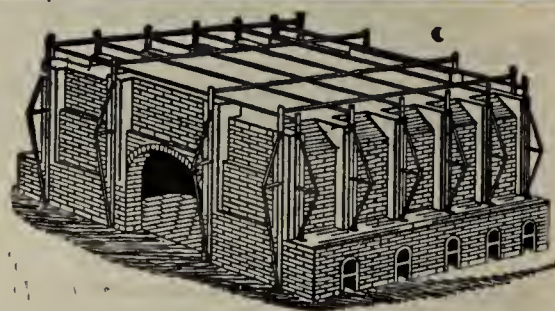


The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

**MOST DURABLE, COMPLETE AND EASILY MANAGED**

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

**VITRIFIED PAVING BRICK.**

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

## TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR.  
NEVADA, Mo., July 17, 1892.

H. REPELL, Esq., Kansas City, Mo.,  
DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave.  
St. Louis, Mo., October 18, 1892.

MR. LOUIS H. REPELL, Kansas City, Mo.  
DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands. Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

**LOUIS H. REPELL,**  
1,913 Indiana Ave. ♦ **KANSAS CITY, MO.**



# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for

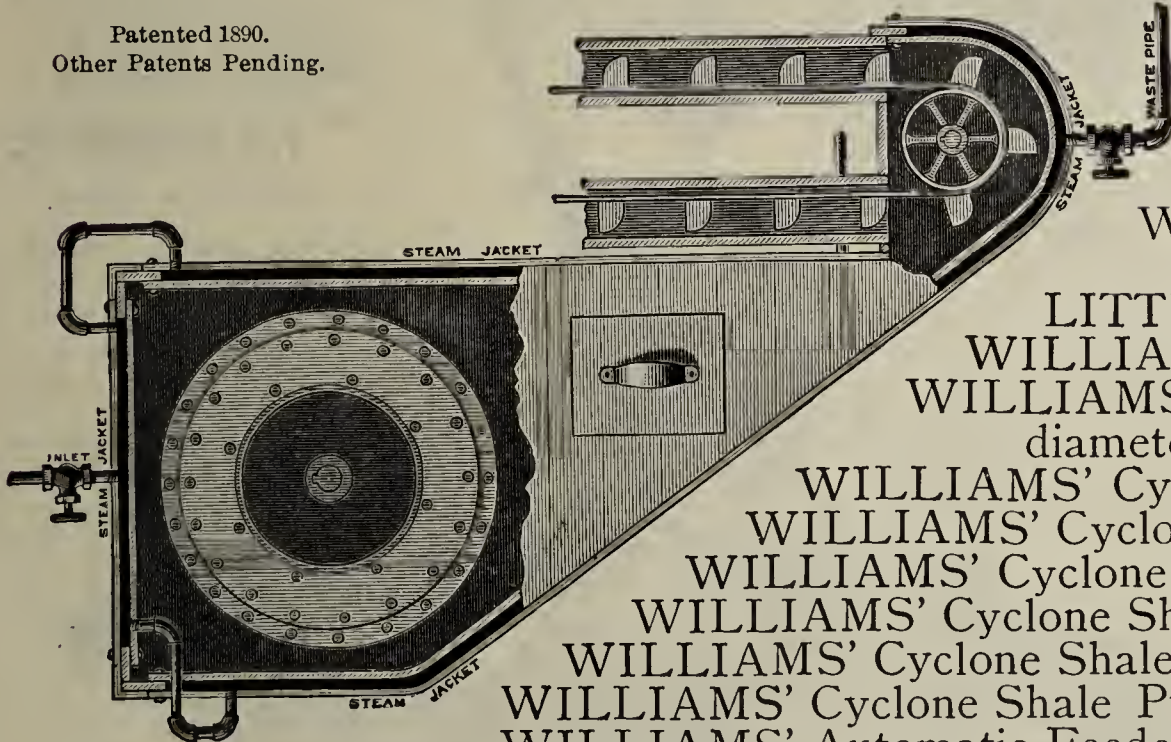
Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**



If You Want Brick Machinery You Should Investigate the "CREAGER."

... WHY? ...

**BECAUSE.....** It has a better record than any line of machinery known to the trade. It is every day making money for the operators. It makes a superior brick. It is simple, strong, and possesses every feature of excellence that could be wished or expected.

There is no fault to be found with the "Creager." It stands head and shoulders above all similar machines and assures absolute success where other methods are not practical. We can show you bonafide correspondence that will surprise you, therefore tell us your trouble and we will help you out.

Catalogue and full information will be forthcoming by addressing,

**Jonathan Creager's Sons,**

127 W. SECOND STREET,

**Cincinnati, Ohio.**

P. S. If you do not ask we cannot tell you of several very important improvements.

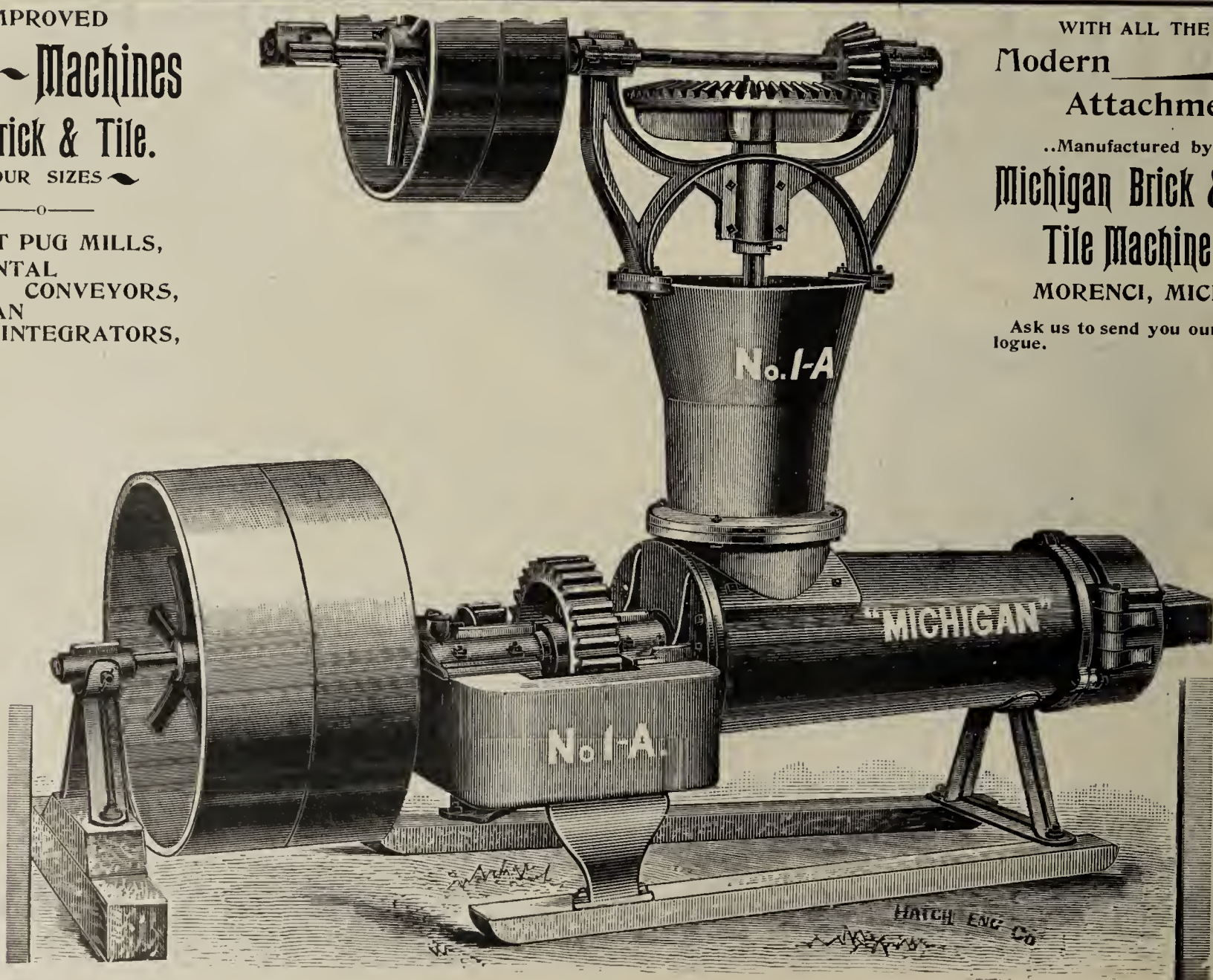
IMPROVED  
**Auger ~ Machines**  
For Brick & Tile.  
~ FOUR SIZES ~

UPRIGHT PUG MILLS,  
HORIZONTAL  
CONVEYORS,  
MICHIGAN  
DISINTEGRATORS,

WITH ALL THE  
Modern  
Attachments

..Manufactured by..  
**Michigan Brick &  
Tile Machine Co.,**  
MORENCI, MICH.

Ask us to send you our Cata-  
logue.





## If You Need . . . .

Brick yard supplies of any kind, we can furnish anything you want at prices that will surprise you.

MOULDS, TRUCKS, BARROWS, ELEVATORS,

SHAFTING, PULLEYS, BELTING,

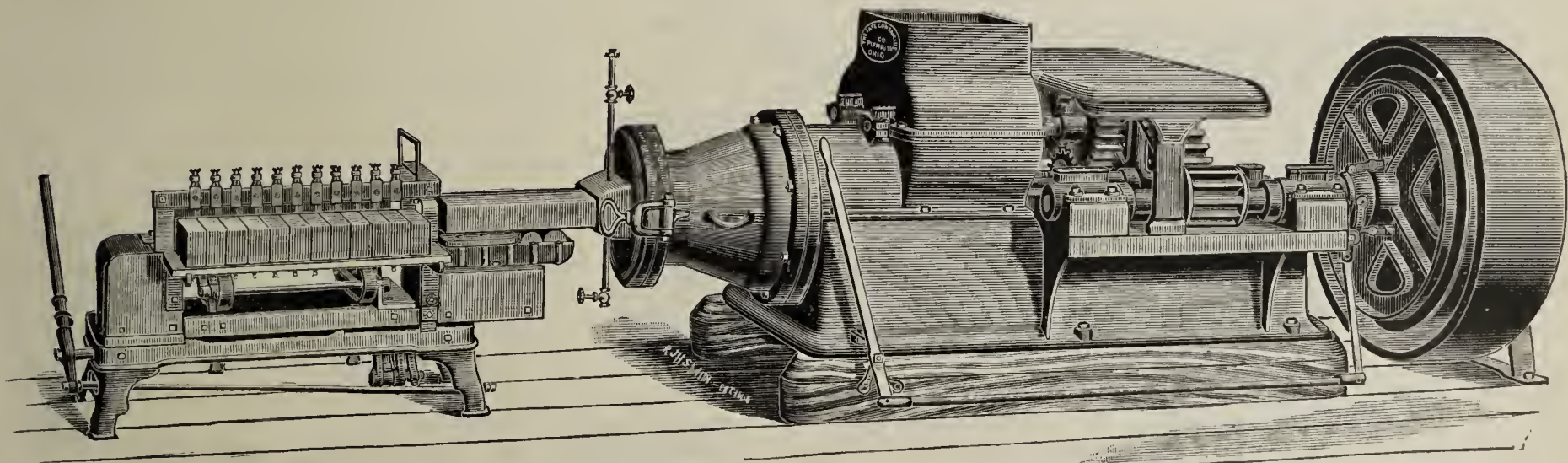
.....CARS and WINDING DRUMS.

All goods are manufactured in our works; we can save you all commissions.  
Write for our New Catalogue, the most complete book of the kind ever issued.

**C. & A. POTTS & CO.,**

Indianapolis, Ind.

## The "Plymouth." DURABLE, ....STRONG.



Brick Machines, Pug Mills, and all brick and tile yard supplies.  
Write for catalogue and prices.

**THE FATE-GUNSAULLUS CO.,**

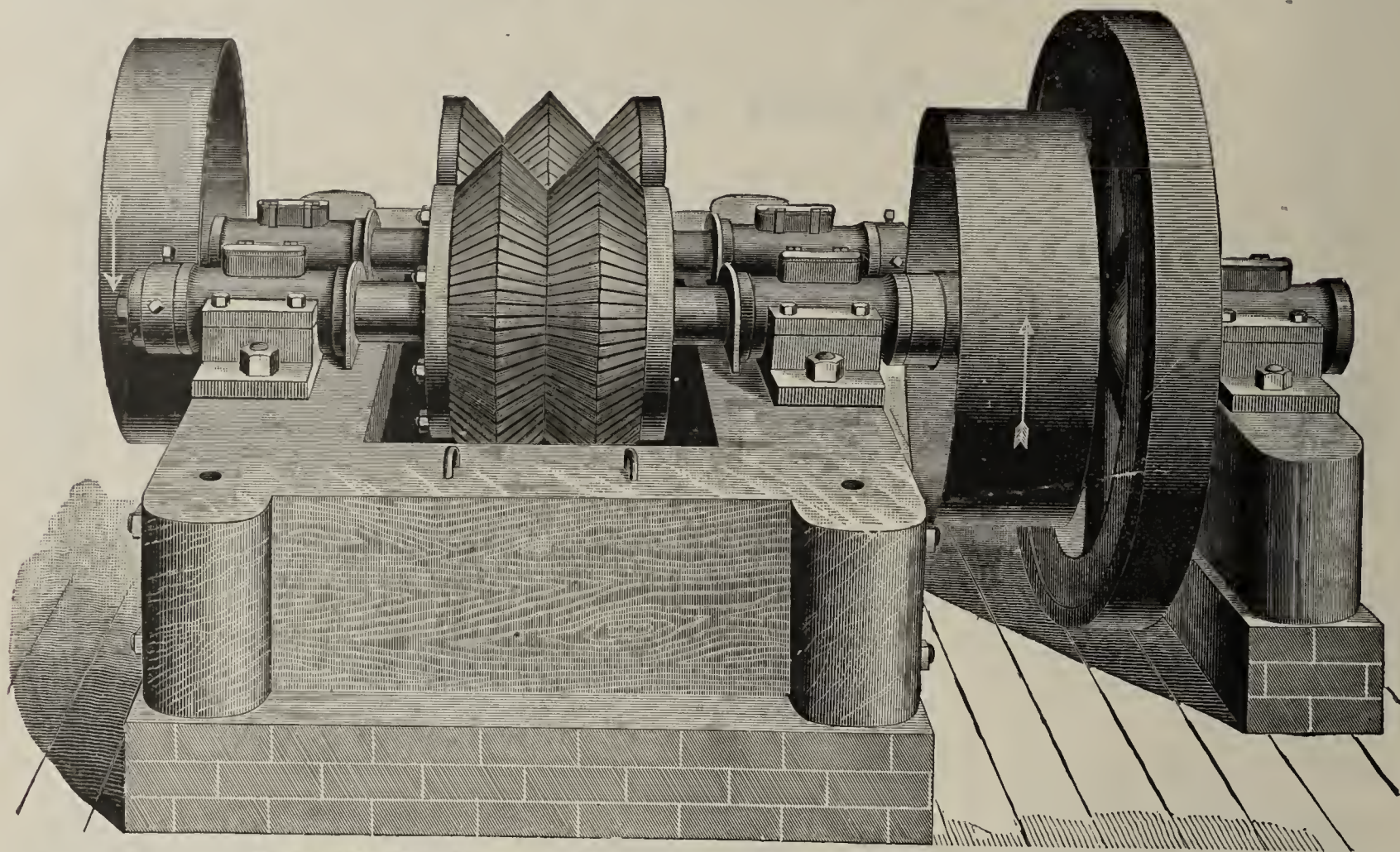
RICHLAND COUNTY.

PLYMOUTH, OHIO



# NEWELL IMPROVED CLAY PULVERIZER

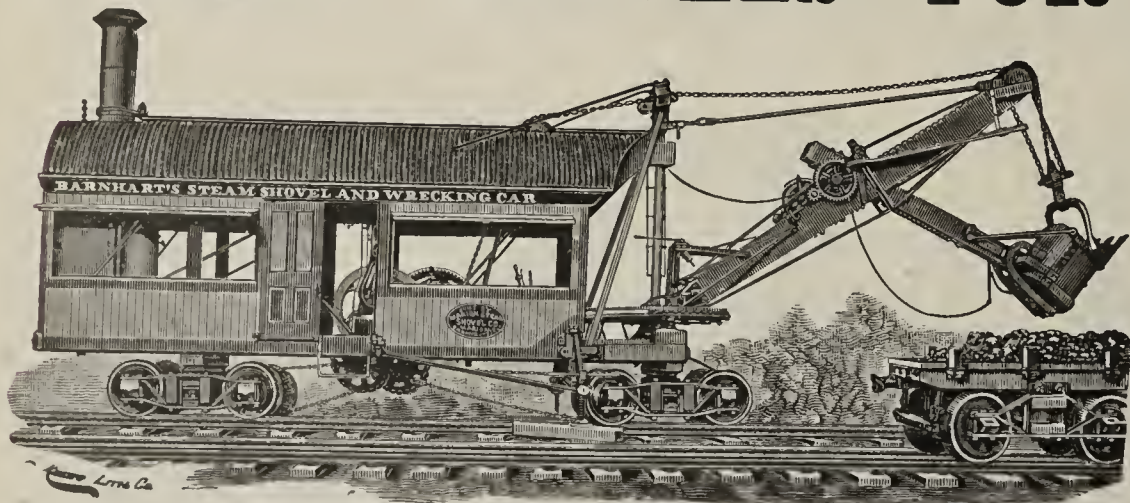
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, 26 Cortland and 21 Dey Streets, New York, U.S.A.

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

The Marion Steam Shovel Co.,  
603 West Center Street,  
MARION, OHIO.

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C—¾ YD



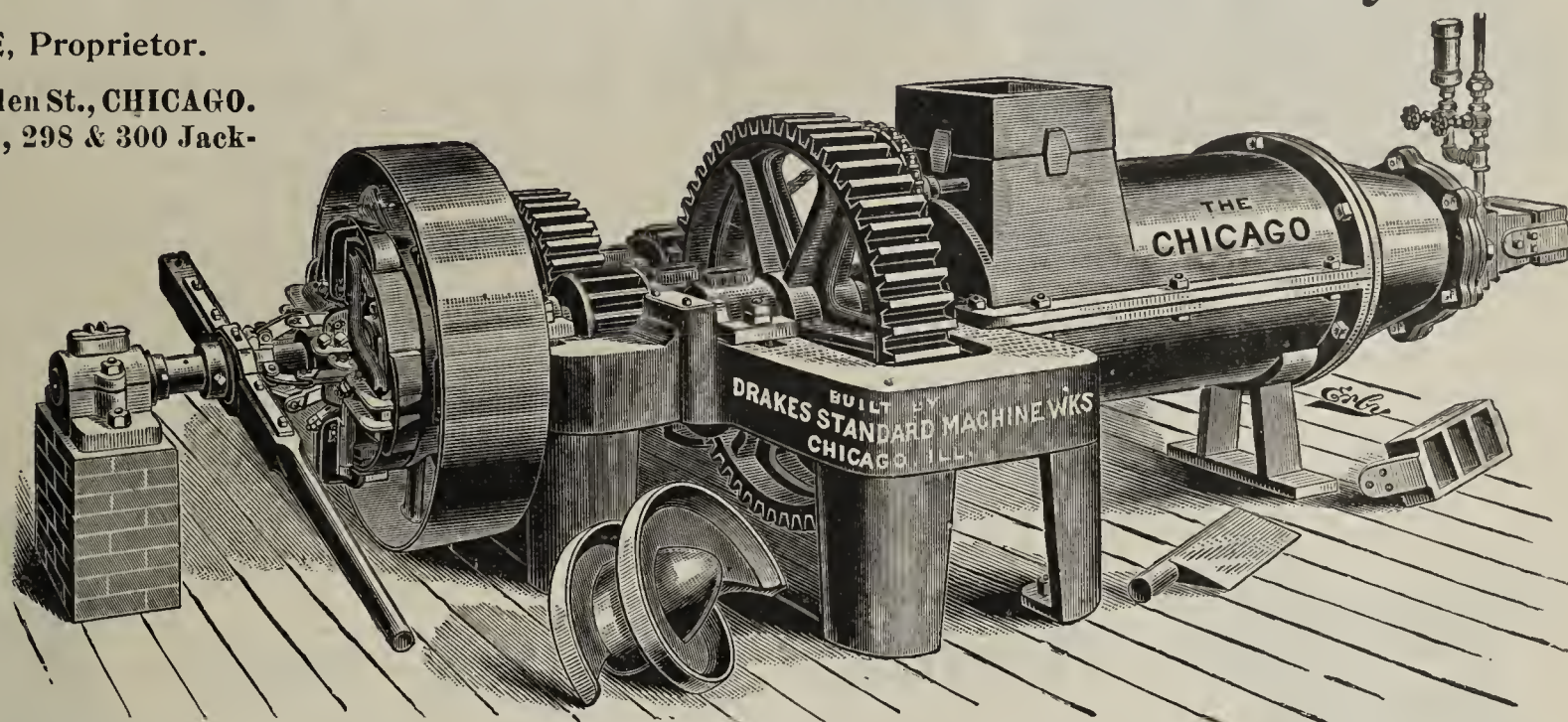
# DRAKE'S STANDARD MACHINE WORKS,

Manufacturers of All Kinds of Brick Machinery.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.

Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**

E. MEECH,  
MANUFACTURER OF  
BRICK AND TILE.  
ROLFE, IOWA.

Rolfe, Iowa, Jan. 5, 1892.

C. & A. Potts & Co.,  
Indianapolis, Ind.:

Dear Sir--In reply to your letter of the 29th inst., I am very glad to tell you in regard to our Disintegrator you shipped us, it is just the machine I was needing. It is a dandy, it will do the work just as you represented it to us. I was stuck until I got it. I think it is a splendid machine for any brick or tile maker.

Yours truly,

*E. Meech*  
Rolfe, Iowa

## The Potts Disintegrators

Do all claimed for them; they are strong and durable. The rolls are chilled.

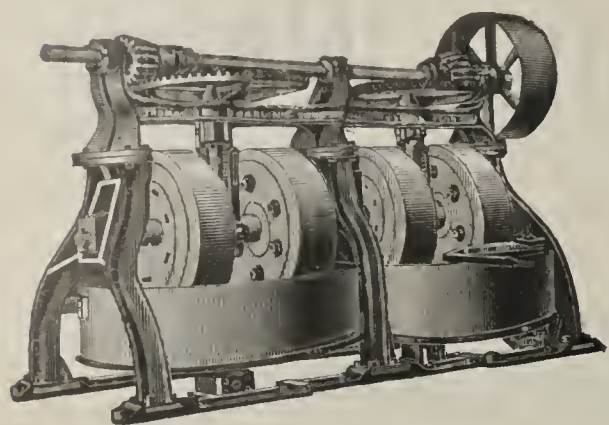
The thorough mixing and tempering of clays is the secret by which good brick are made.

The Disintegrator will do the work.

Write for prices to

**C. & A. POTTS & CO., = Indianapolis, Ind.**





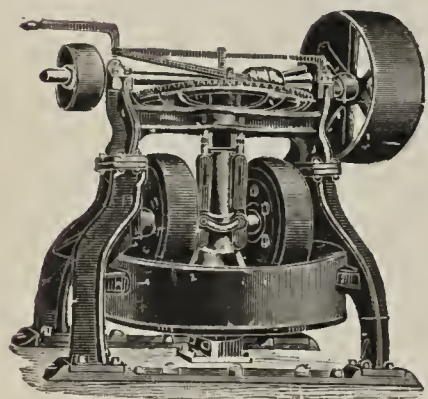
OUR SPECIALTY.

# GRINDING AND MIXING PANS

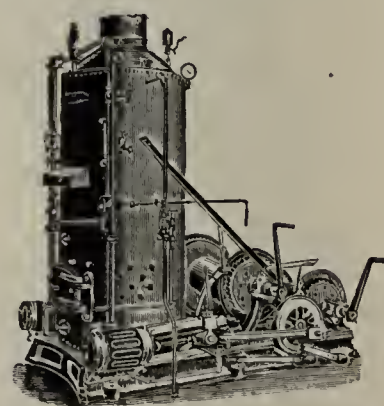
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.

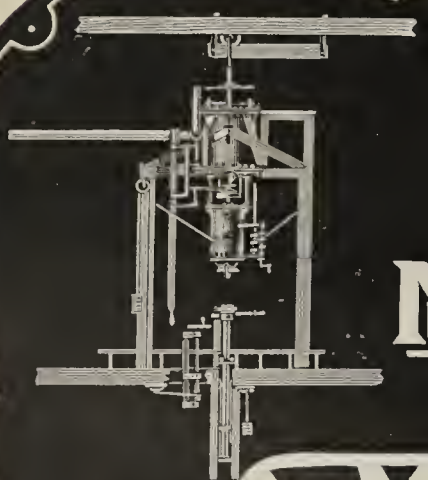


Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

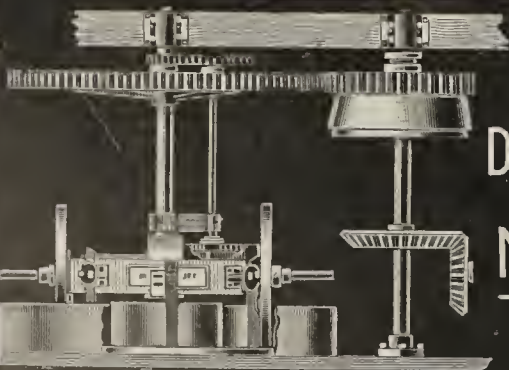
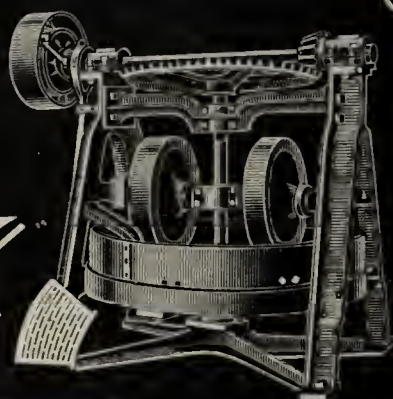
IN STOCK: { One 8 foot Wet Pan.  
 { Eight 3 foot guage Dump Cars.



## MANUFACTURERS OF IMPROVED CLAY WORKING MACHINERY

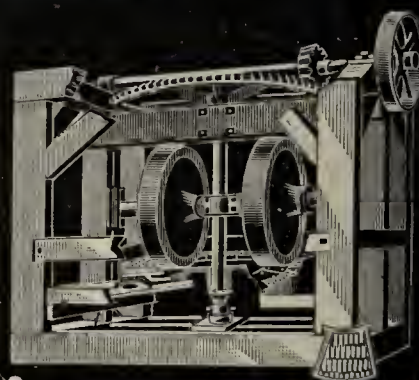
OF EVERY DESCRIPTION

### TAPLIN RICE & CO.



CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

## AKRON, OHIO, U.S.A.



PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
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C. HENCKE, President  
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TELEPHONE 737-2

## STANDARD BRICK CO.,

MANUFACTURERS OF THE CELEBRATED

Milwaukee Cream Colored Brick.

OFFICE AND YARD  
87-510 CLEMENT AVENUE, 17th Ward.

Hoboken, N.J., February 5, 1893.

Messrs. C. &amp; A. Potts &amp; Co.,

Indianapolis:

Gentlemen--After having used your Horizontal Brick Machine and Pug Mill in connection with your No. 4 Disintegrator, we will say that we are well pleased with both of them. Last year we made seven million bricks with the machine, which certainly is a good record, and to obtain such a result with a machine making thirty-three thousand brick a day--this being considered a day's work here in Milwaukee--certainly means steady running and no break down. In fact, we had not an hour's delay caused by the latter last season, as we had none either with the machine nor the disintegrator.

The bricks are of a superior quality to those we made before on either the Cream City or Jurney machine, and the pug mill tempers the clay a great deal better than the soak-pit did, which we are glad to be a thing of the past for us at least, and no doubt soon will be for every one. We enclose check for \$13.50 to balance account.

Wishing you a prosperous season, we are,

*Yours truly*  
Standard Brick Co. A. J. Potts

C. &amp; A. POTTS &amp; CO., - Indianapolis, Ind.

NOW IS THE TIME TO . . .

## : INVESTIGATE. :

If you intend making any change in your plant, we would be pleased to give you any information you may want regarding our HORIZONTAL STOCK BRICK MACHINE.

IT IS THE LEADER. : :

IT WILL MAKE BETTER BRICK.

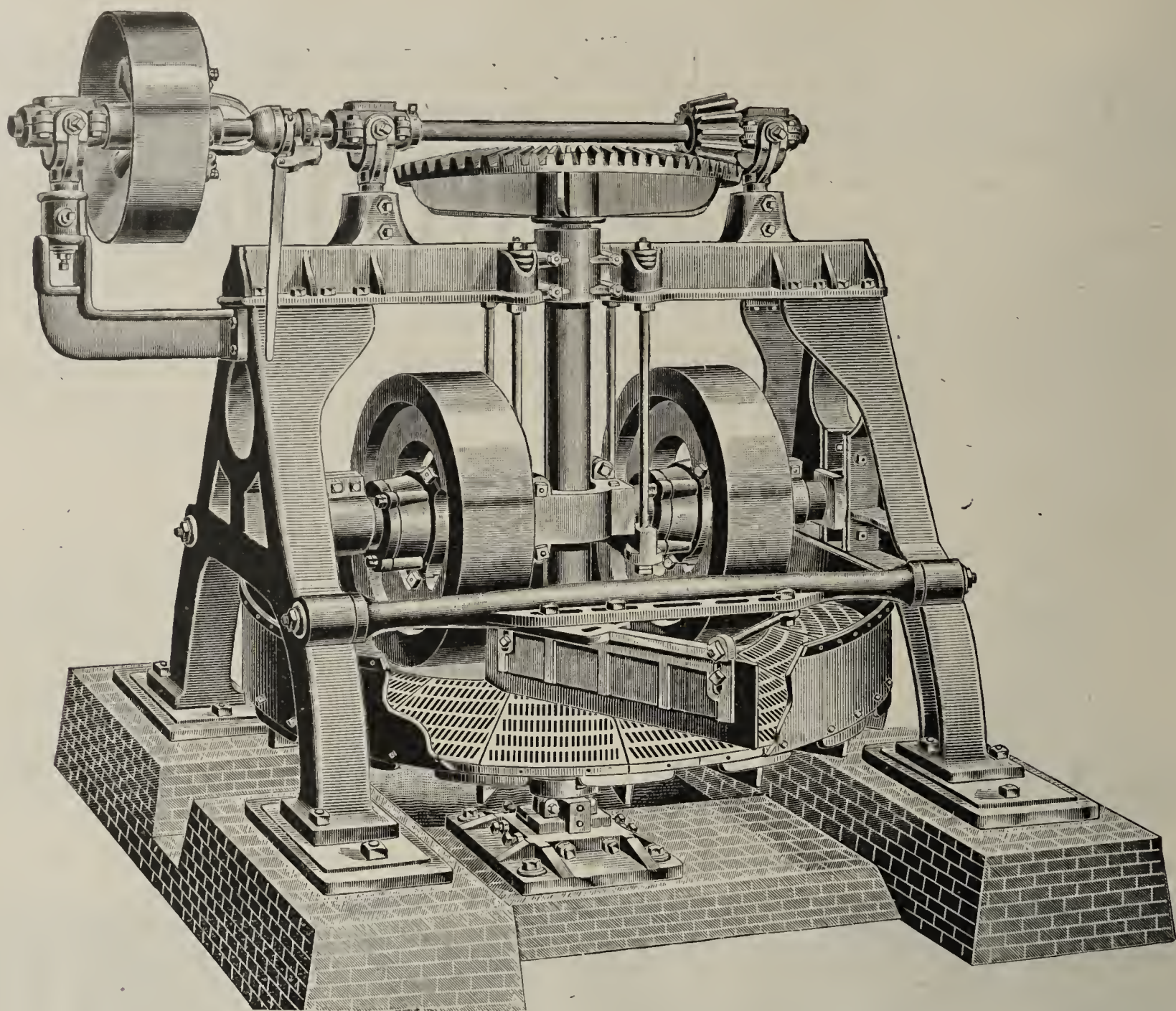
IT IS STRONG AND DURABLE.

For prices and terms, address

**J.H. & D. LAKE, CO.**  
MASSILLON, O.  
U.S.A.  
MFRS. OF  
PLAIN OR SPLIT  
PULLEYS,  
SHAFTING,  
HANGERS, ETC.  
ALSO  
COUNTER SHAFTS  
COMPLETE.

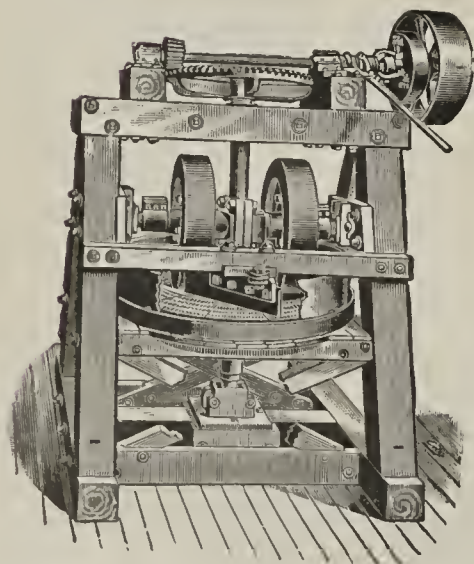
FRICITION CLUTCH PULLEYS;  
CUT-OFF COUPLINGS, PLAIN OR SPLIT;  
FORMERLY OF HORNELLSVILLE, N.Y.





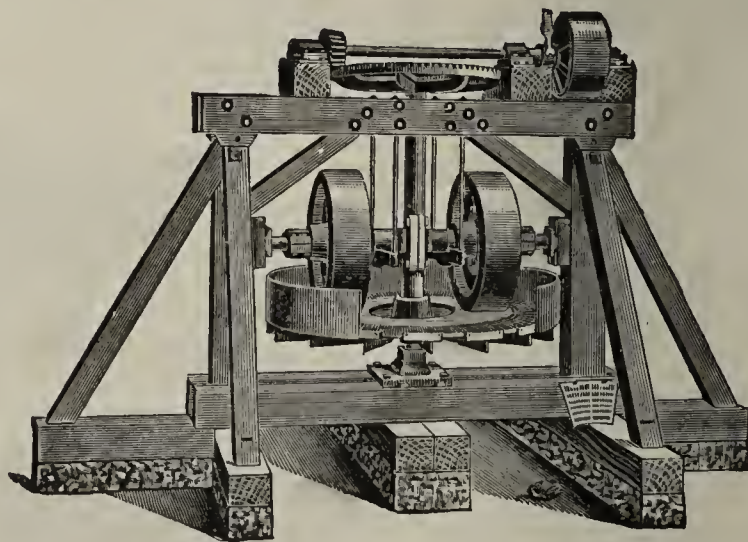
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

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All Sizes and Price  
to suit  
Any Size Plant.  
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**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.



# Fisher Engine, Foundry and Machine Works.

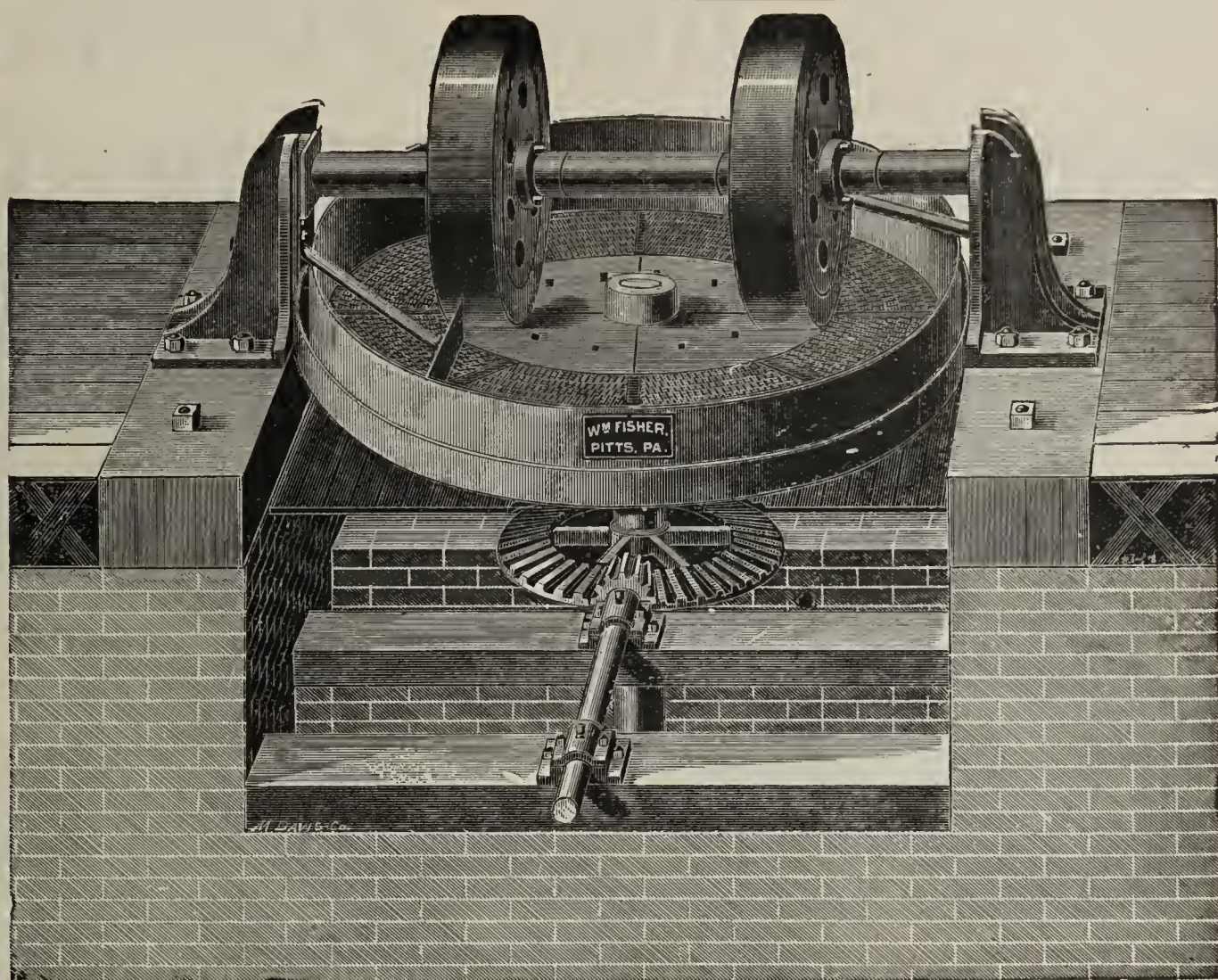
WM. FISHER, PROP.

Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.

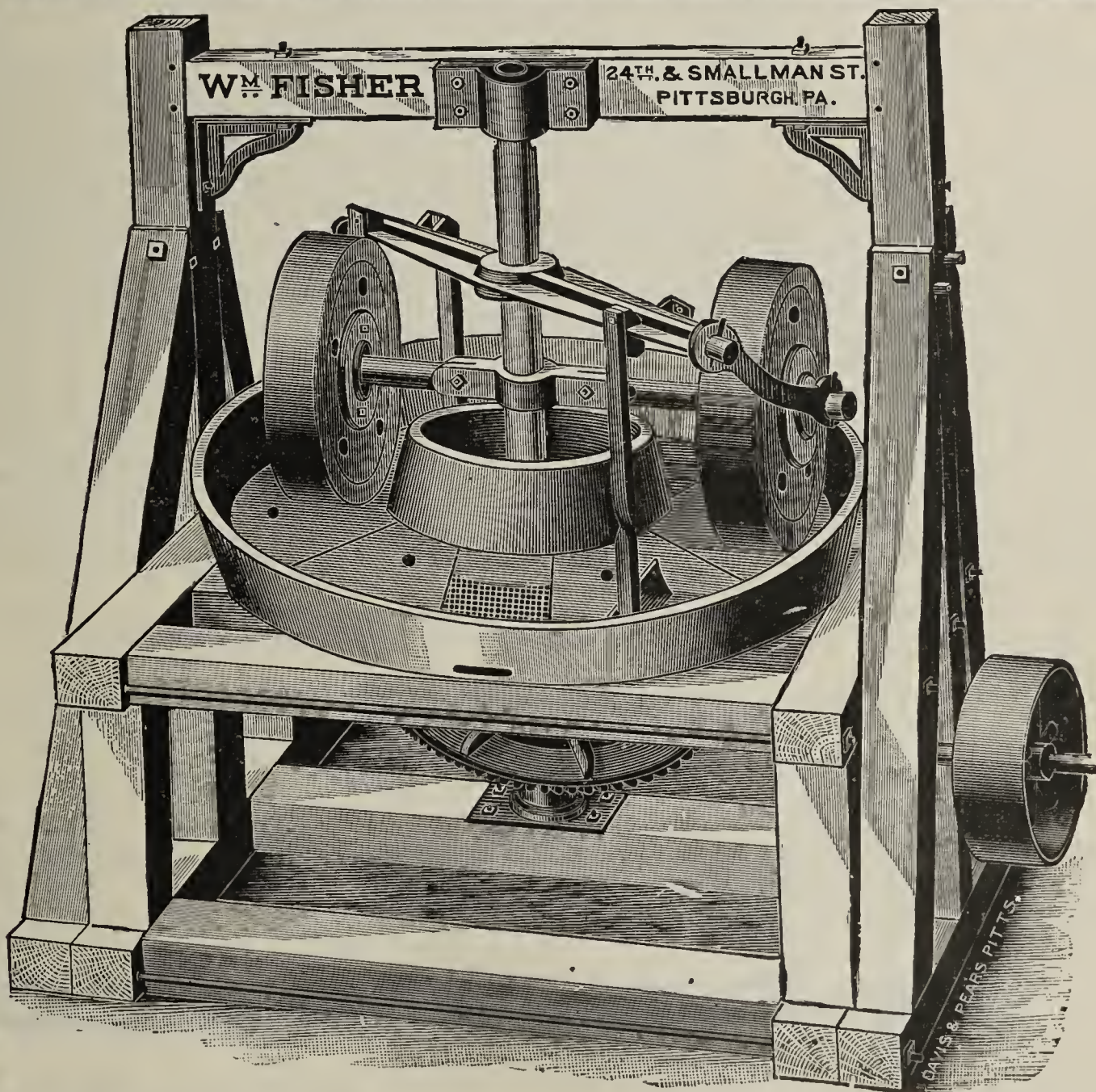


## Wet Pans,

STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,

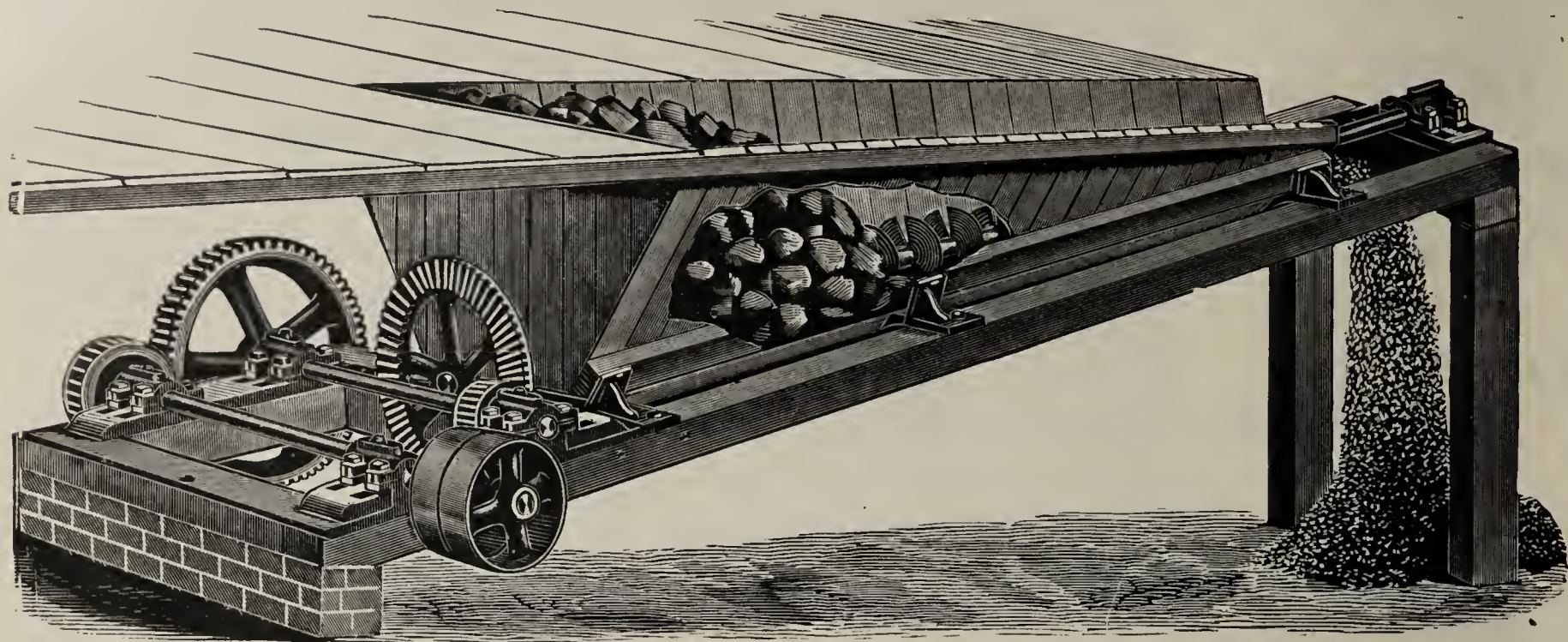
BLAKE CRUSHERS,

BRICK PRESSES.

When writing for prices, state kind of material and capacity required.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

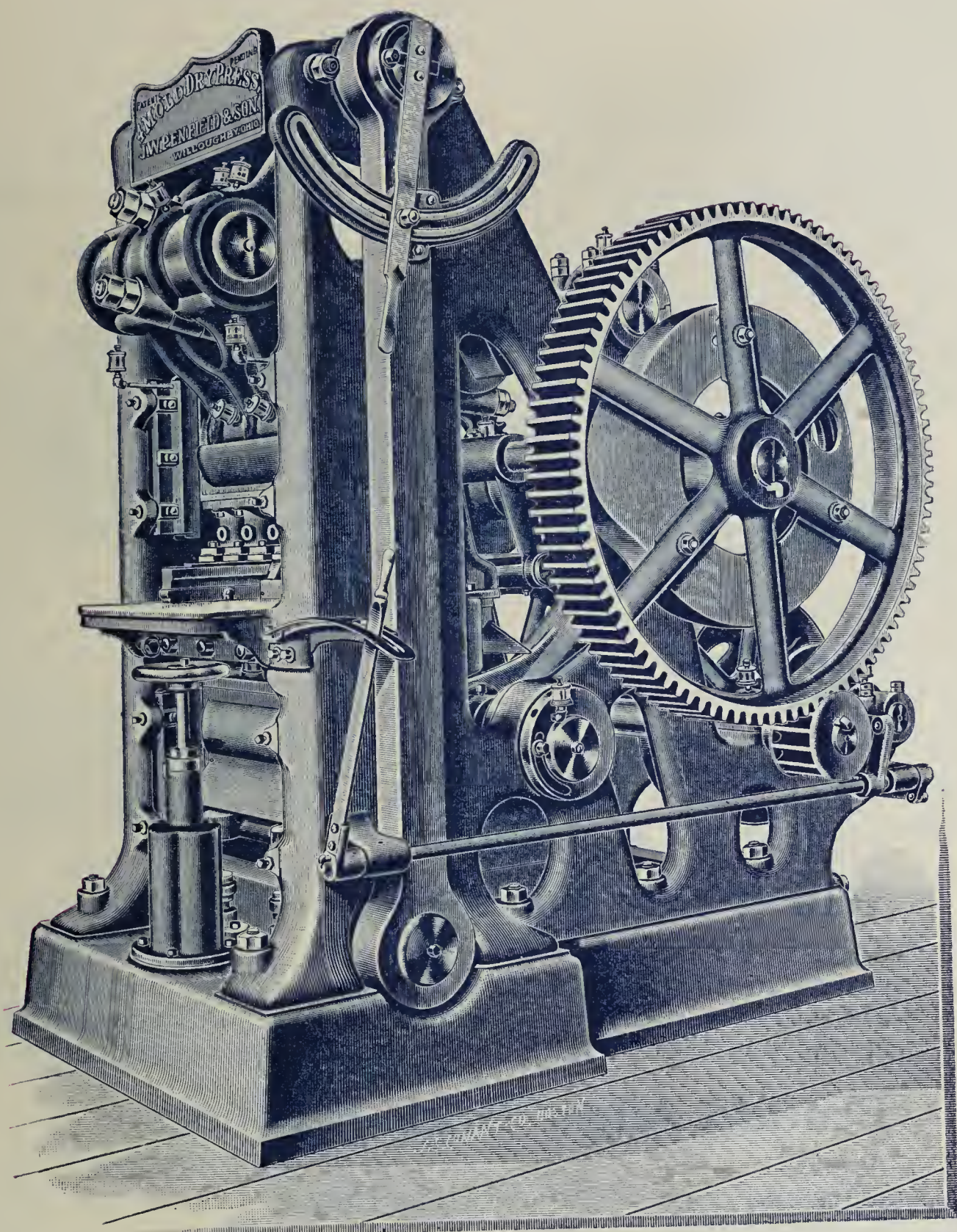
# John Torrent,

Mention Clay-Worker.

MUSKEGON, MICH.



J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY  
WILLOUGHBY, OHIO



Penfield 4-Mold Dry Press Brick Machine.

## **THE PENFIELD DRY PRESS . . . . BRICK MACHINE.**

Is the strongest and best made; runs easier, presses brick longer and makes them stronger than other dry press machines. Its adjustments are most convenient, securing instant regulation of thickness of brick or amount of clay in them, or adjustment of mould bottoms to take up wear.

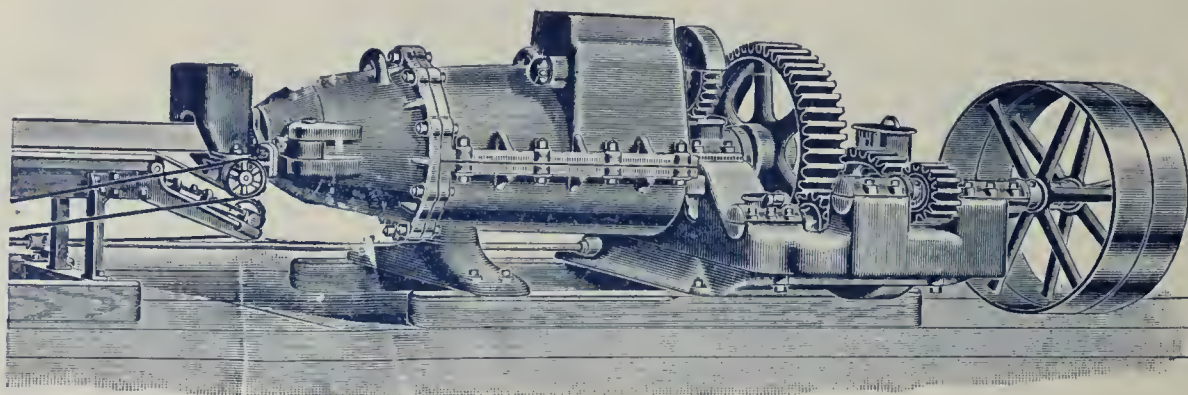
It has other valuable features. Send for details or come and see it.

**J. W. PENFIELD & SON, Willoughby, Ohio,**

~~~~~ U. S. A. ~~~~~

J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY  
WILLOUGHBY, OHIO





(Penfield No. 15 Auger Brick Machine.)

## The First Cost

Of a Brick Machine is really a small item compared with that of the balance of the plant and what it costs to run it.

It takes as many men, more skill and more money to run a light, inefficient machine than to operate one which will do all a Brick Machine can.

## Will it Pay You . . . .

To risk the loss of your investment for a very doubtful saving in the start, merely because a good, reliable machine costs more than a poorly designed, poorly constructed one, whose efficiency—to say the least—is very uncertain.

## Penfield Auger Brick Machines

Are not the lowest priced on the market. Efficiency, durability and reliability are wherein **they** excel. It will pay you to try them.

**J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.**

Auger Brick Machinery,  
Plunger Brick Machinery,  
Stock Brick Machinery (Sand Moulding.)  
Dry Press Brick Machinery,  
Sewer Pipe Machinery,  
Clay Working Machinery of all Kinds.



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

W. B. MERSHON & CO.,

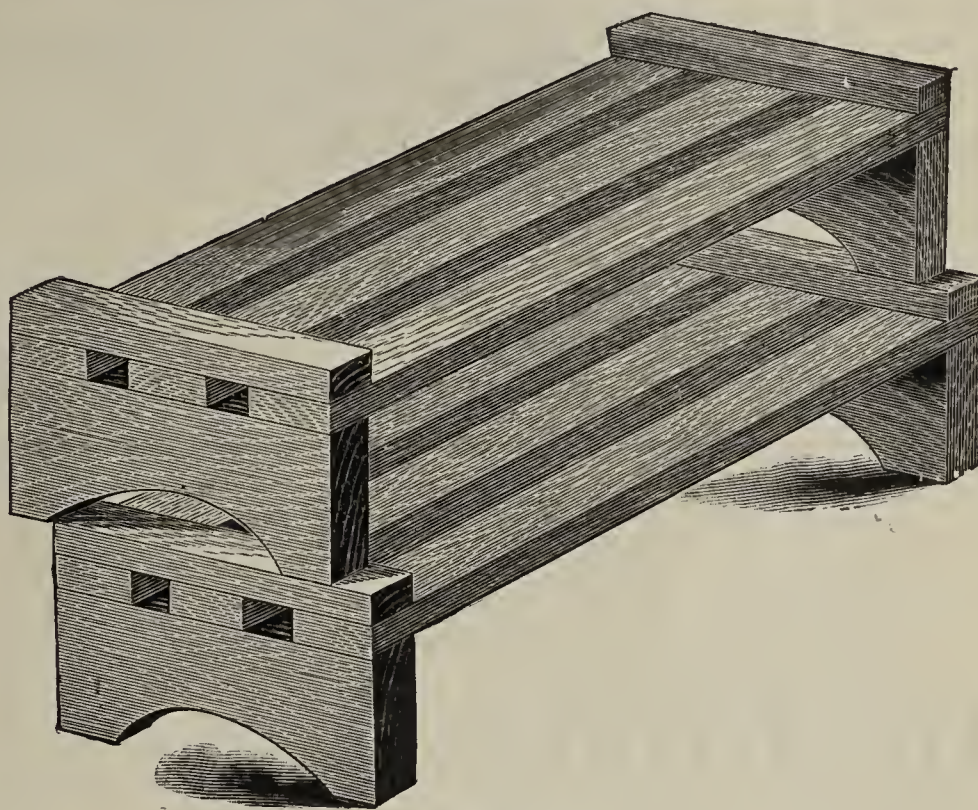
Write for circulars and prices.

East Saginaw, Mich.

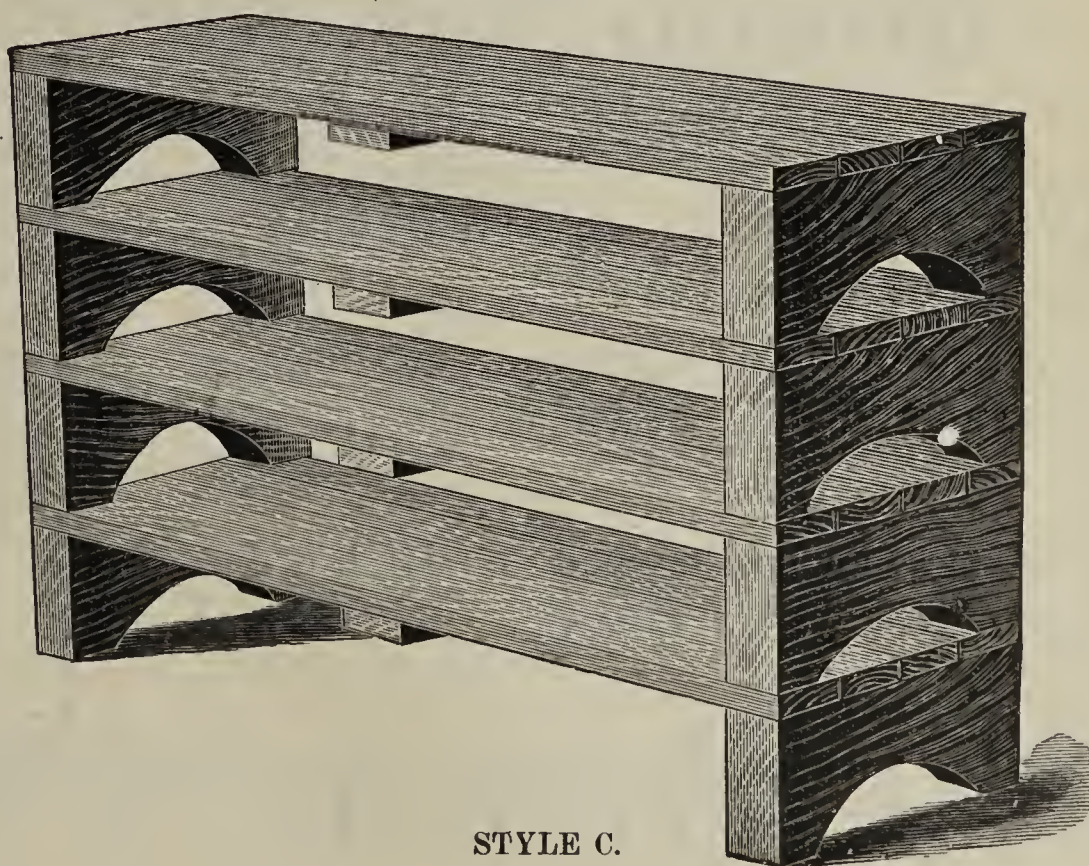
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.



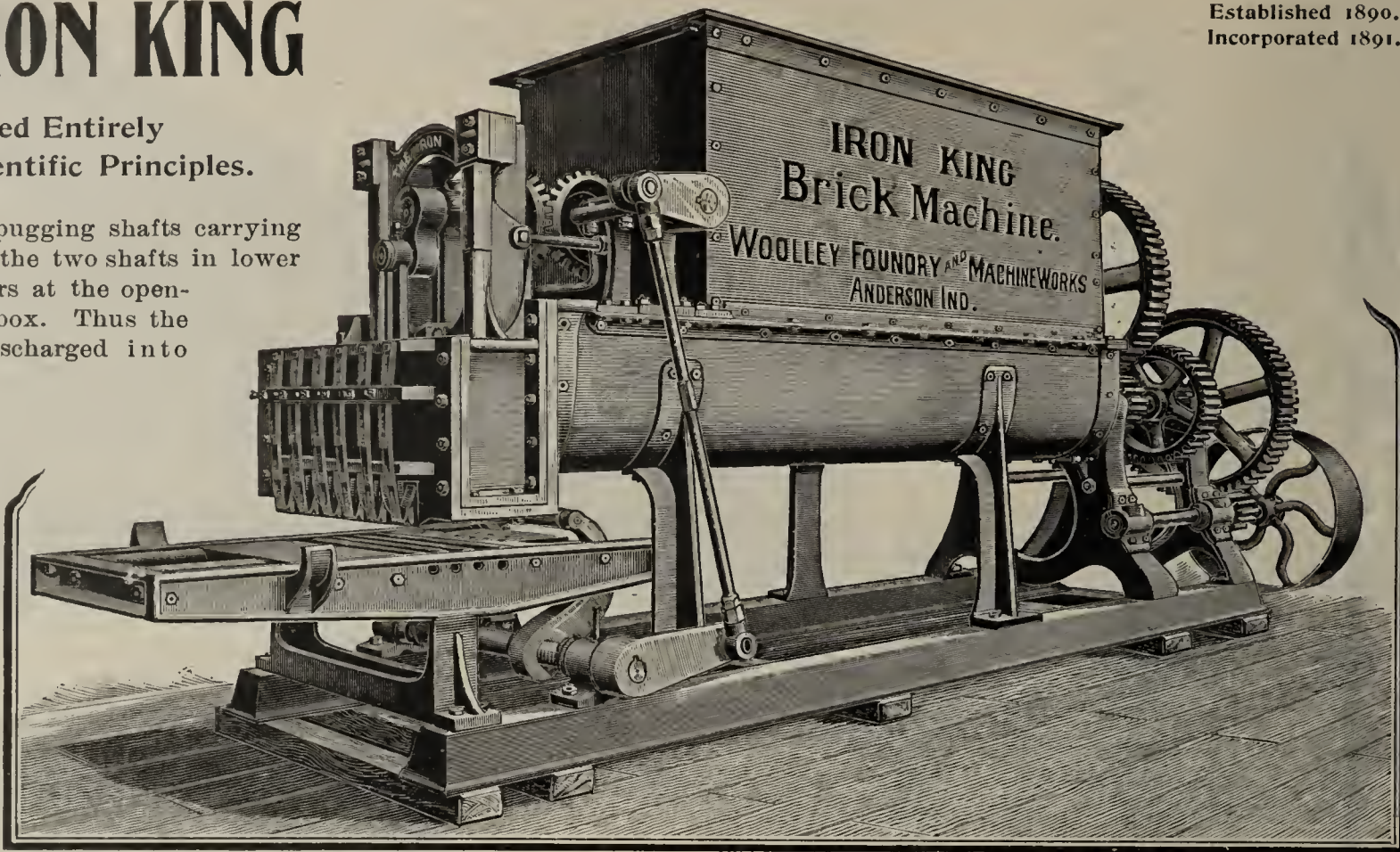
STYLE C.



# The IRON KING

Is Constructed Entirely  
On Scientific Principles.

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and



positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.

• • • SAVE THE PENNIES. • • •

## The Potts :: Mould Sander.

THE only machine made that will sand the moulds better than can be done by hand. It never gets drunk or strikes for more wages. It is sure and reliable. It will save its cost in a short time.

Every machine shipped on trial, if it does not do the work we will take out and return at our expense.

C. & A. POTTS & CO., = Indianapolis, Ind.

W. J. EGGE & CO.,  
BRICK MANUFACTURERS,  
OFFICE, 217 NORTH NINTH ST.,  
YARD, COR. TENTH AND ALLEN STS.

Allentown, Pa., January 12, 1892

Messrs C. & A. Potts & Co.:

Gentlemen- The Mould Sander we got from you, and used last season, gives entire satisfaction. We could not do without it, for before we had the Sander, we paid two dollars a day and often found it difficult even at those wages to keep a hand at it during the season. Now, with the sander, we pay a boy seventy-five cents a day.

Yours,

W. J. Egge & Co.

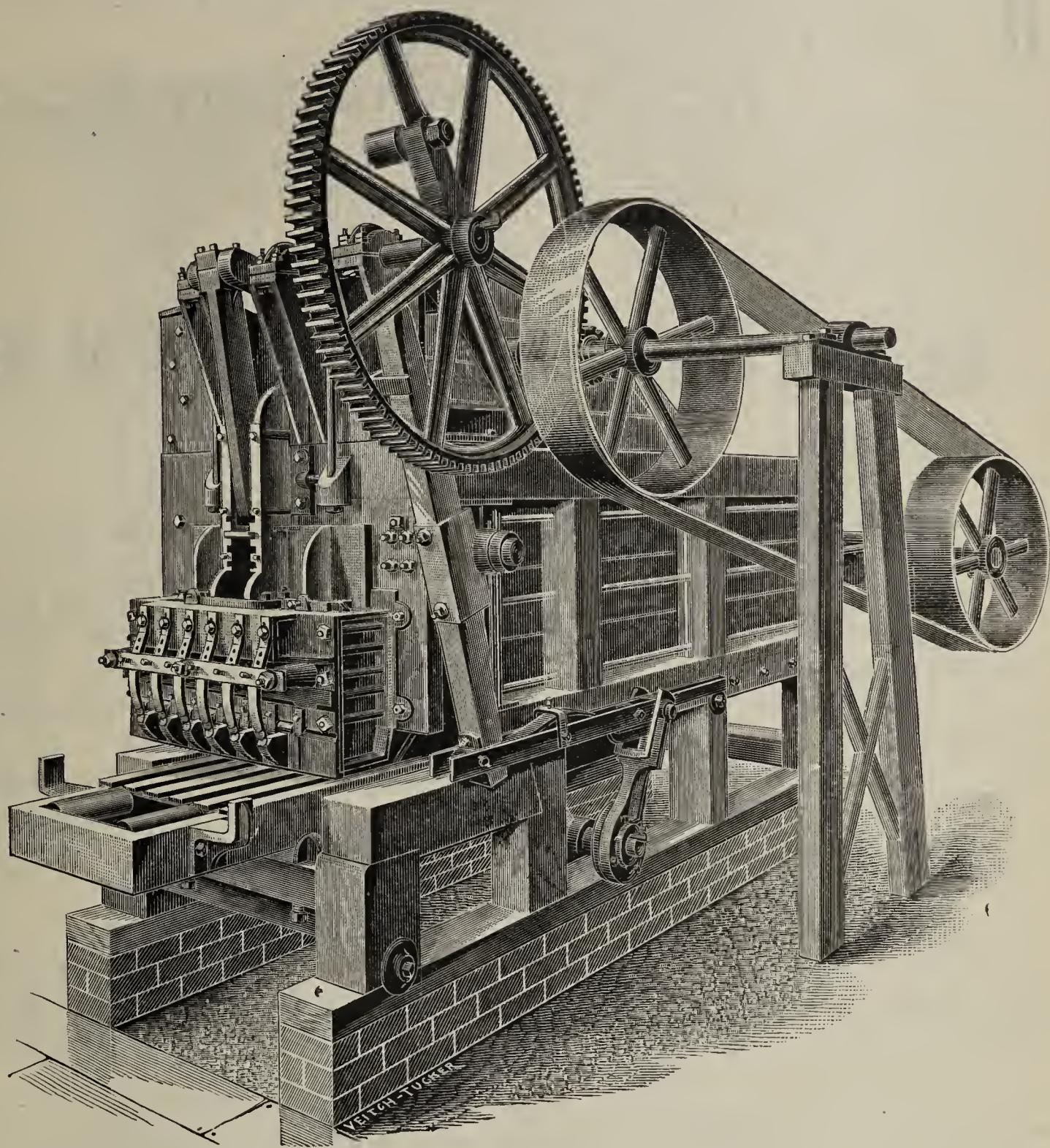


# THIRTY MILLIONS

Have Been Made with One Machine  
in Less Than Thirty Months.



WEIGHT  
NEARLY EIGHT  
TONS.



Not a Single Day's Work Was Lost Through Breakage.

*"New Haven" Records Lead.*

*Let us Prove Them.*

**The McLAGON FOUNDRY CO., New Haven, Conn.**



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

**RUSHVILLE, IND.**

REFERENCE: Rush County National Bank.

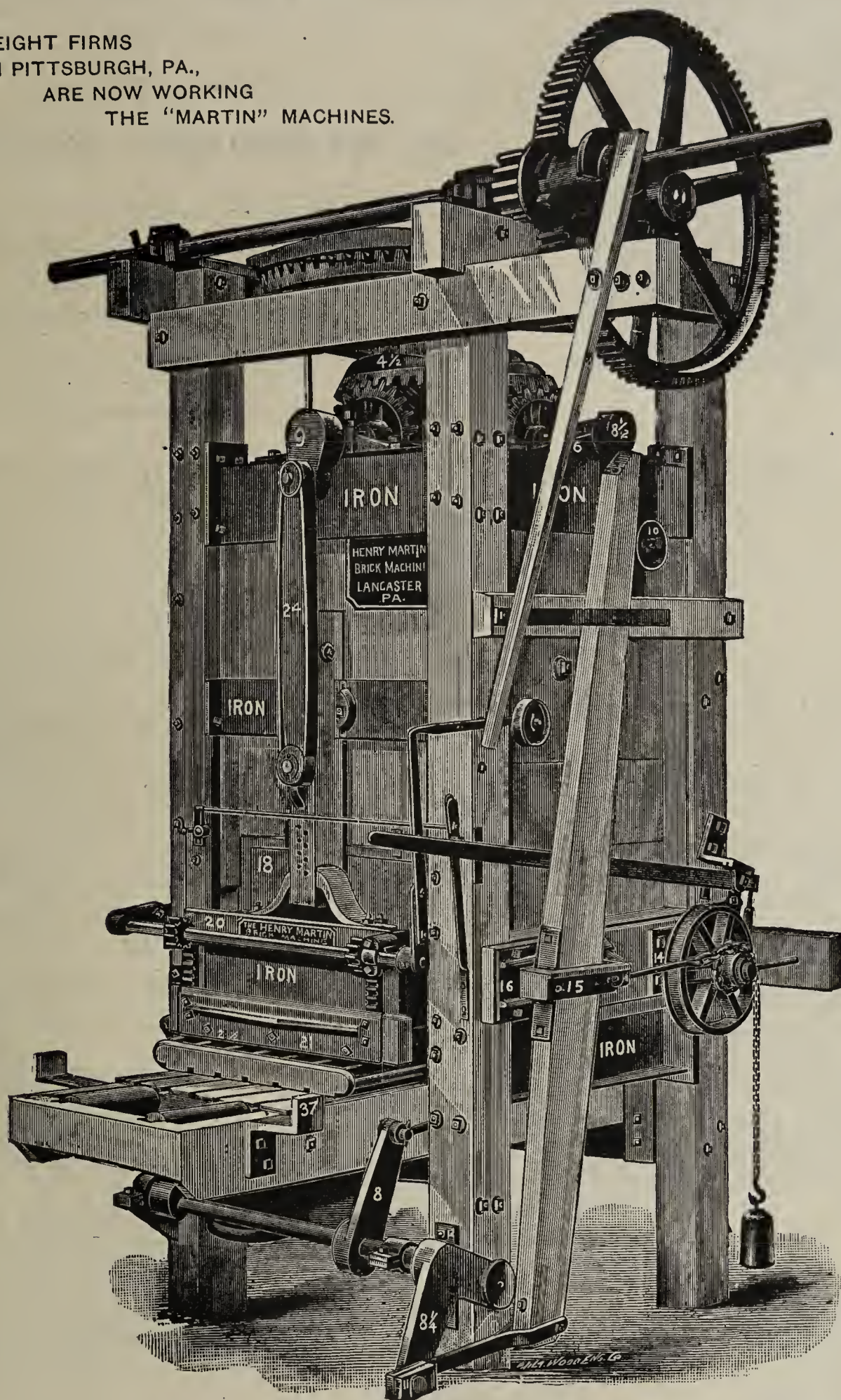


THE  
OLD.....  
RELIABLE

# Martin Brick Machines.

SEVENTY-EIGHT FIRMS  
IN PITTSBURGH, PA.,  
ARE NOW WORKING  
THE "MARTIN" MACHINES.

Each  
and  
Every  
Machine  
is  
Built  
Under  
the  
Personal  
Supervision  
of  
its  
Inventor.



We  
Manufacture  
all  
the  
Latest  
and  
Best  
Improved  
Brick  
Machinery  
and  
Supplies.

## ...The Henry Martin Brick Machine Mfg. Co...

ESTABLISHED  
1857.

LANCASTER, PA., U. S. A.

INCORPORATED  
1887.

WRITE US  
FOR ANY INFORMATION DESIRED.





# THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

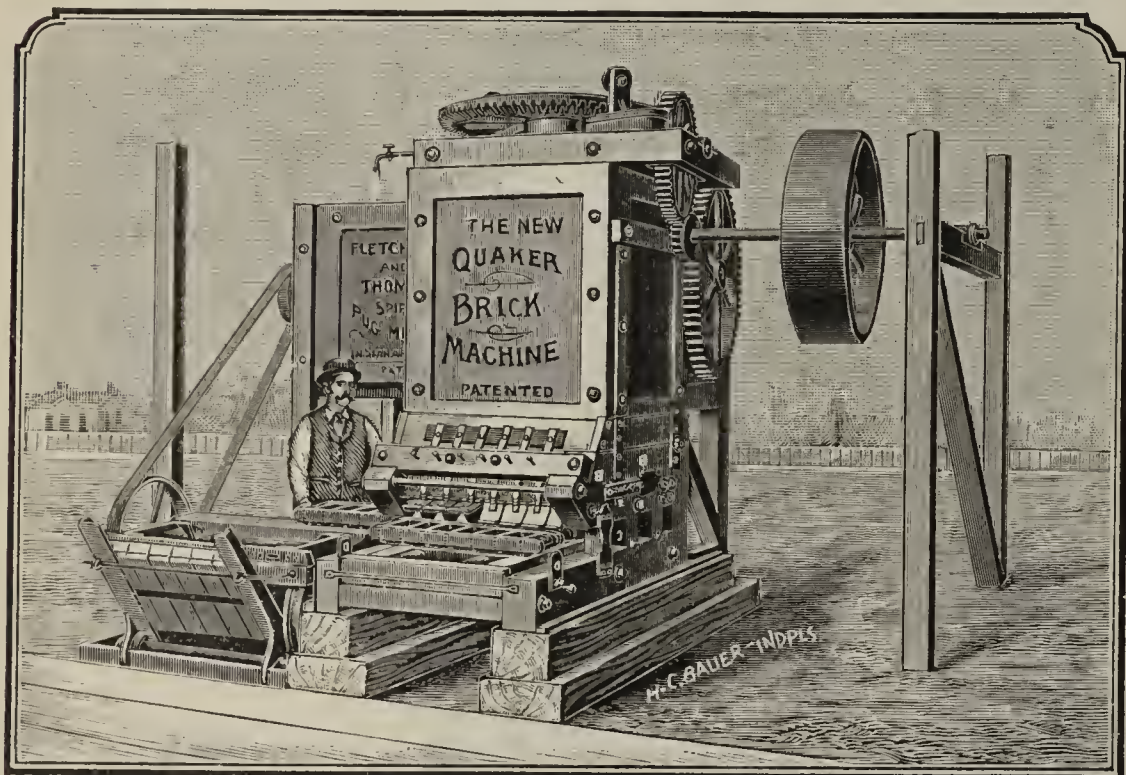
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



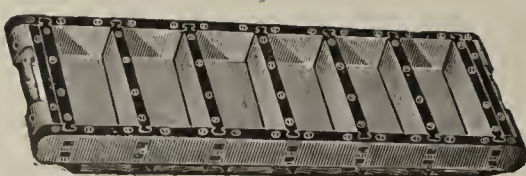
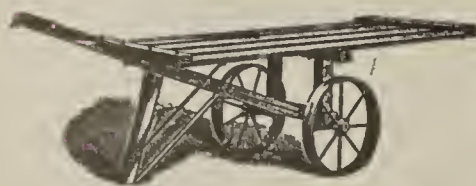
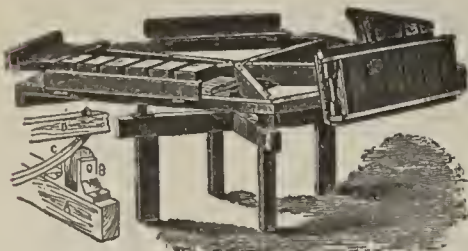
## Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



(FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.,**  
Wellington, Ohio.



# PRICE OF CHESTER

Is a Brick Manufacturer whose long experience and success in the "art" commands the respect of all who know him.

He gave the "Monarch" Machine the most exhaustive and critical tests, when he first put it in his yard. Below you have the result of his critical and careful judgment.

CHESTER, PA., Aug. 8, 1893.

THE WELLINGTON MACHINE Co.,  
WELLINGTON, OHIO:

GENTS:—

We do not think that the "Monarch" Brick Machine can be beaten; in fact, we do not see where any improvements can be made on it. It simplicity of construction; its workings, and the quality of its work speak volumes in its favor.

The pugging of the clay is perfect, and anyone desiring a machine had better look over the market well before deciding against the "Monarch." Its working parts are strong, and with usual care should last very long, as the journals are well protected.

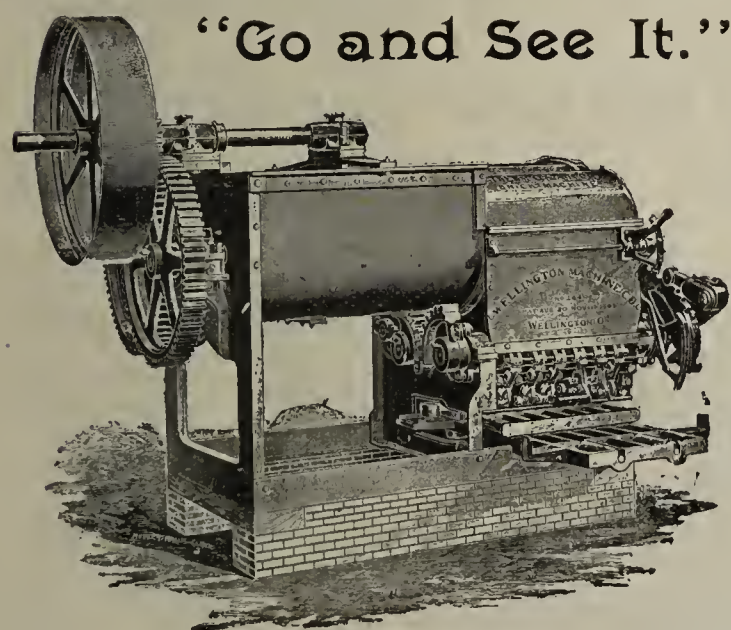
We speak highly of its merits to our brickmaking friends, and have invited them to call and see for themselves. We have used other machines and have seen a number of others at work, but we must confess that the "Monarch" takes the cake. We are not using rollers or disintegrators, and find that we are getting as good results as those who do, but of course all clay cannot be worked as easily as ours.

In case of stones the doors in front act promptly, and have not given us any trouble.

As a whole, you have a great machine, and its merits will work themselves into the good graces of the brickmakers. You are at liberty to use our names as reference, and callers will be shown the machine with pleasure.

Yours most respectfully,

W. G. PRICE & SON.



"Go and See It."

## DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple: (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

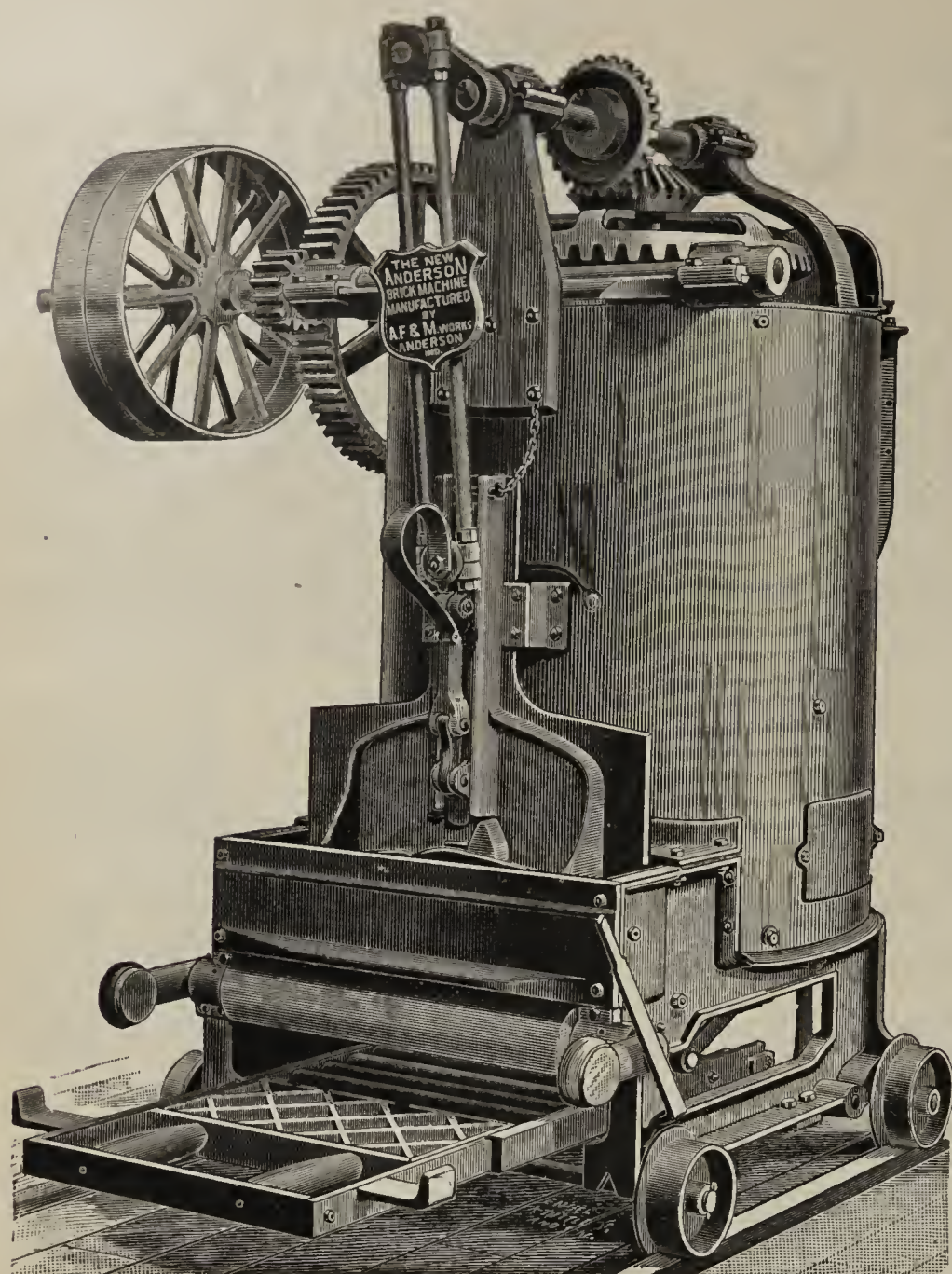
Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.





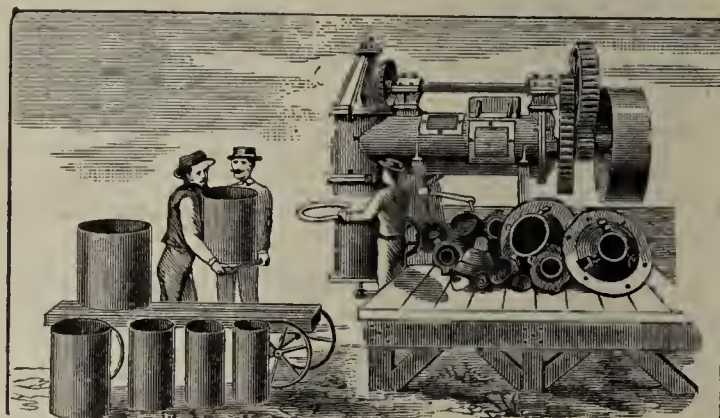
## THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.

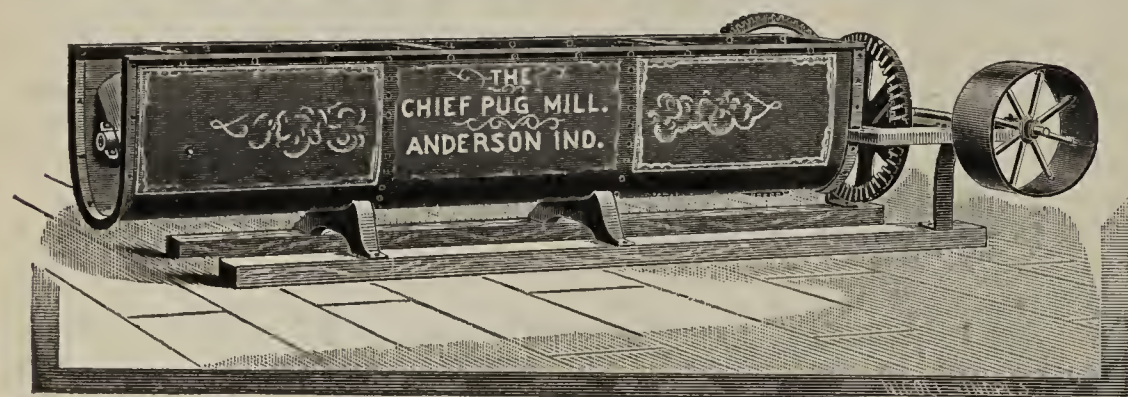


## The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.

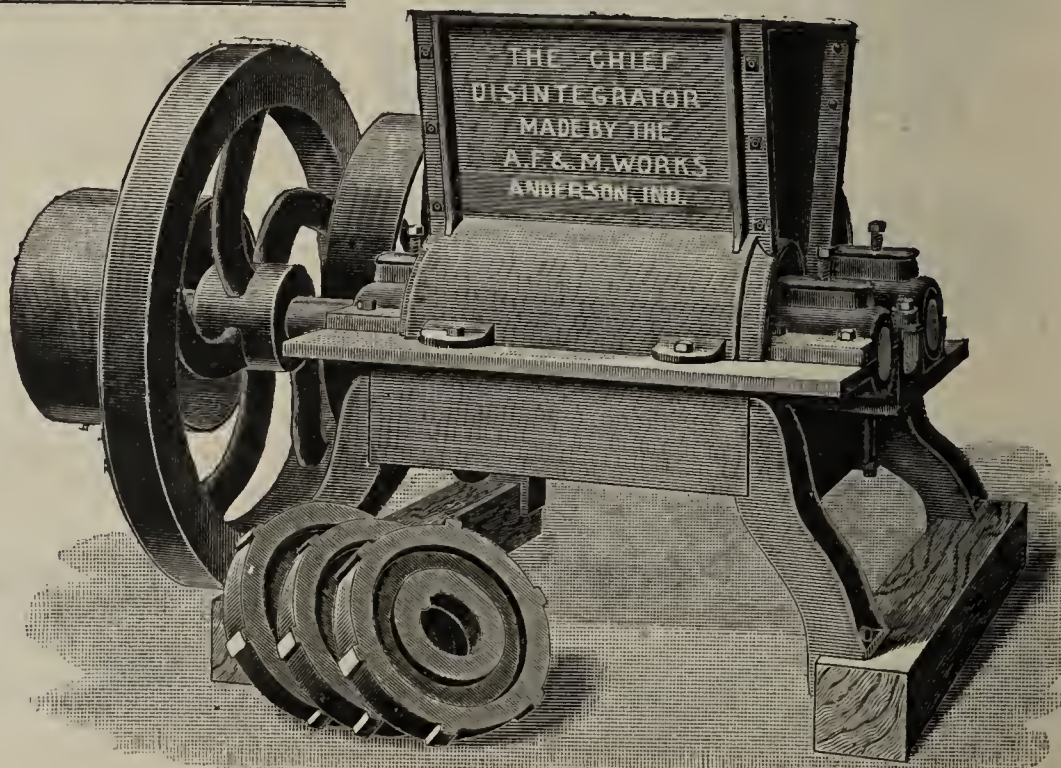


## The Chief Disintegrator and Stone

### SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 3/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.



[Mention the Clay-Worker.]

Correspondence Solicited.



## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

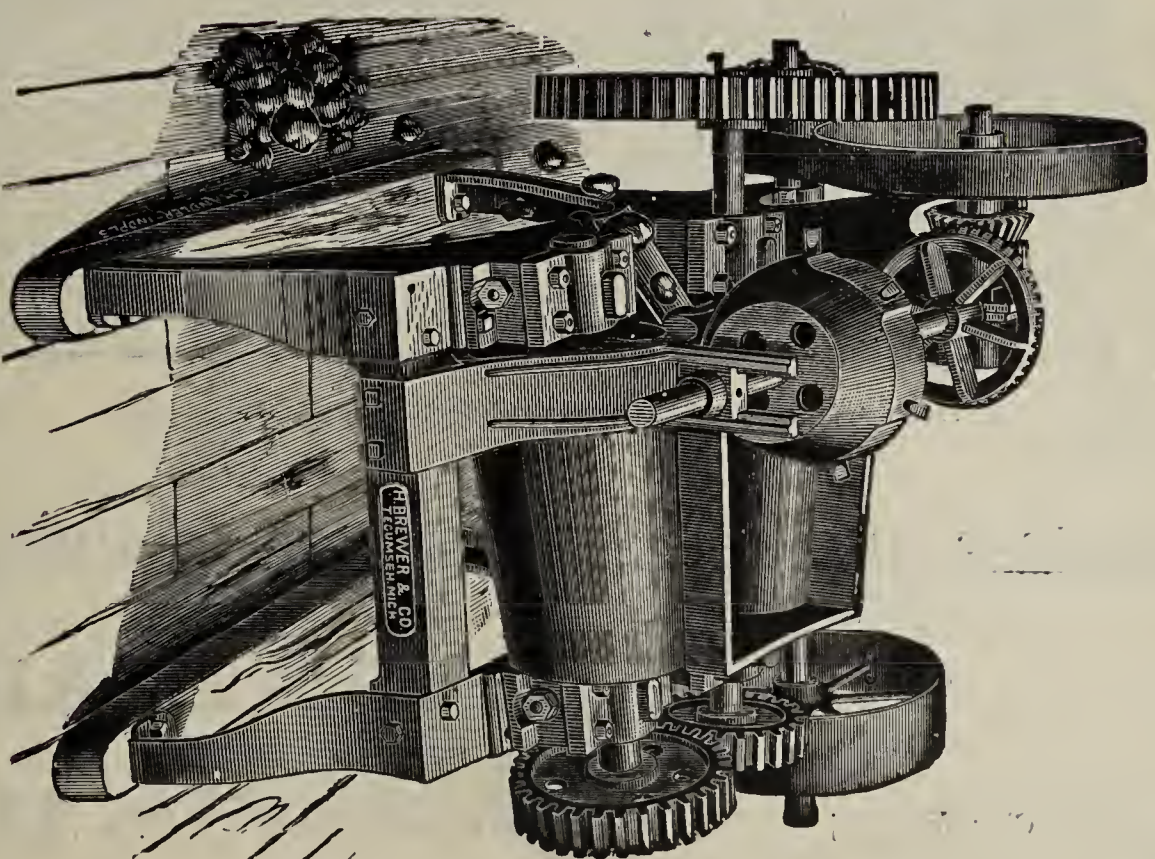
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

### H. BREWER & CO.,

[Mention the Clay-Worker.]

### Tecumseh, Mich.



H. Brewer & Co's Combined Clay Crusher and Stone Separator.



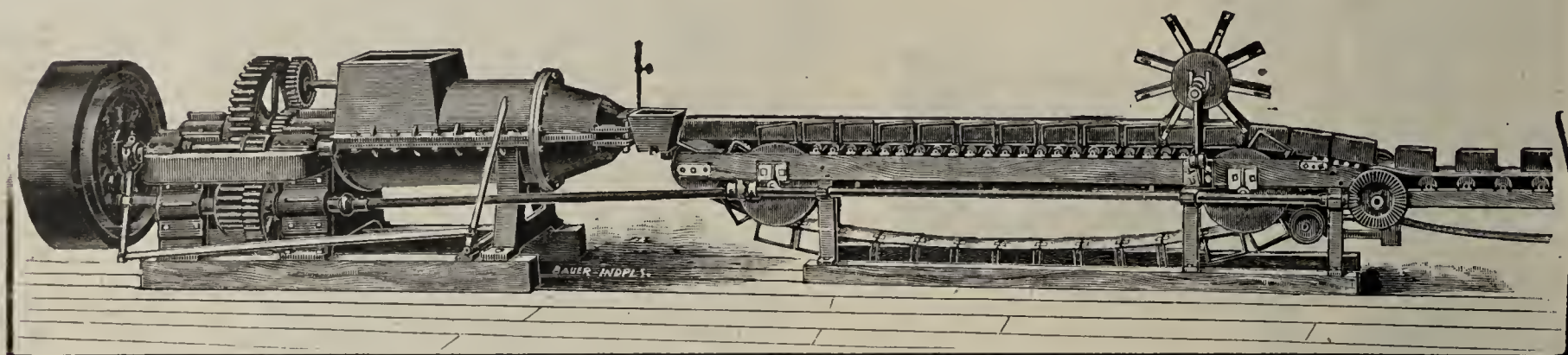
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



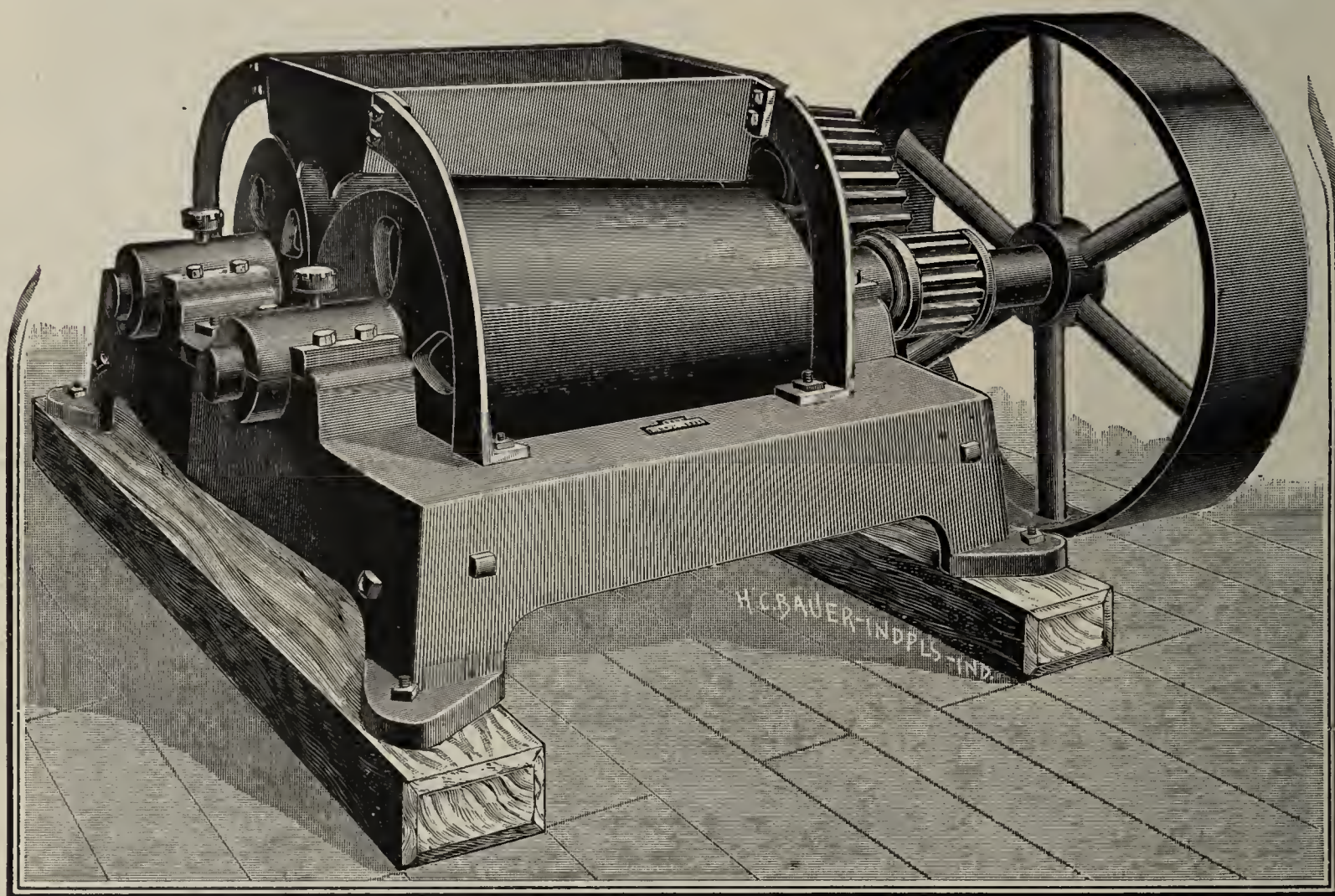
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

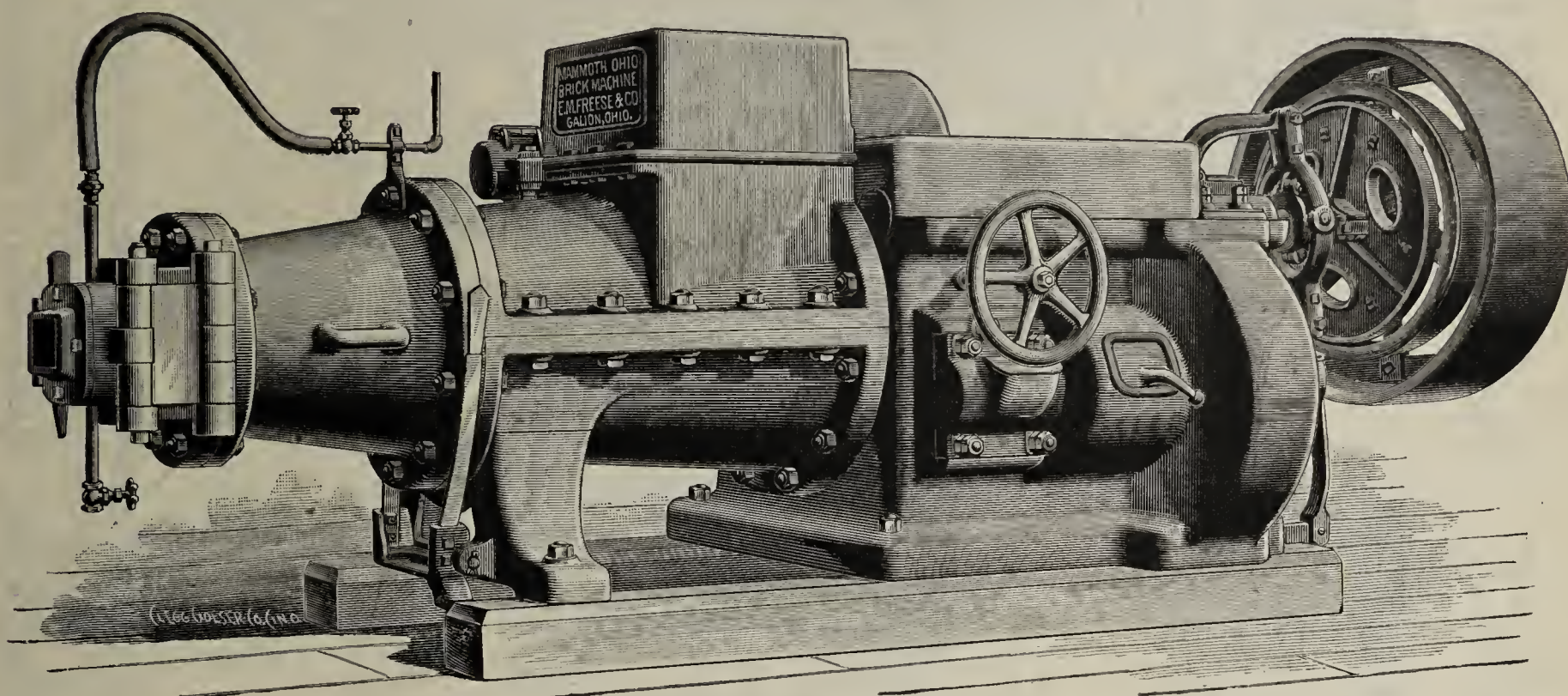
[Mention the Clay-Worker.]

Decatur, Ill., U. S. A.



# SUPERIOR BRICK MACHINERY.

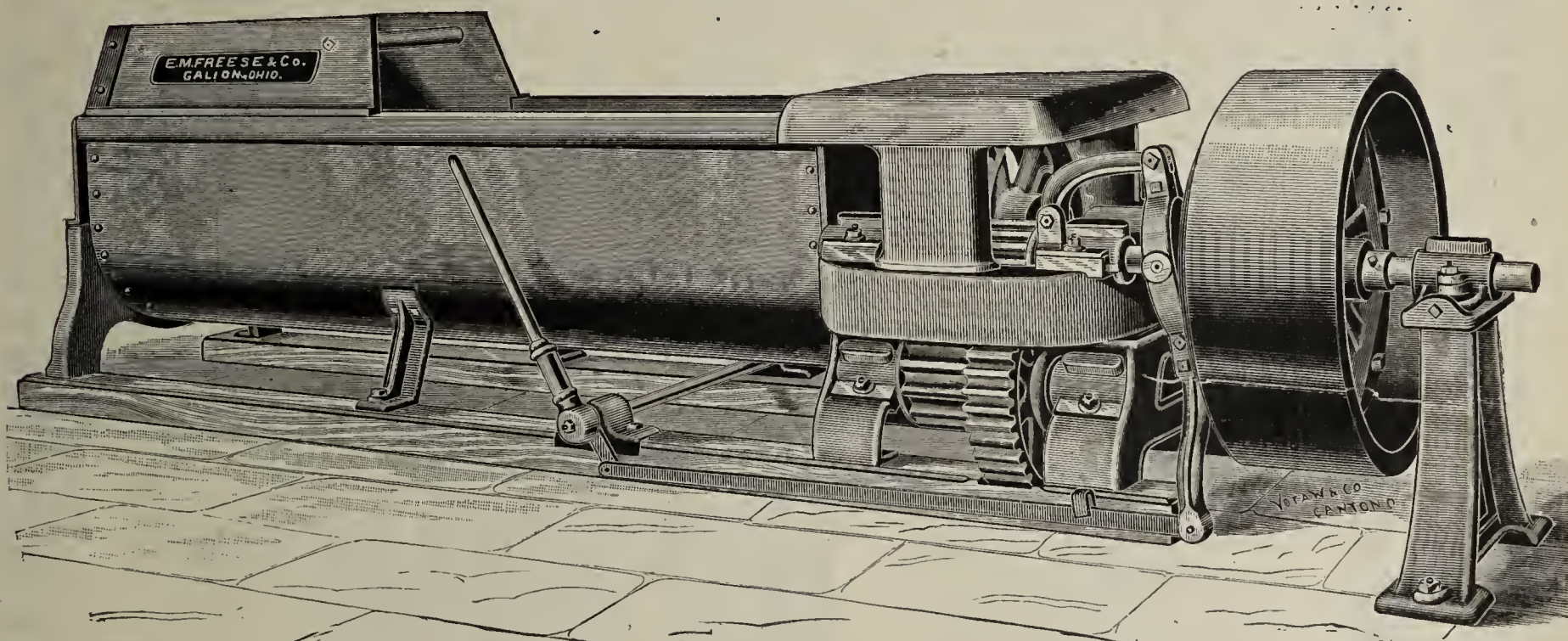
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

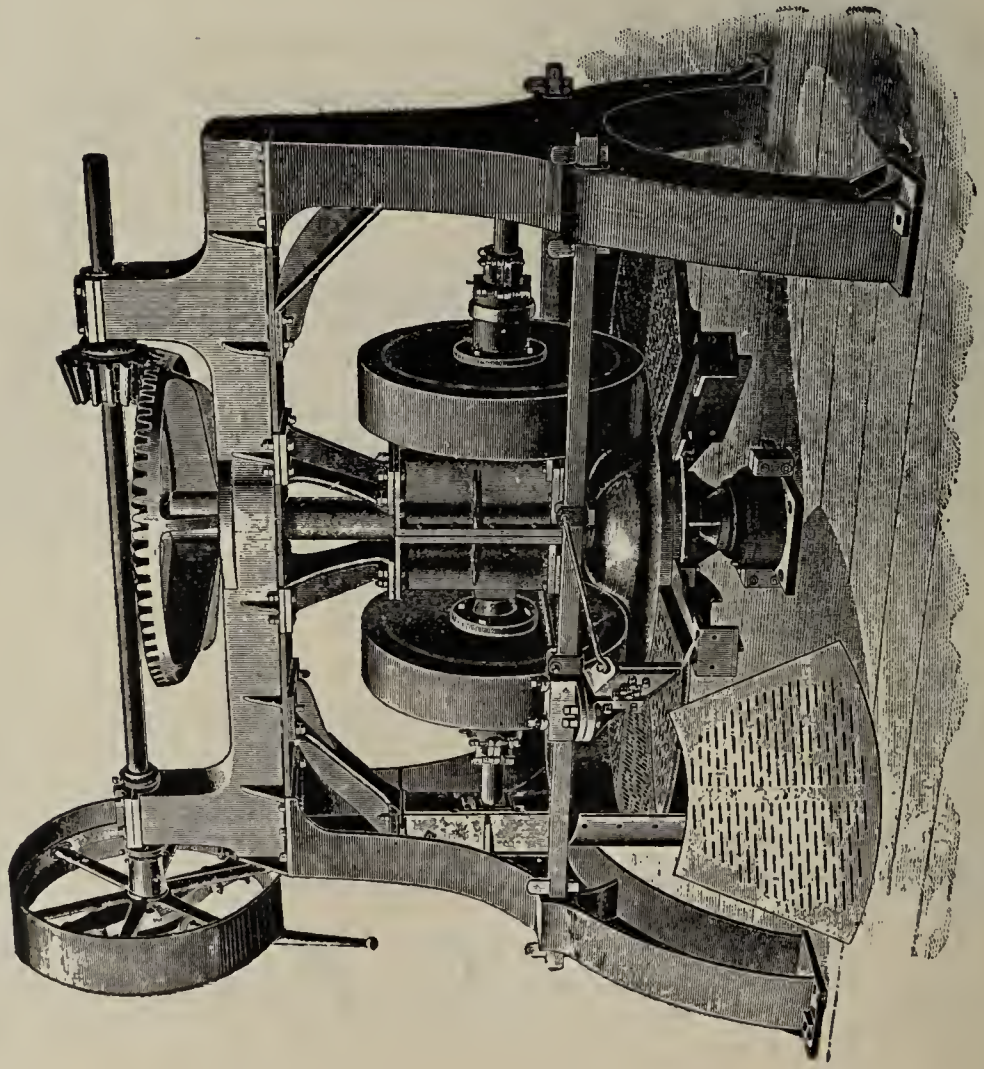
ADDRESS E. M. FREESE & CO.,

~~~~~ GALION, OHIO.



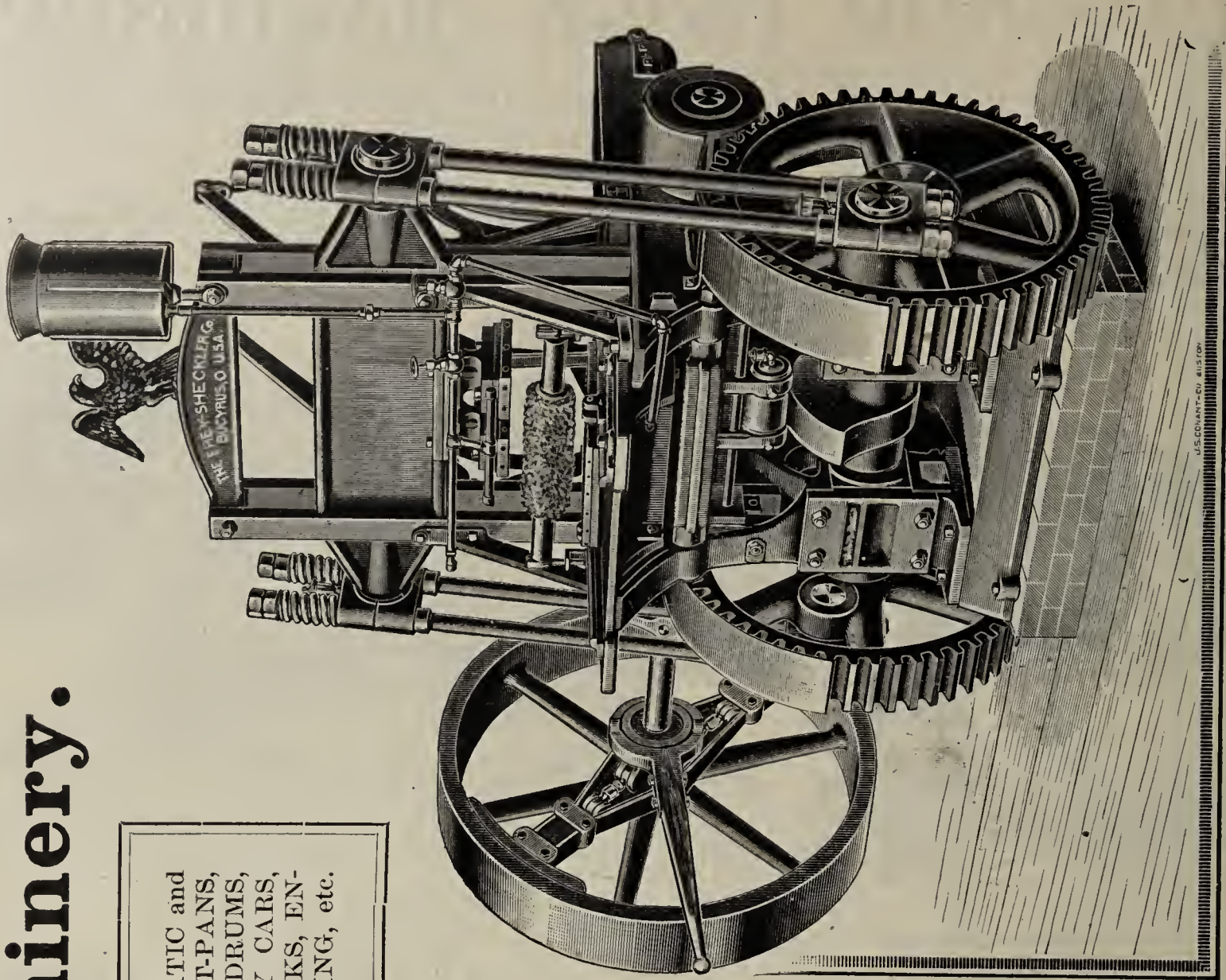
# The Frey = Sheckler Company, Clay Working Machinery.

BRICK, TILE and TERRA COTTA MACHINERY, AUTOMATIC and Hand Power CUTTING TABLES, RE-PRESSES, DRY PANS, WET-PANS, CRUSHERS, REDUCTION MILLS, PUG-MILLS, WINDING DRUMS, DUMP CARS, CLAY CONVEYORS, CLAY SCREENS, DRY CARS, TURN TABLES, TRANSFER CARS, BRICK and TILE TRUCKS, ENGINES and BOILERS, LINE SHAFTING, PULLEYS, BELTING, etc.



Nine Foot Diameter All Iron and Steel Dry-Pan.

SEND FOR CATALOGUE.

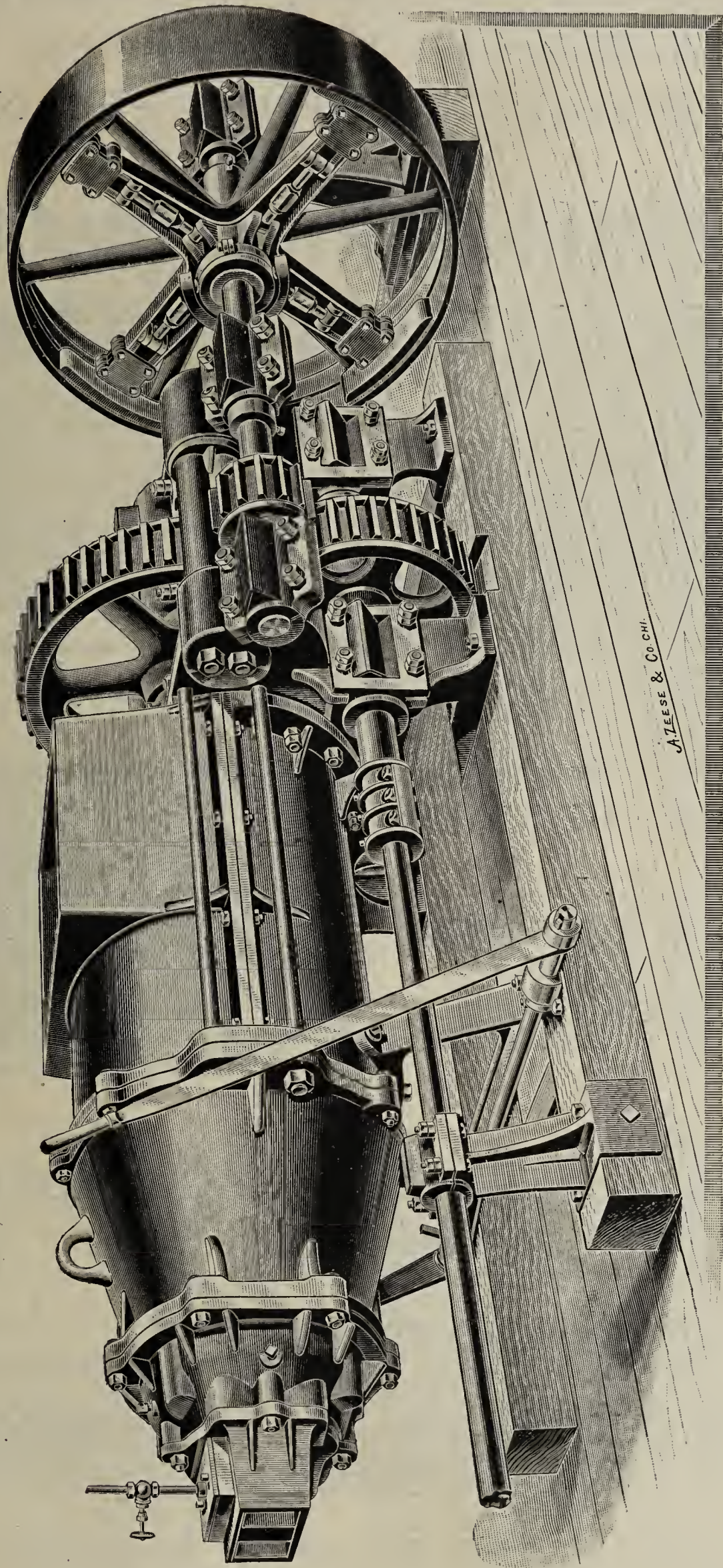


Eagle Steam Power Double Die Repress.

**The FREY-SHECKLER CO.,** Manufacturers, - BUCYRUS, OHIO, U. S. A.



# The Frey-Sheckler Co., Clay Working Machinery.



GIANT BRICK MACHINE.

The Frey-Sheckler Company,

Manufacturers of a Full Line of Clay Working Machinery,

BUCYRUS, OHIO, U. S. A.

SEND FOR CATALOGUE.

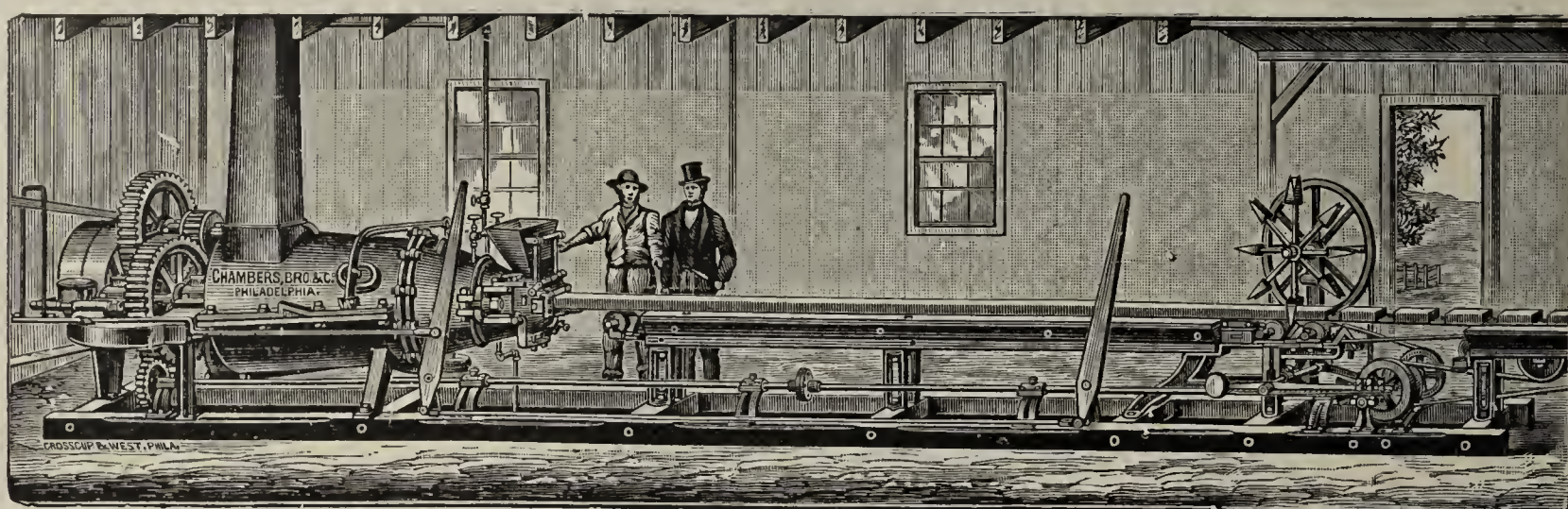


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



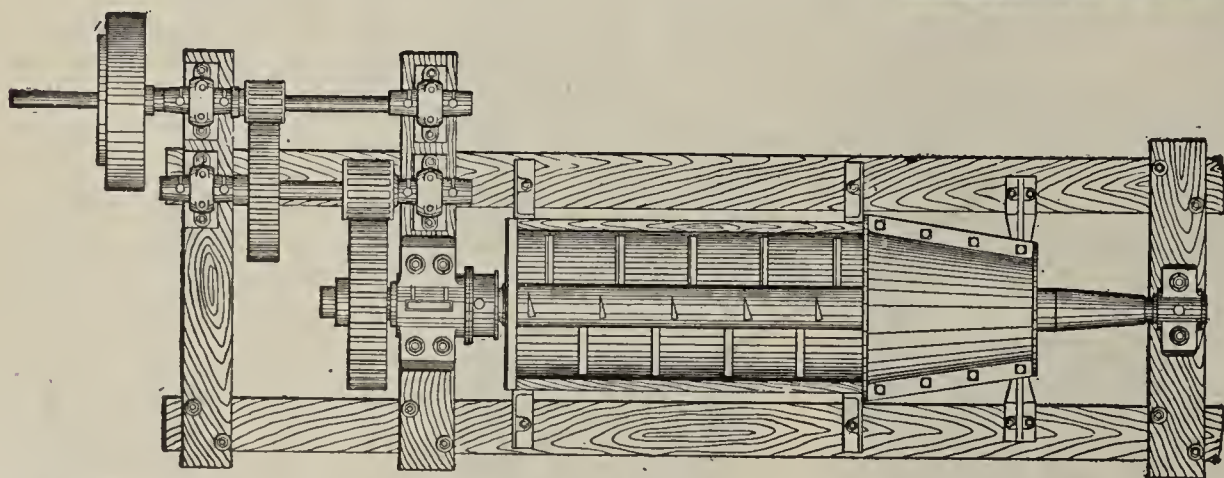
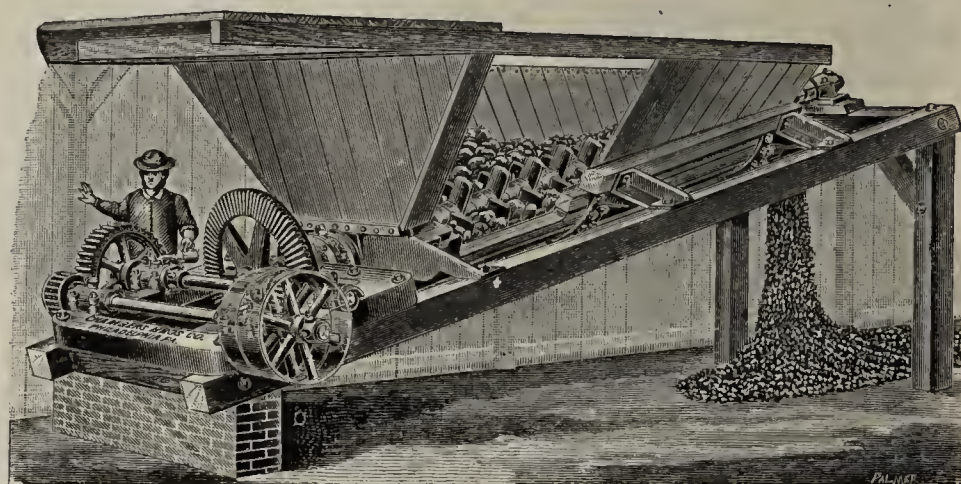
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

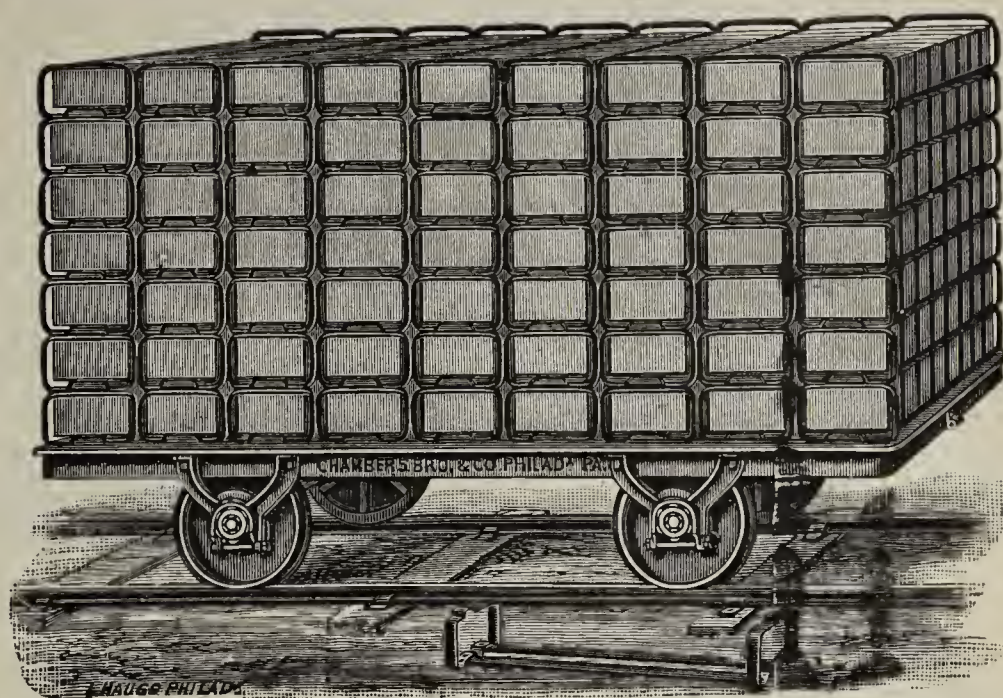
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

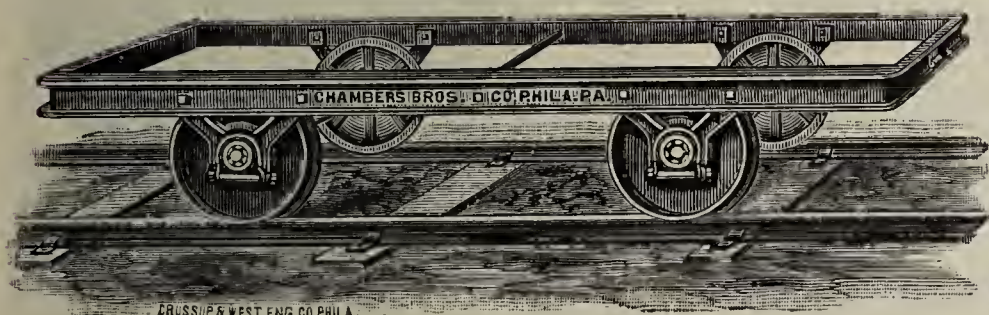
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

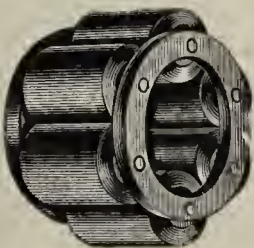


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

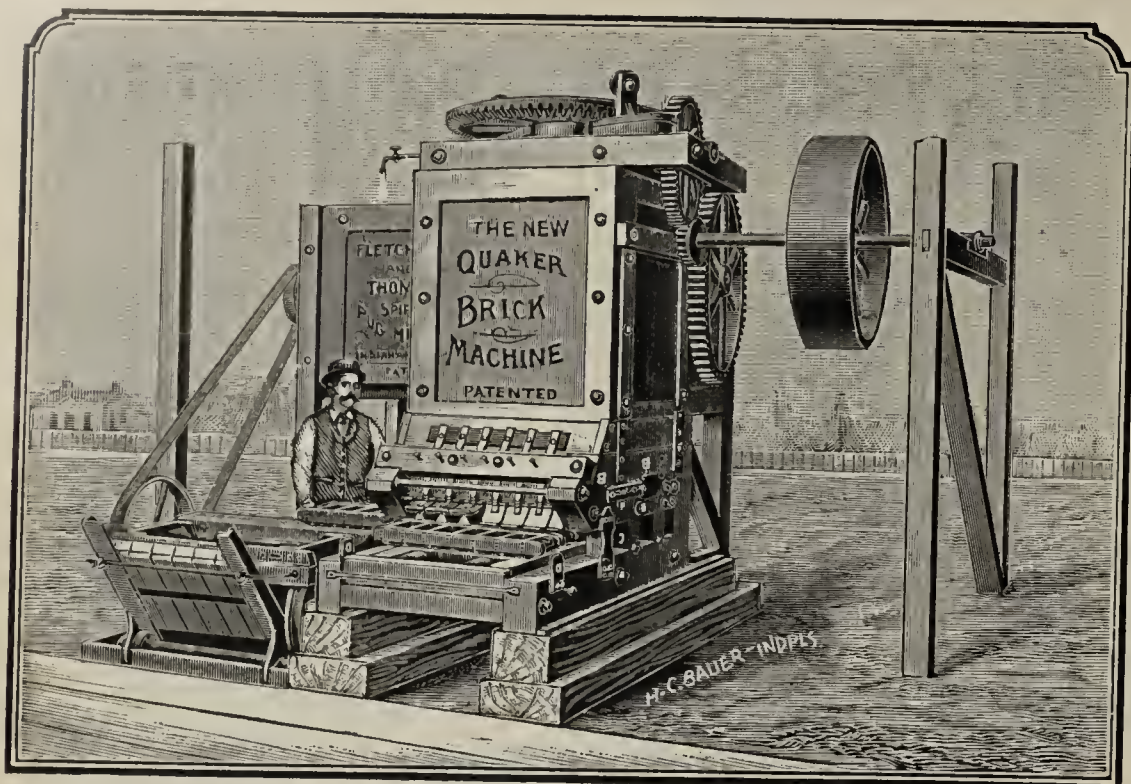
[Mention the Clay Worker



FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.

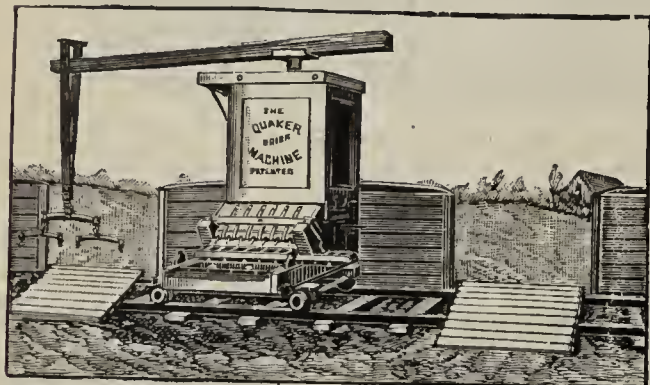


Machine Molds.



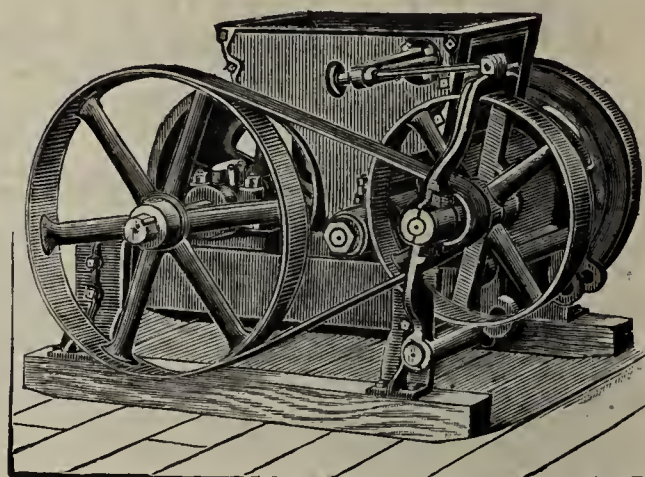
Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



**THE NEW QUAKER** HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.

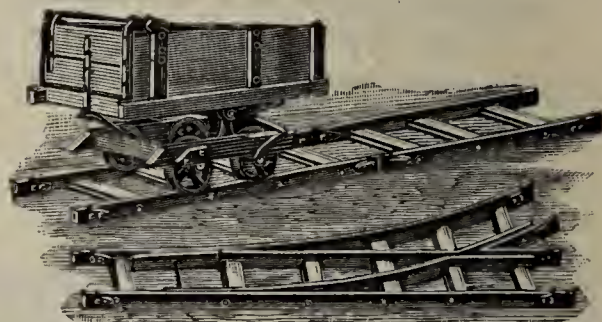
**DISINTEGRATORS.**

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

**FLETCHER & THOMAS, Indianapolis, Ind.**



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS  
—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

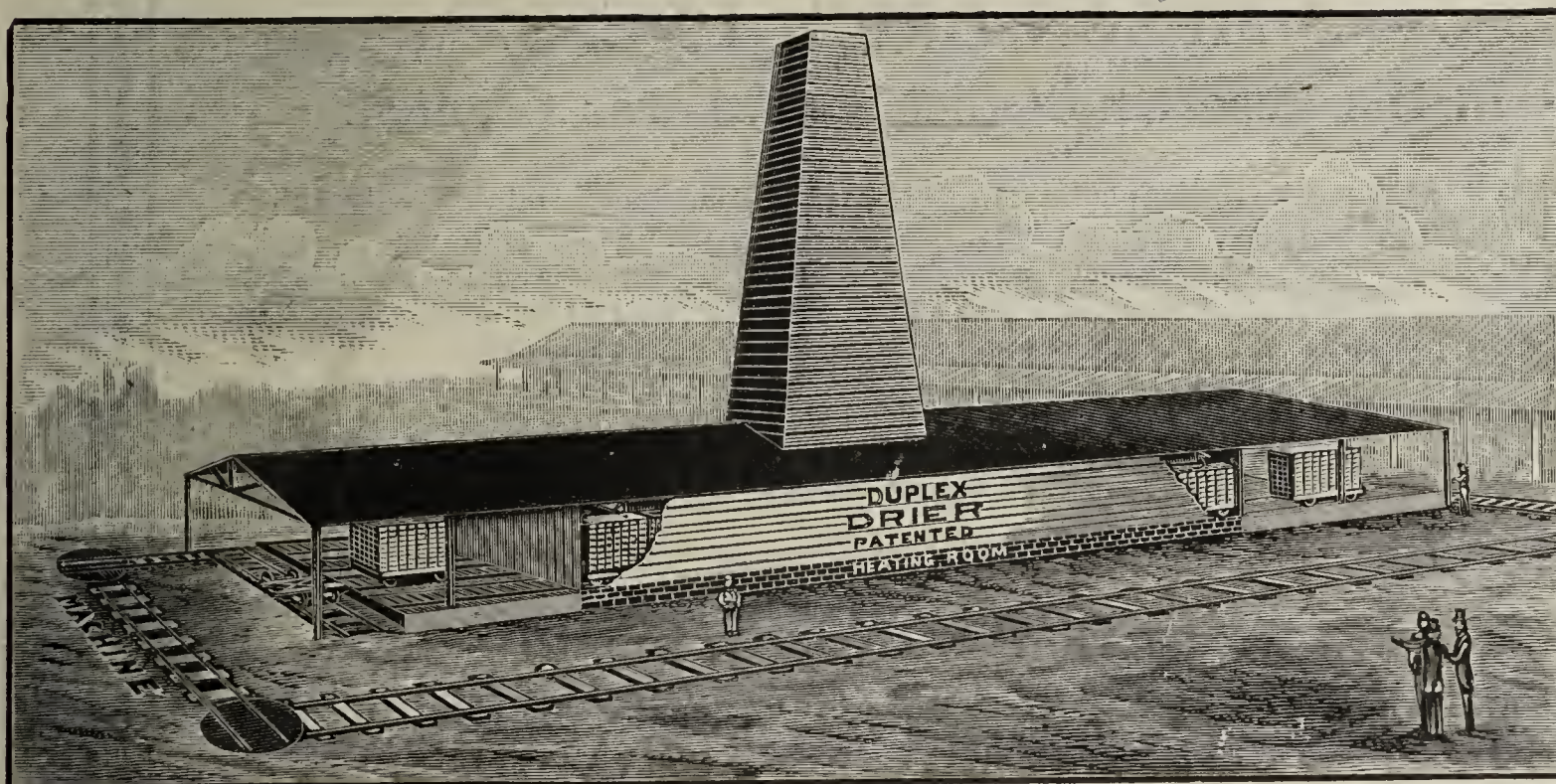
## THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## ATTENTION BRICKMAKERS!

Do not be alarmed by the  
screaching of Wild Cats  
or the howling of WOLVES.



.....  
The  
Duplex  
Steam  
Drier

IS NO.,...  
INFRINGEMENT.

.....

Harland Brick Co. have been using it at Bernice, Ill., for eighteen months, 75,000 daily capacity. Harland Brick Co., Shermerville, Ill., twelve months, 75,000 daily capacity. Galesburg Paving Brick Co., Galesburg, Ill., six months, 150,000 capacity. J. B. Legnard, Chicago, Ill., four months, 160,000 capacity, and others.

Now is the time to buy. Address,

W. C. BYRNE,

Room 67, 162 La Salle Street,

Chicago, Ill.



—“*VENI, VIDI, VICI.*”—

Complete Triumph of the

# SIMPSON BRICK PRESS

—AT THE—

WORLD'S COLUMBIAN EXPOSITION.

Pronounced by the judges on Brick Machinery in Machinery Hall to be the

∴ **Highest Type of its Class.** ∴

On the following page is a copy of an award given to us by the judges on Brick Machinery at the World's Columbian Exposition. Any award or diploma that may have been given to our competitors was granted on models exhibited in the Mining Building, where the exhibitor was absolutely alone and with no competition whatever. In Machinery Hall where full sized machines were exhibited, and the only place where a just comparison could be made, our press had everything its own way and won on all points claimed.

The special judge on brick machinery, who is an expert in the trade, rendered his decision to the committee of the whole, consisting of thirty-four judges, and gave the award to the

**SIMPSON BRICK PRESS.**

• • In His Report no Other Award was Granted. • •

We therefore make the emphatic statement that in Machinery Hall, the only building where brick machines came into actual competition, the **SIMPSON** was the only dry or semi-dry brick machine that was given an award by the special judge on brick machinery. His decision was also **APPROVED** and **ADOPTED** by the committee of the whole, consisting of seventeen foreign and seventeen American judges.

In addition to the **Simpson Brick Press** we are also manufacturers and dealers in

∴ **Full Brick Yard Equipments.** ∴

Estimates given on complete plants. For prices, terms and other information, address

**The SIMPSON BRICK PRESS CO.,**

Agents for Canada,

WATEROUS ENGINE WORKS CO., Brantford, Ont.

87 Washington St., CHICAGO, ILL.



# World's Columbian Exposition

## At Departmental Committee on Awards, MACHINERY HALL.

August 30th, 1893.

At the regular meeting of the Jurors in that department, the report on the Waterous Engine Works Co., (showing a Simpson 5-mold press) was read and APPROVED as follows:

Waterous Engine Works Co, No. 6,490 as follows: This exhibit consists of a machine (the Simpson Brick Press) for making brick by the dry press process, good in design, material and workmanship.

This machine shows an advancement in mechanism in regulating and reducing the mechanical difficulties.

### FIRST.

Its longer pressure forces partial cohesion of the particles. Longer is better than stronger pressure.

### SECOND.

The use of the long lever with toggles, causes long even pressure without excessive strain of parts.

### THIRD.

The pressing strain is taken up by two exposed steel side bars and not by the frame.

### FOURTH.

The clay moves in the mold during pressure, giving polish to the product.

The brick is made in the bottom of the mold and the pressure is held until the brick is delivered, insuring surface polish.

### FIFTH.

The mechanism provides for exact thickness without

shimming or packing, and the modification of their dimensions are easy and quick.

### SIXTH.

The discharge of the brick from the mold, by the came on the master gear, is a marked improvement on the lifting of the entire pressing mechanism, together with the green brick.

### SEVENTH.

The heating of the charge box.

### EIGHTH.

The toggles work inward, thereby giving unobstructed access to the table on which the brick is delivered, instead of leaving them to be pushed out and damaged by the following brick.

### NINTH.

The parts are accessible and changeable without delay.

**For These Points of Advancement in Dry Press Mechanism an Award is Recommended.**

The above points of superiority, given the Simpson Brick Press explains the well known fact that The Simpson Brick Press Co., has more successful and money making institutions using their machines than any other dry press brick machinery concern in existence Write us for information and address,

**THE SIMPSON BRICK PRESS CO.,**

87 and 89 Washington Street,

CHICAGO, ILL.

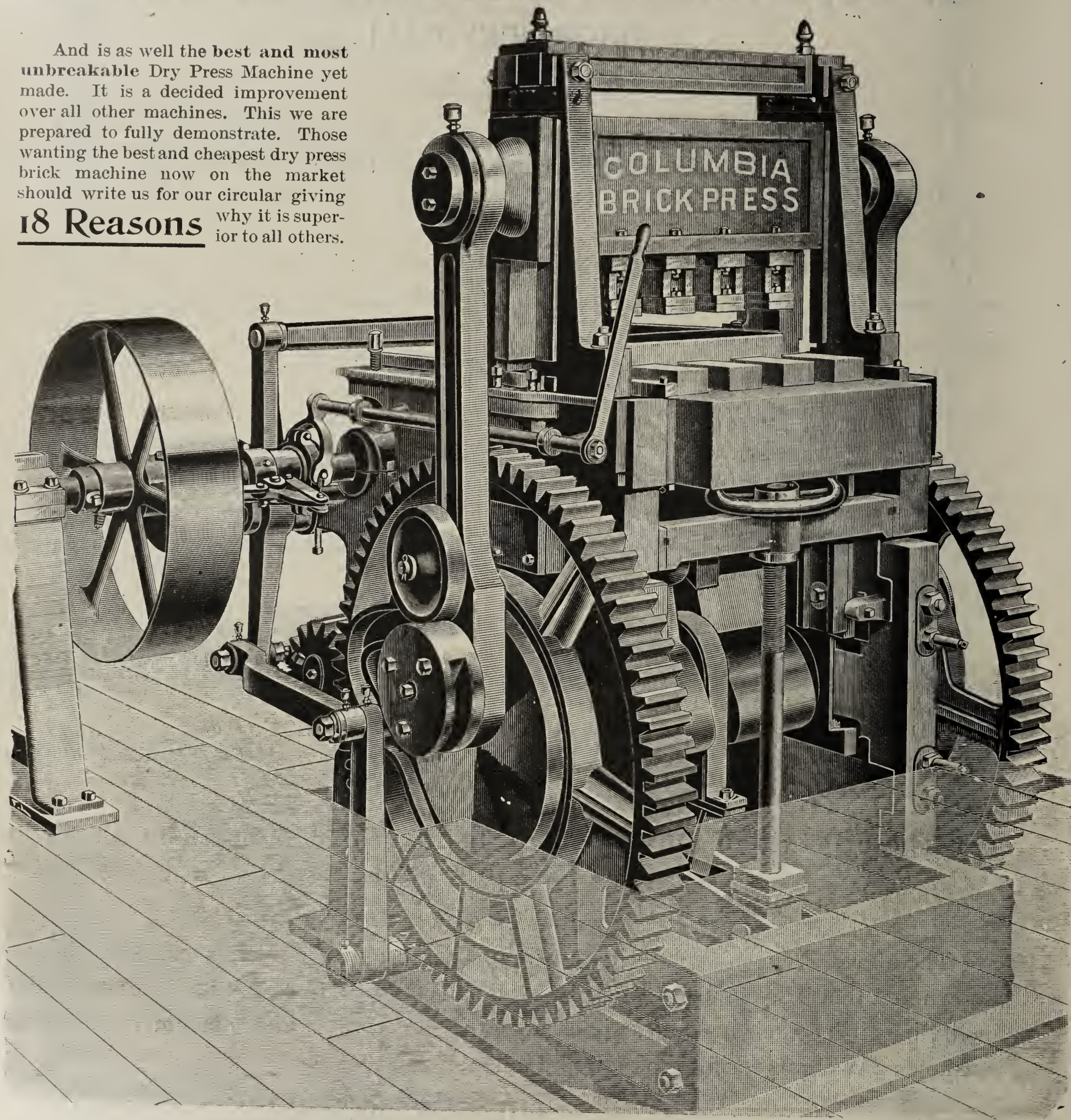


# ❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

## FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

### COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

**Refer to . . .**

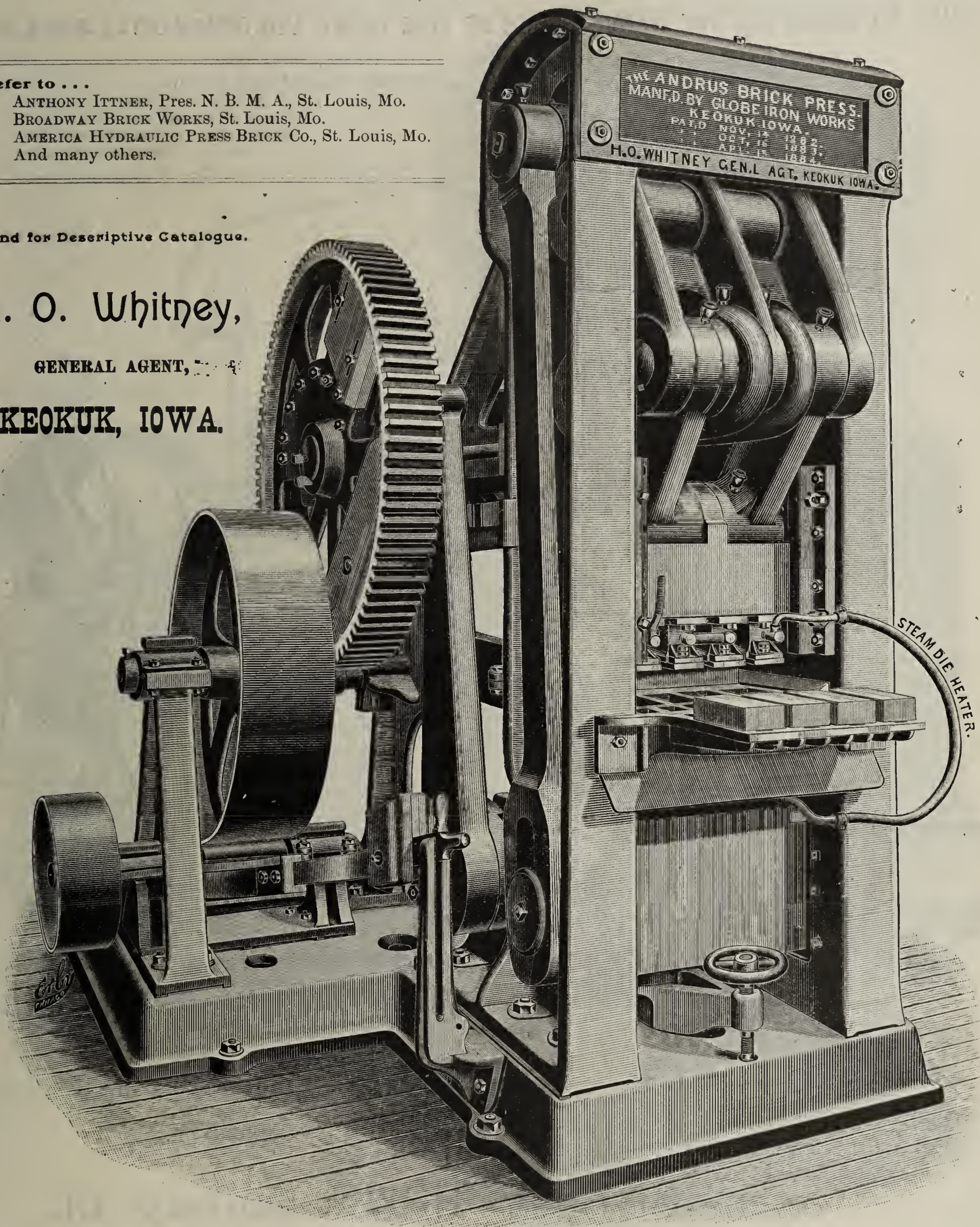
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK Co., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





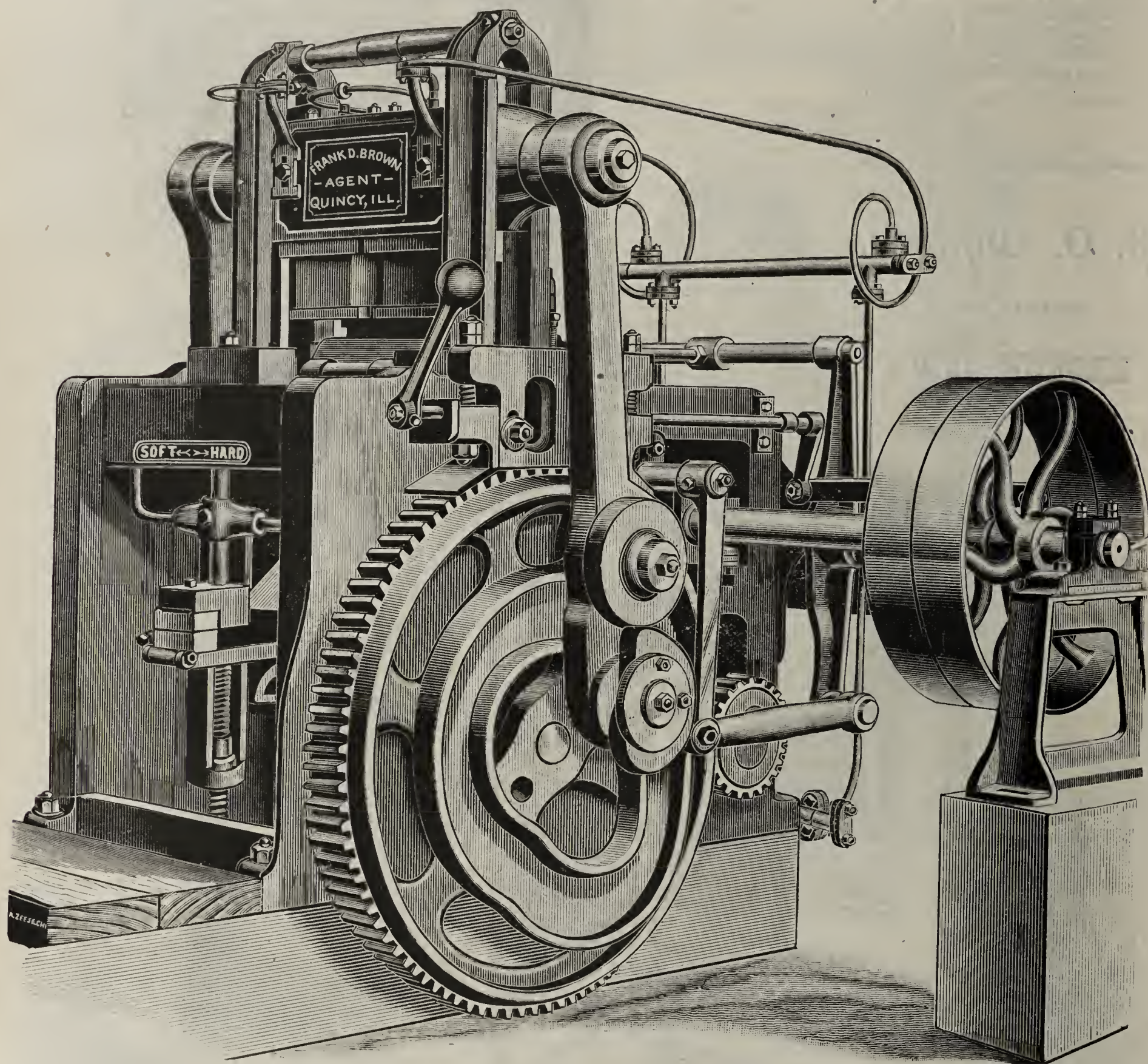
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.✧•

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.  
Will place the machine in your yard and guarantee entire satisfaction.  
Your correspondence solicited.

**FRANK D. BROWN, Quincy, Ill.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

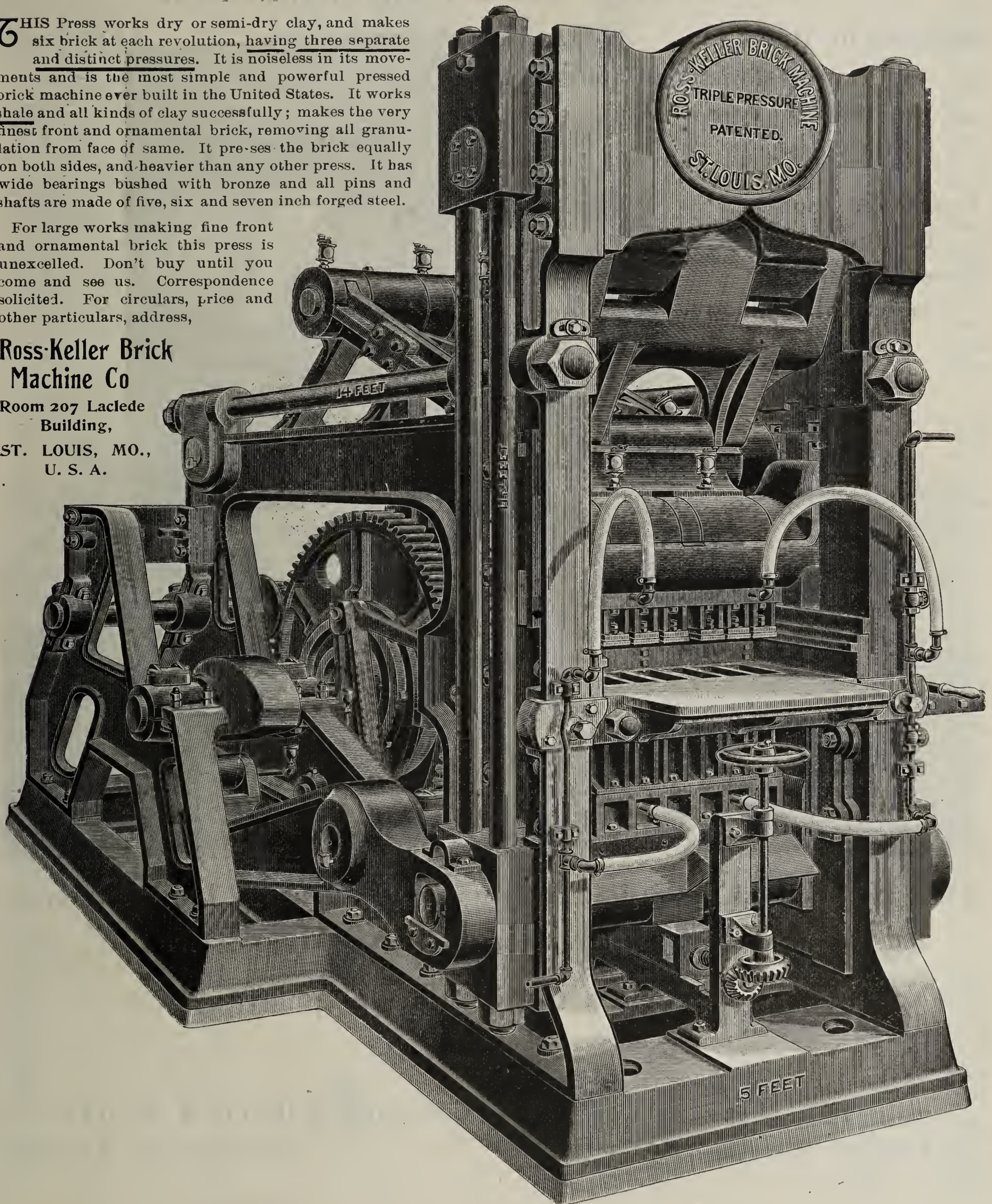
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

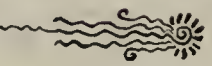
**Ross-Keller Brick  
Machine Co**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





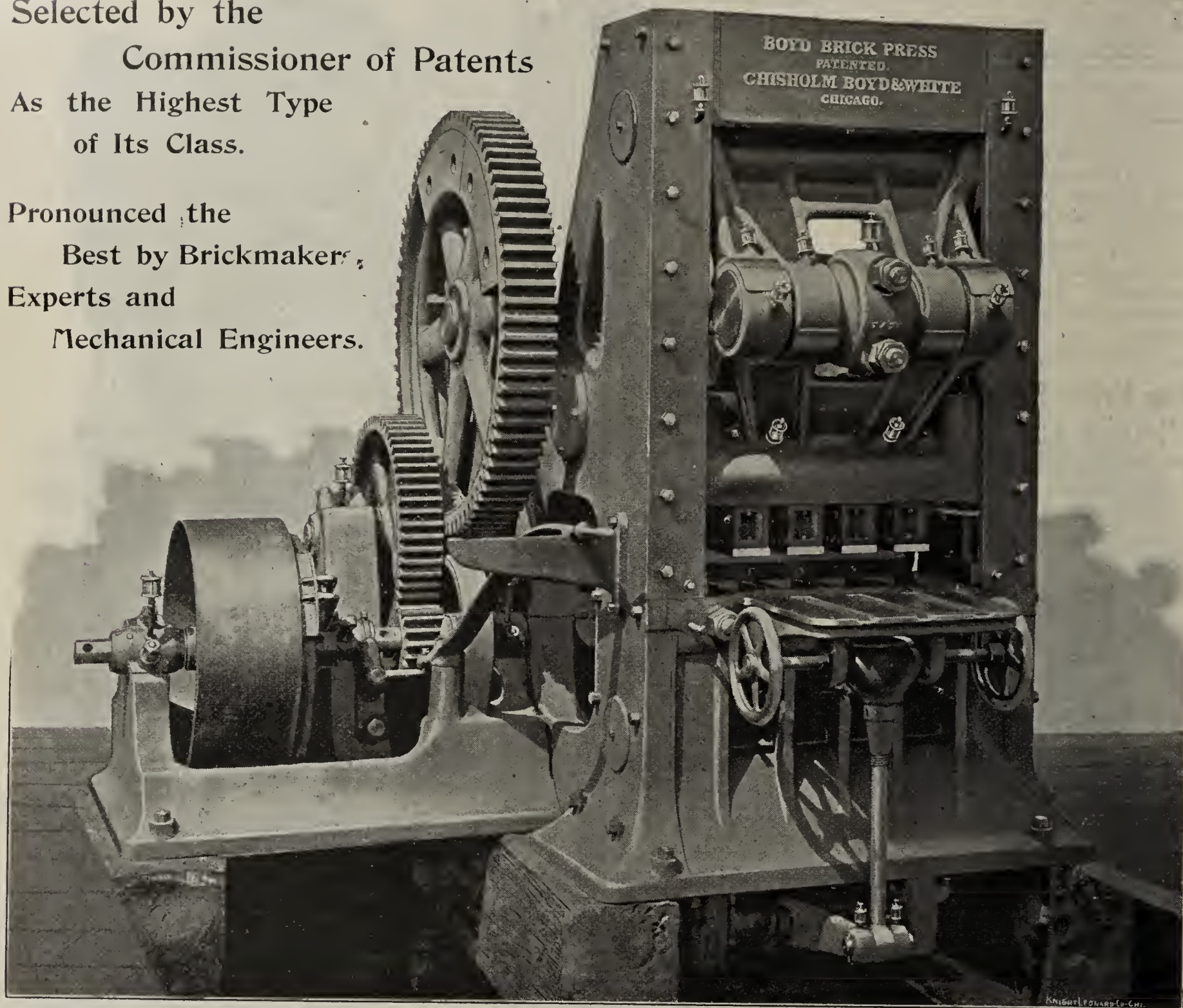
# TRIUMPH OF THE BOYD PRESS

• • • • •  ALL THE HONORS.

*AWARDED A MEDAL AND DIPLOMA.*

Selected by the  
Commissioner of Patents  
As the Highest Type  
of Its Class.

Pronounced the  
Best by Brickmakers,  
Experts and  
Mechanical Engineers.



THE BOYD BRICK PRESS IS THE ONLY AMERICAN BRICK MACHINE  
TO RECEIVE A MEDAL, DIPLOMA, OR OFFICIAL MENTION AT

✧ The World's Columbian Exposition. ✧

Monon Block:  
324 Dearborn Street.

CHISHOLM BOYD & WHITE,  
Chicago, Ill., U. S. A.



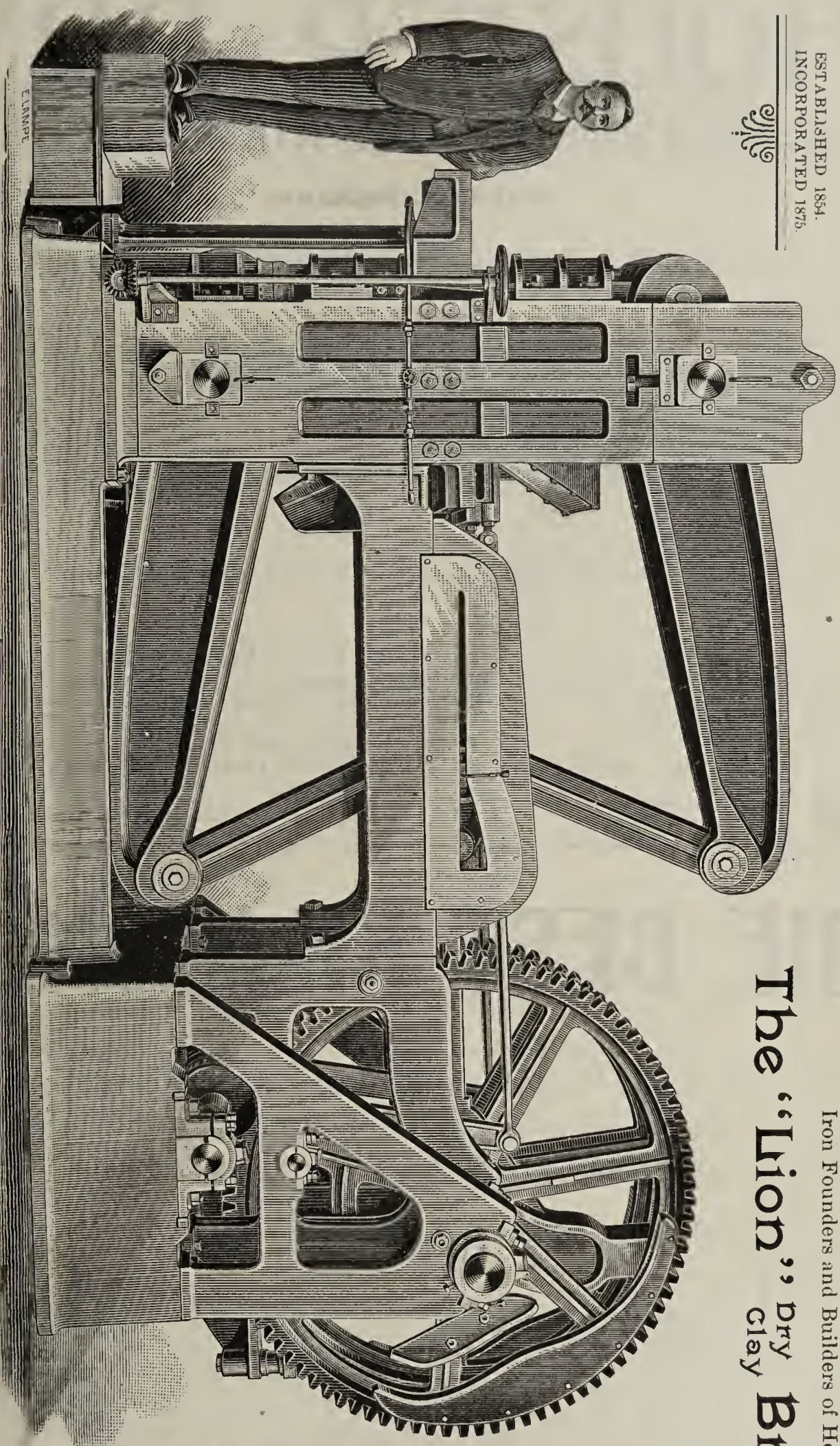
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1854.  
INCORPORATED 1876.



Iron Founders and Builders of Heavy Machinery.

## The "Lion" Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to

30,000 pressed

bricks per 10 hours

Pressure, 200 Tons on Five  
Bricks.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

**ST. LOUIS IRON & MACHINE WORKS, Main Street and Chouteau Ave., St. Louis, Mo.**

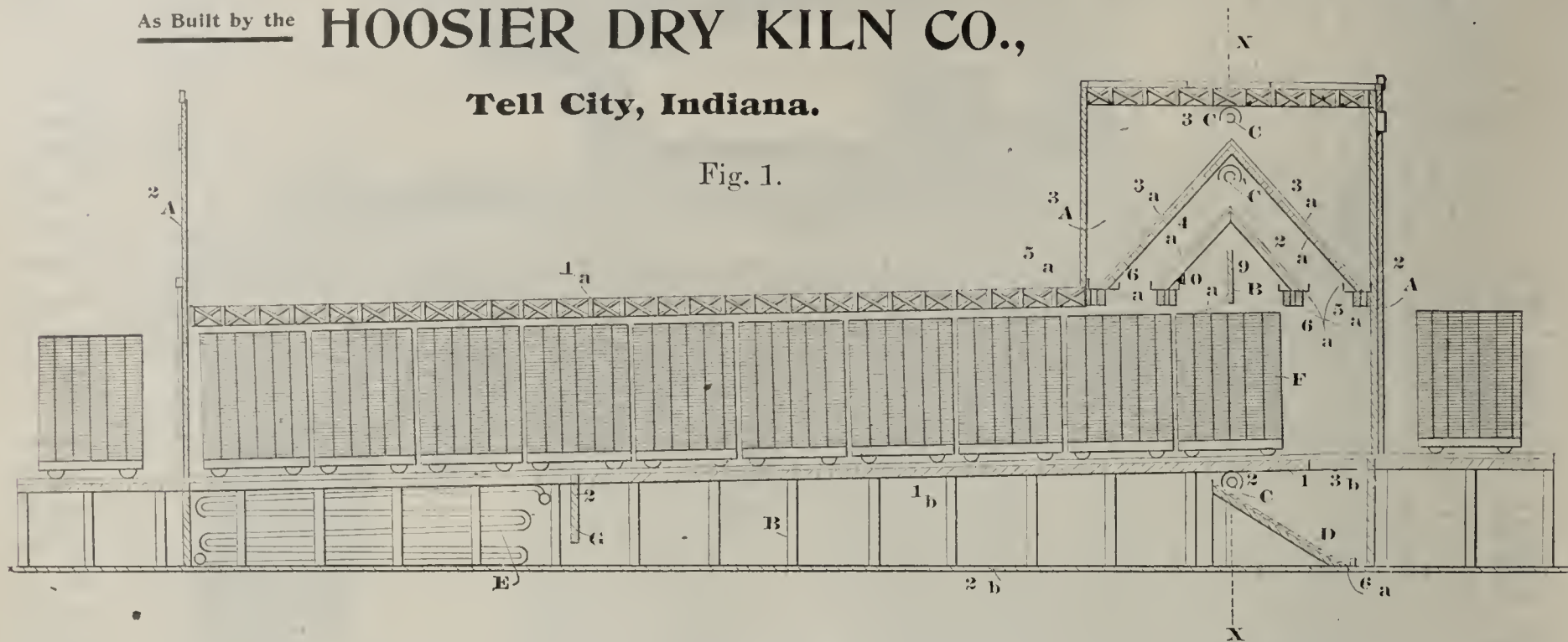


# HOOSIER DRYER,

As Built by the **HOOISIER DRY KILN CO.,**

## Tell City, Indiana.

Fig. 1.



**L**ATEST ON THE MARKET.  
**L**ITTLE IN APPEARANCE.  
**L**ARGE IN RESULTS.  
**L**EAST IN FIRST COST.  
**L**IGHT IN COST OF OPERATION.

**THE HOOSIER DRYER** in addition to the advantages indicated is constructed and operated in a manner that enables us to guarantee quicker work and more satisfactory results than any other dryer now on the market. By our system, which is covered by letter patents and which does not conflict with any former invention, we can handle clays that heretofore have defied all attempts at rapid drying. Our terms are reasonable and satisfactory results are guaranteed.

**Either Gas or Steam used for Heating.**

# THE BEST KILN ON EARTH

Is none too good, and for that reason, if you wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself :

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

ST. LOUIS, MO., Nov. 29th, 1892.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons; I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

ANTHONY ÍTTNER.

**For further information and Illustrated Circular, address,**

W<sub>M</sub>. & S. H. ALSIP.

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



# "Morrison's Improved Kiln Record"

IS NOW READY FOR DISTRIBUTION.

Success is the only positive evidence of merit.....

.....Merit without success is faith without works.

Here is a page from "The Record."

Office of SELMA BRICK & TILE CO.

SELMA, ALA., Oct. 3rd, 1893.

R. B. MORRISON & Co.,  
ROME, GEORGIA.

GENTLEMEN:—We have burned the kiln you put in for us second time and are perfectly satisfied with results. Each time we burn your kiln we save \$100 on fuel and \$50 on labor, and in saving of our arch brick and uniformity of color throughout the kiln and large increase in percentage of hard brick, we realize at least \$200 more for the 350,000 brick, making us \$350 saved each burn.

Yours truly,

SELMA BRICK & TILE CO.

For further encouragement write us for copy of "The Record." No stamp need be sent.

Brick Manufacturers, you want results! We give them in the Record of our Kiln for seven years past in all parts of the United States and Canada.

For the "Record" descriptive pamphlet, and all information desired, address,

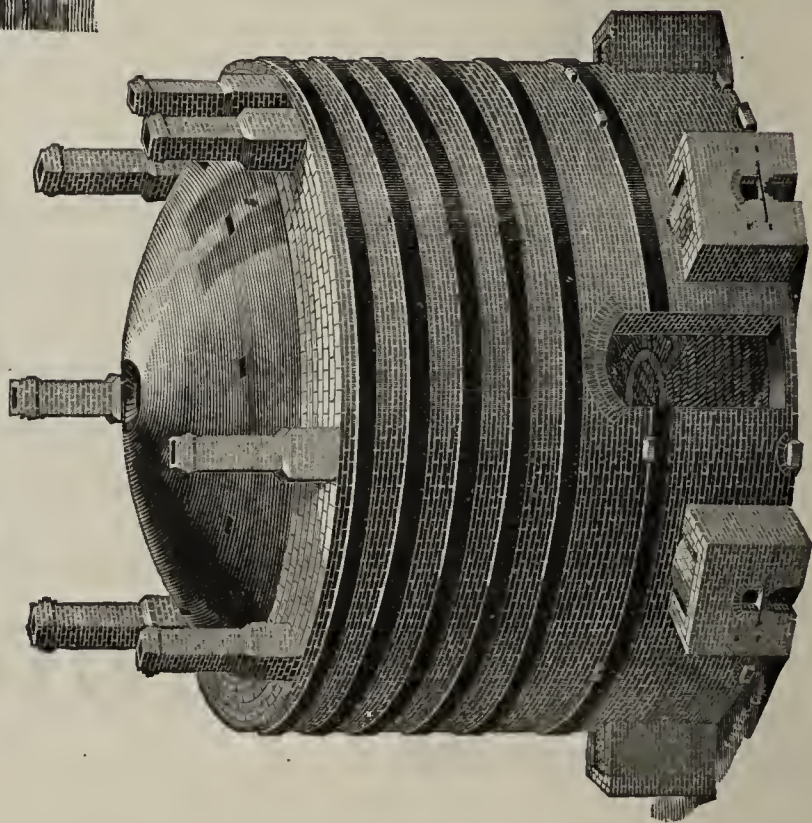
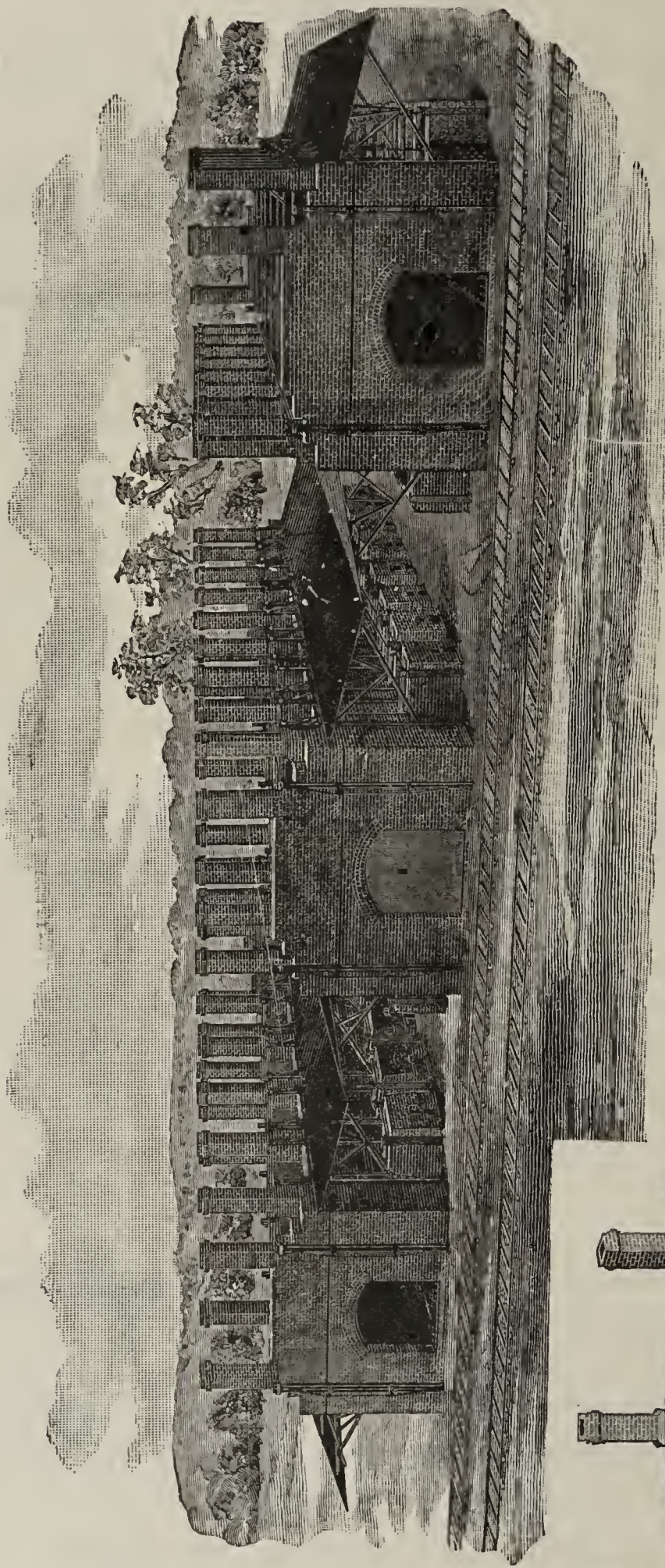
**R. B. MORRISON & CO.,**

P. O. Box 335.

Rome, Georgia, U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



## THE KILN OF THE PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.  
 It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT &amp; CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS &amp; COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

## FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.) Yours truly,

N. B.—Messrs. Carroll &amp; Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER,

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



W. H. KELSO, President.

PAUL BOEHNCKE, Treasurer.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

F. HASPER, Secretary

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

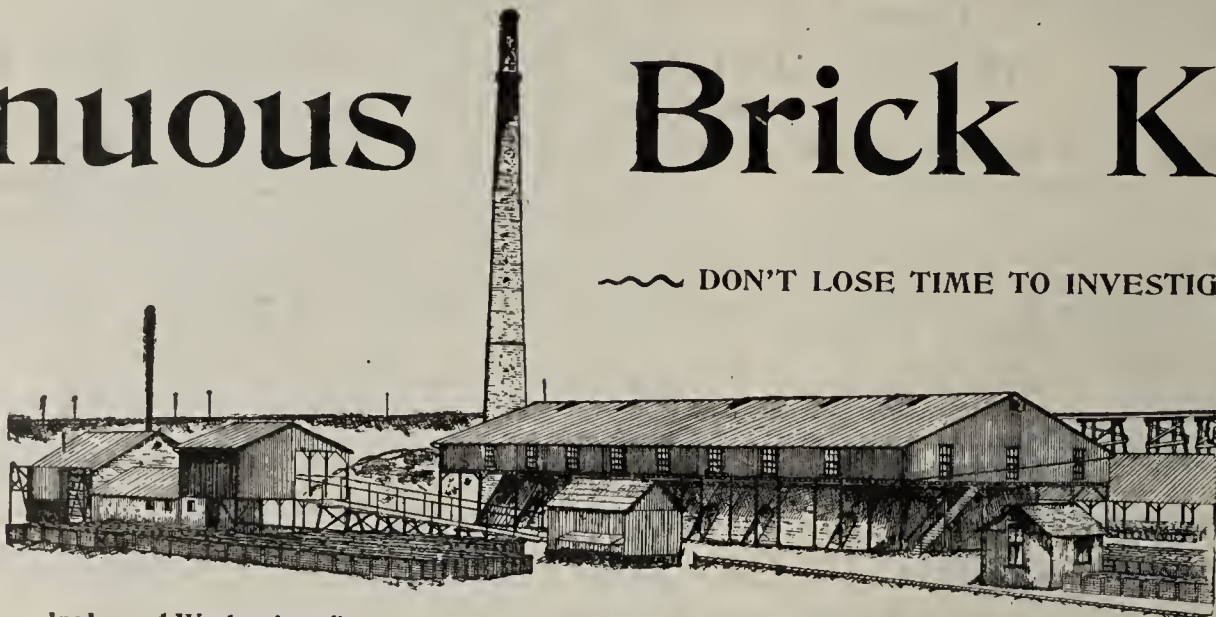
Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

## Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware  
of  
Infringe-  
ments.

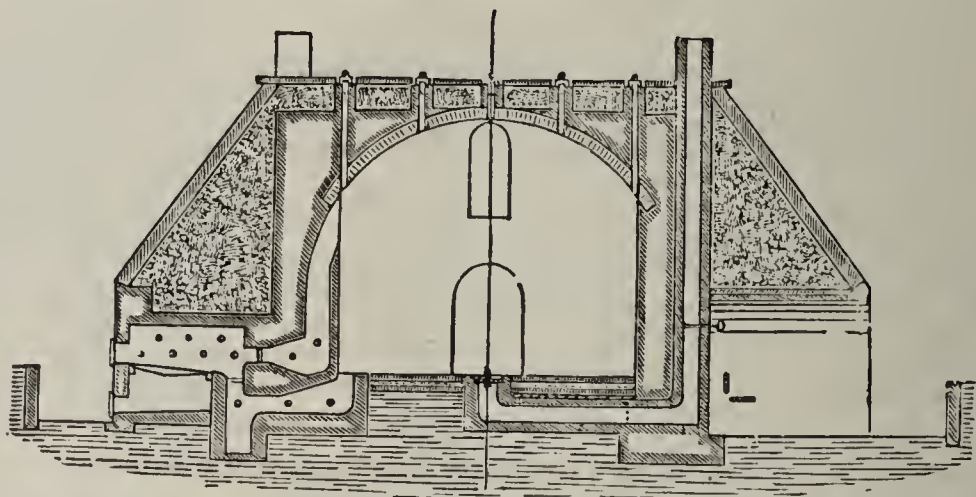
### ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,  
Box 35, Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

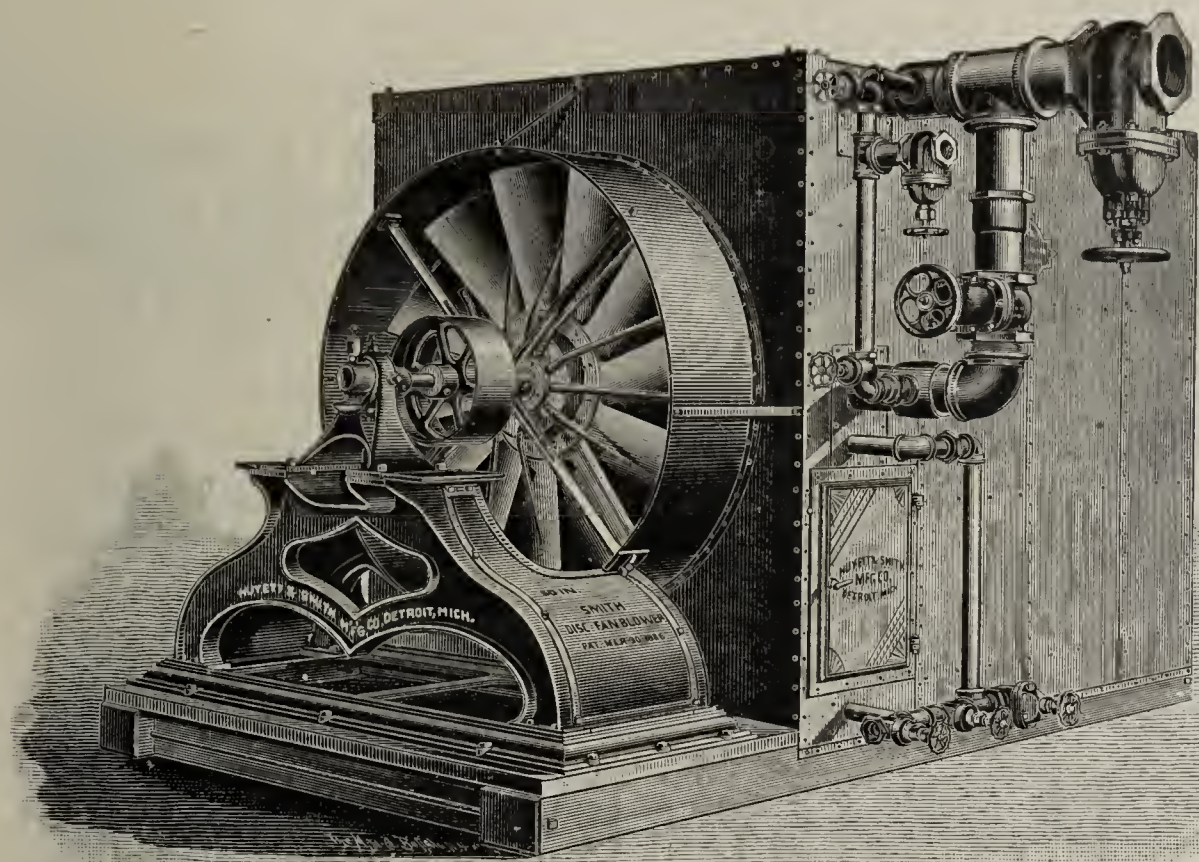
FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

does not need any extra fuel or labor in connection with continuous kilns. Write for circulars and catalogue.

We have also Boehncke's Brick Drier, which is very economical





## DON'T READ THIS

letter unless you want  
to learn of the merits of  
the

### Best Brick Dryer

on the market:

FLOOD BRO.,  
Manufacturer of

MACHINE AND HAND-MADE BRICKS

Main Yard: Old Front St.  
and Nicetown Lane.

PHILADELPHIA, PA., Oct, 6th, 1893.

Huyett & Smith Mfg. Co.,  
Detroit, Mich.

GENTLEMEN:

We are much pleased with the  
Fan and the Dryer. Not one brick has been  
cracked in the process of drying, while in  
its operation we find the Fan and Heater  
easily managed.

When we have added the other boiler  
required, we expect to get 40 and likely  
50 M daily from it. Very truly,

FLOOD BRO.

(The above plant was sold guaranteed to  
dry 30,000 daily.)

# SMITH HOT BLAST BRICK DRYER

MANUFACTURED BY

## THE HUYETT & SMITH M'F'G. CO.,

MAIN OFFICE & WORKS: DETROIT, MICH.

Among the many Brick Manufacturers made happy by the purchase of a HUYETT &  
SMITH MANUFACTURING COMPANY HOT BLAST BRICK  
DRYER are the following:

Covington Improvement Co., Covington, Va.

Flood Bro., Philadelphia, Pa.

Gunn Bros., Philadelphia, Pa.

Penn Brick Co., Philadelphia, Pa.

R. G. Eisenhart, Horseheads, N. Y.

James E. Dingee, Philadelphia, Pa.

J. M. Rumbaugh Brick Co., Greensburgh, Pa.

John A. Schmitt, Wilkes-Barre, Pa.

Montello Clay & Brick Co., Reading, Pa.

Arthur Johnson & Bro., Omaha, Neb.

Swoyer Bros., Allentown, Pa.

Geo. A. Fleming, Boston, Pa.

For full information, catalogue, plans and references write

## The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

DETROIT, MICH.

NEW YORK, 107 Liberty Street.

CHICAGO, 31 South Canal Street.

BOSTON, 48 Union Street.

.....BRANCHES.....

PHILADELPHIA, 118 Custom House Place.

LONDON, ENGLAND, 13 Little Trinity  
Lane, E. C.





“NOW falters to its end a wondrous year,  
Crowned with strange lights of glory and of woe,  
Splendors of memory, and prophetic glow,  
And all that makes life terrible and dear.”

Clayworkers, true, have diverse fortunes met,  
But all may profit by the times gone by,  
And when again the New Year's sun is set  
May all their deeds bring joy exempt from sigh.

## Holiday Rejoicings

While now in order, will not deter the practical Brickmaker from considering the lessons of the past and possibilities of the future. Indeed, mature reflection before embarking on the coming business tide of '94 is a preliminary essential to success.

Possibly, the year's events have demonstrated the necessity of wiser economy, better system, faultless machinery and appliances—especially in drying—and now, while planning for next season, it would be a profitable use of the time required to investigate the merits of

## THE STANDARD PATENT BRICK DRIER.

It is the most improved, practical and economical Drier to be found, and for the moderate expenditure needed, will prove a good, paying investment ere the Holidays return.

Write for Illustrated Catalogue No. 15.

# The Standard Dry Kiln Co.,

General Office and Salesrooms, 923, 925 W. Main Street,

LOUISVILLE, - KY.



# THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XX.

INDIANAPOLIS, IND., DECEMBER, 1893.

No 6.

Written for the CLAY-WORKER.

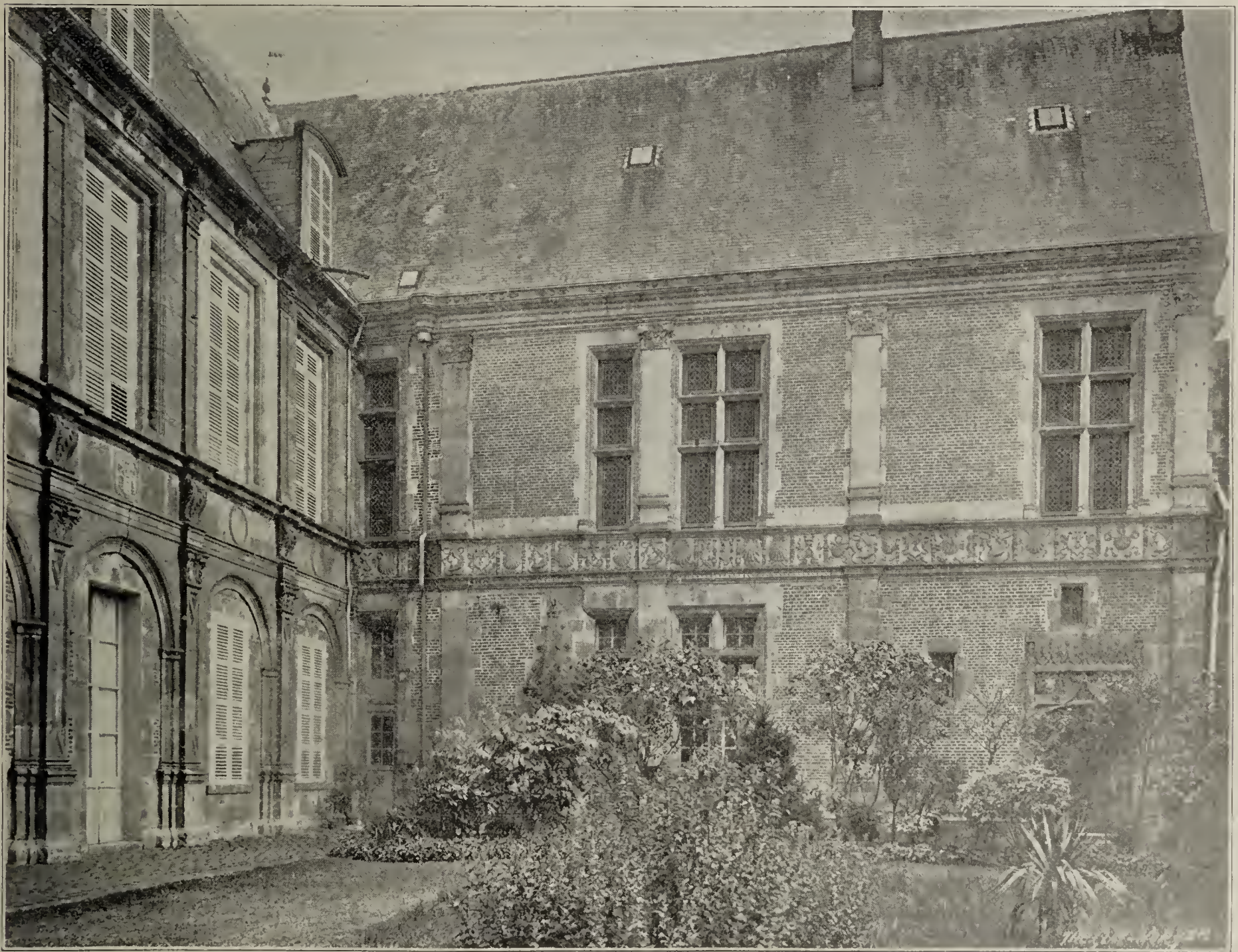
## SPECIMENS OF ANCIENT BRICK CONSTRUCTION.

### Palace of the Archbishop of Sens.

THE history of the religious architecture of Sens dates back to the ninth century. The palace of the Archbishop was constructed about the middle of the sixteenth century. The lower and the upper part is a mixture of brick and stone. No bet-

ter illustration could be selected to show what fine detail may do for a structure. The proportions, the general outlines, but for the refinement of detail, would give to this building a veritable warehouse appearance. The plain surfaces below, the band at the first story, the pilasters of the second story and their close connection with the low cornice crowned by an almost overpowering roof, present features, which, would have made a building that certainly would

not have come down in history to the present time, as one of the great historic monuments of France if the detail had not been handled thus skillfully. This is the great feature of this illustration. A very ordinary outline is decorated by the hand of the artist and we have a superb structure. There are very few buildings of to-day but which could be made beautiful without changing their present outlines by a mere refinement of detail. A study of this illustration



PALACE OF THE ARCHBISHOP OF SENS, FRANCE.

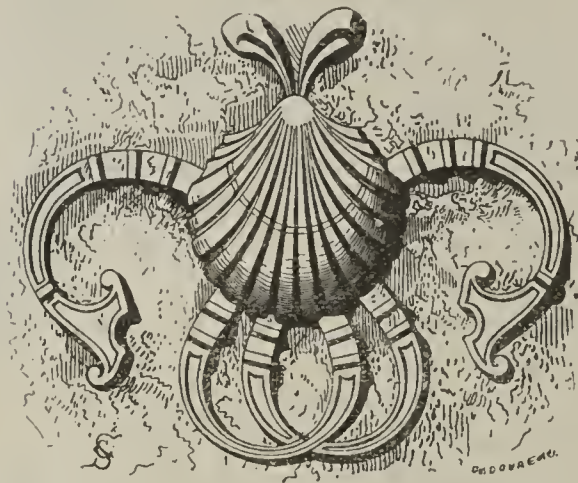


will show exactly what is meant. The moldings are happily conceived and delicately executed, the surfaces, at proper intervals, are skillfully treated by the sculptor. Beautiful forms came to his mind and from the ends of his chisel they took permanent form on the building.

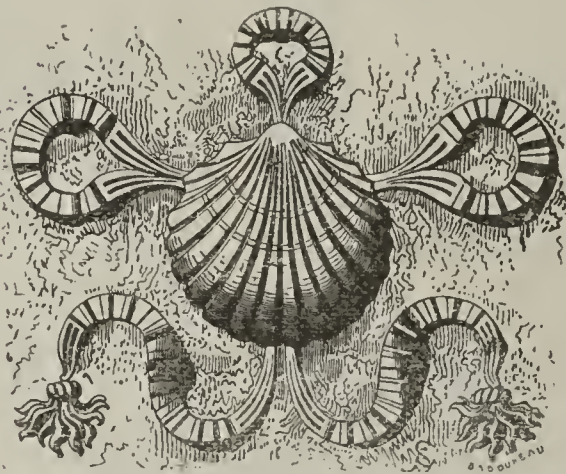
Something has been said recently, in a journal which gives consideration to clay work, about the character of the decorated brickwork furnished by the establishments engaged in that business. It speaks truthfully of the crudeness and commonness of most of the molded forms now so common. The manufacturers, in turn, reply that they are disposed to make brick from such designs as are furnished them, and they thus excuse themselves. This is not enough. The manufacturers of ornamental brick can do better than this. They can do what one establishment in the East has already done,—employ artists to design regular stock forms and give to the world something of more merit than the ordinary forms now in vogue. If the builders of the Palace of the Archbishop of Sens had had to depend upon the stock products of our pressed brick manufacturers, that structure would not have been preserved to the people of the present day, with its common outline and its very ordinary features of composition, crude details would long since have caused it to be obliterated. As it is, however, we have a structure superbly decorated without an ugly line, and one which contains lessons for all ages.

It is upon this feature of fineness of detail, elegance of decoration, that we must depend for success in our architecture. As we have said before, the American people have structural forms which are peculiar to them. We have arranged our buildings in a manner suited to our peculiar requirements. All that we have to do to develop our own American architecture is to decorate this construction, to decorate these buildings properly. So long as we continue to be careless in this matter, to use a caricature of good forms to hastily cover with unstudied details the construction and arrangement which we have so admirably worked out, we will fail of the proper individual result due to the efforts of our people. In looking towards an American architecture some of our designers have undertaken to work it out through the introduction of individual decorative features. A distinctive style in architecture has never grown

in this way. The old round arch gothic architecture had its peculiar form of construction. Yet it was clothed with many of the Roman details. The details of the gothic architecture departed from, yet grew out of, certain of the decorative features of the round arch gothic. They were yet more refined and the result correspondingly satisfactory. The archi-



ture of the renaissance which began after the gothic structural forms had lost their original significance carried the spirit of the original gothic with it, while at the same time it resurrected certain of the details of the older Roman architecture. We could use decorative forms from this palace, work them into terra cotta, surround our iron work with it and thus help to make a beautiful characteristic American architecture. Changes in constructive forms may come very rapidly through changes in the physical requirements of the people; but changes in decorative forms, in



so far as they come through the origin of new features, are always slow, and the movement from one character of detail to another is gradual. We cannot expect to originate much that is new in the way of decorative forms. There is much that is beautiful to be had and there is no reason why it should not be absorbed.

The patterns of brickwork in connection with stone which are here indicated are worked out with bricks slightly

darker than those which form the body of the wall. The result of this method is clearly established.

We here give a few of the details of decoration which belong to this palace and trust that by so doing we emphasize what we mean in saying that this structure is lifted above the ordinary and into the realms of the truly beautiful through the study and refinement of the decorative forms. LOUIS H. GIBSON.

#### THE COMING CONVENTION.

The Convention of tile and brick-makers and users to be held January 3 and 4 in this city should be well attended. Those interested should put themselves in touch with others alike interested. No one should think for a moment that he has learned all about the business, and stay at home. If such an one should come, he is likely to find that men of very modest pretensions have learned something that is valuable and by which they may profit, which they have not dreamed of.

Don't come with the idea that you know it all, and will keep what you know, but come with the purpose fully fixed in your mind to give and take information.

Those who have given their time and thought to the business for a long time, need the recreation the change, of thought and the company of others who can and will be helpful to them.

The papers so far provided for, cover important fields for thought and practice, and it will be encouraging to all to have a large attendance. The following is a partial list of papers to be read:

#### PROGRAMME.

"Farm Drainage," Prof. W. C. Latta, Layayette, Ind.

"A Glance Backward," M. C. Dawson, Rushville.

"Drainage of Marshes," Wm. M. Whitten, South Bend.

"Drying and Burning Clays," Windfall Manufacturing Co., Windfall.

"Manufacture of Drain Tile and Brick," F. E. Dickinson, Wolcottville.

"Burning Tile," W. E. Dawson, Colfax.

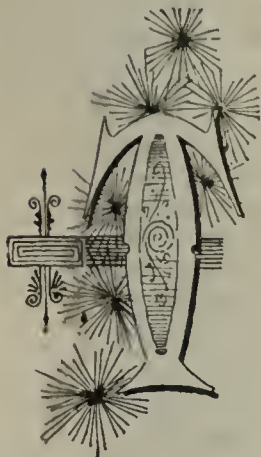
"Making Large Tile," Samuel Cowgill, Summittville, Ind.

Those attending the Convention will please get a certificate at the ticket office where they start, certifying that they pay full fare coming, which will be stamped if presented in the office of the Secretary of the State Board of Agriculture, January 3rd and 4th, which will entitle them to return at one-third fare.



## THE MANUFACTURE AND USE OF PAVING BRICK.

BY DANIEL W. MEAD.



THE generic term brick includes within its meaning classes of material of such wide variations in their particular qualities as to need a more definite classification when considering the adaptability of such classes to particular purposes. So, when we consider a certain class of this material for street paving it must not be confused with other classes manufactured for other purposes and perhaps entirely unfit for this particular use. These manifold qualities of brick are due partially to methods of manufacture, but more largely to greatly diversified qualities of the clay from which the brick are made.

## OCCURRENCE AND DISTRIBUTION OF CLAYS.

Clays may be classed as to their origin and occurrence as follows: (1) Residuary clays result from the disintegration of rocks in place. The soluble and binding materials are leached out and washed away and leave the insoluble materials in a more or less divided form as clay. This takes its character of the rock from which it is derived, modified by the action of water. Some of the purest clays are derived in this way from feldspathic rocks from which the alkalis have been leached, leaving a clay closely resembling kaolin (pure clay). Other less pure clays are derived from the disintegration of limestone, sandstone, etc.; in each case, however the soluble constituents are almost entirely gone, leaving the insoluble silicates, quartz grains, alumina and ferric oxide. Clays Nos. 1, 2 and 3 in Table I. are examples of this class of clays. (2) Drift clays are the result of the mechanical action of the ice during the glacial period, by which the various formations were ground up and mechanically transported and redeposited largely without the aid of water. These clays represent the character of the mother rock much more accurately than those of class 1, as in this case the soluble matter is largely retained and not leached out, except by the action of the water, since their deposition. (3) Alluvial clays are residuary and drift clays rewrought and redeposited by fluvial agencies. (4) Indurated clays, or argillaceous rocks and shales, are formations resulting from the disintegration of the earlier rocks by various influences and their re-formation into new strata. They have usually been subjected to great pressure from the superincumbent rocks, to which pressure they owe their physical character to a large extent.

Of these four classes, the residuary clays (class 1) are found wherever rocks and the result of their disintegration have been undisturbed by fluvial or drift influences, and are hence found largely outside the drift areas. The clays of class 2 are found within the drift sheet and constitute the common brick clays of the Northern States. Those of class 3 occur along the various river courses; while those of class 4 occur in the many geological horizons, which we may briefly summarize as follows, beginning with the oldest and lowest geological horizon: (a) In Utica slate as a dark carbonaceous clay slate, hard in Pennsylvania, soft in New York, sometimes imbedded with impure limestone. (b) In the Hudson river shale as shales and shales more or less interbedded with limestone (over 5,000 feet thick in Penn-

sylvania and 200 feet thick in Illinois). (c) In the Salina (or Onondaga salt group) as a red shale (in New York State, from 1 to 500 feet thick). (d) In the Devonian as the Marellus shales, a black slate, somewhat bituminous. As the Hamilton group, consisting of shales, shales and sandstones, 300 to 700 feet thick; as the Genesee formation, the black slate of the west and south; as the Portage group, consisting of shales and flagstones; as the Chemung group, consisting of thin bedded shales, sandstones and flagstone. (e) In the Carboniferous in which are developed the most extensive beds, of fireclays, potters' clays, shales, soapstone, etc., interbedded with sandstone, limestone and coal. (f) In the Triassic, which usually consists of dark sandstones, soft shales and coarse conglomerate. (g) In the Cretaceous and Tertiary, which consists of earthy formations of sand and clays.

Of the deposits of clay above named, the clays from the carboniferous period are most widely utilized for the manufacture of paving

hydrous silicate of alumina, known as kaolin, which, according to Prof. G. H. Cook, is composed of:

|              |        |
|--------------|--------|
| Silica.....  | 46.3   |
| Alumina..... | 39.8   |
| Water.....   | 13.9   |
|              | 100.00 |

This may be considered a pure clay, and is rarely, if ever, found in nature. To this is commonly added in varying quantities, silica, lime, magnesia, ferric oxide, potash and soda. The presence of these substances, which may be regarded as the impurities of clay, and the physical condition under which they exist, cause the wide variation in the clays themselves and to a great extent in the manufactured product made therefrom.

## CHARACTER DUE TO CHEMICAL CONSTITUTION.

Pure alumina will resist the highest temperature of the blast furnace, in which crystalline (quartz silica) will be only slightly affected, both being practically infusible. Alumina



MAP SHOWING LOCATION OF PAVING BRICK CLAY DEPOSITS AND CITIES MANUFACTURING AND USING BRICK PAVING.

brick. At Columbus, Ohio, the Devonian shales, or the product of their disintegration, is utilized, while at Syracuse the Salina shale is found available. Some few drift clays are also successfully used for the manufacture of a fair quality of paving brick, notably at Decatur, Jacksonville and Urbana, in Illinois. A mixture of drift clay and carboniferous clay is utilized at Brazil, Ind., for the manufacture of paving brick. The accompanying map shows the distribution of the carboniferous deposits east of the Rocky Mountains and also the outline of the drift area. It also shows the location of the principal paving brick factories and the principal cities which are now using this material for paving within the territory shown.

## CHARACTER OF CLAYS.

As may be judged from its wide occurrence and manifold compositions, clay varies widely in its extreme characters; but all materials to be classed as clays must have certain constituents in common. The essential ingredient is a

shrink, warps and cracks greatly in drying but gives plasticity and adhesiveness to the clay and strength to the product. Silica prevents cracking and distorting, the more silica being present the less the shrinkage. But the more silica the less plasticity and adhesiveness of the clay and the less strength and greater brittleness. Lime and magnesia, while infusible in themselves or with alumina, fuse in the presence of an excess of silica, as do also several other common ingredients of clay, and form a "vitrified brick."

It is found that potash has the most active fluxing effect on clay, after which follow soda, lime, magnesia and iron, in the order named. To "vitrify," a clay should contain at least 3 per cent. potash, or  $3\frac{1}{2}$  per cent. of soda, or 5 per cent. of lime or magnesia, or 8 per cent. iron, or a combined proportion of any or all of these fluxes equal to these amounts. An appreciable less amount of these fluxing elements will leave the product more of the nature of a firebrick, unvitrified and porous, and, as a rule unfit for paving purposes. A greater propor-

Abstract from a paper read before the International Engineering Congress at the World's Columbian Exposition.



tion than above specified is desirable, and will make the clay more easily vitrified at a less heat, and is to some extent a measure of its economic manufacture, as a lower heat and consequently less fuel will be required in its burning. Too great an amount of these fluxes, amounting, perhaps, to three times the quantities above mentioned, will render the clay hard to handle on account of great fusibility. According to Richter, lime and magnesia are more active fluxing agents than potash and soda, but his conclusions do not agree with American experience. The presence of lime or magnesia in a paving brick in reasonable quantities is not believed by the writer to be detrimental to the brick if it exists in a finely divided state and is intimately commingled with the other constituents, so that a silicate of lime or magnesia will be formed in the burning. The Milwaukee building brick is one of the best of common brick, and it contains a large percentage of lime, and Portland cement contains often as high as 60 per cent. of lime. In each case, however, the lime exists in close chemical or physical union with the other elements of the material.

Iron in considerable quantities has a fluxing effect with silica and to this extent cements it together and gives it strength. It is not the most valuable of constituents in this regard, however, and its presence is not essential to a first-class paving brick. Iron, when present, is usually in the form of hydrous peroxide or protoxide of a yellowish or bluish color. During the burning, the water of crystallization is expelled and the iron takes the form of the red peroxide, giving its color to the material in proportion to the amount present. Potash and soda fuse at a lower temperature than the other constituents of clay, and their presence in suitable quantities is desirable for the manufacture of vitrified paving brick.

In Table I. the analysis of various paving brick clays are given with that of some other noted clays for comparison. These analyses have been compiled from a variety of sources too numerous to be mentioned in detail.

#### CHARACTER DUE TO PHYSICAL CONDITION.

The influence of physical condition is equally important to that of chemical character.

Many of the clays from the older formations have compressed and consolidated and form slates and other hard argillaceous rocks; others less compact form the shales, while others exist in a plastic form. There is a marked difference in their adaptability for manufacturing use under these varying conditions, and the methods of manufacture must be largely determined by them. If a clay is not found naturally in a plastic condition, it must be reduced to a finely divided state by mechanical means before it can be tempered and made into paving brick. While as previously noted, the fusing of clay depends on its constituents to a great extent, yet its physical condition also modifies this quality largely. Coarse clay, even with considerable of the fluxing materials, will resist considerable heat. The more finely clay is ground the more easily it is vitrified and the tougher, stronger and more impervious its produce becomes. Fineness in grain is an essential feature of the best paving clays.

The ingredients of the clay exist in various forms which affect the clay and its product. The uncombined silica may be more or less finely divided and its condition has its effects on the action of the fluxes. In clays derived from feldspathic or micaceous rocks, undecomposed feldspars and micas sometimes occur. Lime, instead of being finely divided, may occur as lumps or pebbles, in which condition it will unite with the other ingredients only on its surface, the balance burning into caustic lime, which, on exposure, will gather moisture and slack, disintegrating and crumbling the brick. In general, a clay which will fuse and vitrify, but keep its shape, is essential to the manufacture of the best paving brick. Analysis and physical examination will point out the probability of the development of certain characteristics in the manufactured product, but, after all is done, the only thorough test is the working of the clay by suitable methods and its proper burning.

#### THE MANUFACTURE OF BRICK.

The greatest diversity, both in the mechanical and chemical constitution of clays, renders the question of method of manufacture a difficult one, for the knowledge of the successful

utilization of one clay is not wholly applicable to another. All clays are improved by being loosely thrown up and exposed to the weather, and some clays are improved by thoroughly wetting and allowing them to lie for a day or more. The nearer homogeneous and fine grained a clay naturally occurs, the fewer processes necessary in handling it.

The soft mud process is used only to a very limited extent in the manufacture of paving brick, Bloomington, Ill., being the only place familiar to the writer where this process is still used. The dry press process of brick manufacture has not as yet come widely into use for the manufacture of paving brick, although certain clays might be worked by this method, and the writer understands that some paving brick are being made at Middleport, Ohio, and Louisville, Ky., by this method, although he has not seen them. What is known as the stiff mud process is the one usually adopted for the manufacture of paving brick and seems to be the best adapted for the present circumstances of its manufacture.

The clay, if indurated, is first reduced to a powder, usually by means of the granulator or dry pan, and then thoroughly tempered in a suitable pug mill before passing to the brick machine. As a rule, the longer and more thoroughly the clay is worked or tempered, the more uniform and better will be the resulting product. The auger machine has given the best satisfaction in the manufacture of stiff mud brick, and the machine makers of the United States have adopted this type of machine almost universally. On leaving the machine, the brick manufactured by this process are dry enough to handle, and they are placed on trucks or cars and conveyed at once to the dry-house. Some makers re-press there brick before drying, but it is not common practice at present, although many factories furnish both common and re-pressed paving brick.

#### DRYING.

Several systems of drying are in successful use among the paving brick manufacturers: (1) By a hot floor, which may be produced by furnaces or steam pipes under the floor over which the brick are hauled to dry. (2) By slatted floors under which are steam piping

TABLE I.—SHOWING ANALYSES OF PAVING BRICK CLAY FROM VARIOUS LOCALITIES.

|                                      | Silica. | Alumina. | Perox. of iron. | Protox. of iron.      | Lime. | Magnesia. | Potash.                       | Soda.                        | Water and loss. | Undetermined.                               | Total. | Geological source of clay. |
|--------------------------------------|---------|----------|-----------------|-----------------------|-------|-----------|-------------------------------|------------------------------|-----------------|---------------------------------------------|--------|----------------------------|
| Kaolin.....                          | 46.30   | 39.80    | .....           | .....                 | ..... | .....     | .....                         | .....                        | 13.90           | .....                                       | 100.00 | Pure clay.                 |
| Stonebridge, Eng.....                | 67.34   | 23.03    | .....           | 2.03                  | ..... | .....     | 1.38                          | 1.38                         | 8.21            | .....                                       | 102.02 | Fire clay.                 |
| Mt. Savage, Md., }<br>non plastic. } | 50.16   | 35.90    | .....           | 1.50                  | 0.13  | 0.02      | Nil                           | Nil                          | 12.71           | { Mang. oxide trace. Carb. of lime, 23.20 } | 100.75 | " "                        |
| Milwaukee (white) brick.....         | 38.22   | 9.75     | 2.81            | 1.16                  | 3.24  | 15.83     | 2.16                          | 0.65                         | 2.80            | { Sulphur, 0.89 }                           | 99.85  | Drift clay.                |
| Phillipsburg, N. J.....              | 56.78   | 17.38    | 6.50            | { Phosphorus, 0.133 } | 4.14  | 3.15      | { and organic matter, 3.427 } | { and carbonic acid, 7.600 } | .....           | { Sulphur, 0.89 }                           | 99.910 |                            |
| Syracuse, N. Y.....                  | 67.67   | 11.67    | 6.53            | .....                 | 12.74 | 0.95      | 0.80                          | 0.80                         | .....           | .....                                       | 100.36 | Salina shale.              |
| Cumberland, W. Va.....               | 69.02   | 22.07    | 4.53            | .....                 | 1.70  | 0.38      | 1.34                          | 1.34                         | .....           | 0.96                                        | 100.00 | Carboniferous.             |
| New Brighton, Pa.....                | 67.36   | 22.05    | 5.61            | .....                 | 0.86  | 0.36      | 2.70                          | 2.70                         | .....           | 1.06                                        | 100.00 | "                          |
| Canton, O.....                       | 67.65   | 18.36    | 8.34            | .....                 | 0.80  | 1.02      | 2.58                          | 2.58                         | .....           | 1.25                                        | 100.00 | "                          |
| New Lisbon, O.....                   | 64.08   | 25.32    | 5.44            | .....                 | 0.30  | 0.29      | 0.63                          | 0.63                         | .....           | 3.91                                        | 100.00 | "                          |
| Middleport, O.....                   | 71.57   | 17.06    | 8.34            | .....                 | 0.50  | 0.58      | 0.56                          | 0.56                         | .....           | 1.39                                        | 100.00 | "                          |
| Brazil, Ind.....                     | 77.67   | 14.77    | 3.63            | .....                 | 0.38  | 0.27      | 2.43                          | 2.43                         | .....           | 0.85                                        | 100.00 | " and drift                |
| Columbus, O.....                     | 66.30   | 18.62    | 9.78            | .....                 | 0.40  | 0.84      | 1.89                          | 1.89                         | .....           | 2.17                                        | 100.00 | Devonian shale.            |
| Akron, O.....                        | 60.05   | 20.00    | 6.82            | .....                 | 0.52  | 0.45      | 1.79                          | 1.60                         | 1.95            | { Sulphur, 1.95 }                           | 101.11 | Carboniferous.             |
| Haydensville, O.....                 | 72.24   | 16.87    | { Iron 0.16 }   | .....                 | 0.50  | trace     | 1.09                          | 1.09                         | 5.14            | .....                                       | 100.00 | "                          |
| Zanesville, O.....                   | 61.80   | 20.76    | 8.70            | .....                 | 1.38  | 1.09      | 1.11                          | 1.11                         | .....           | 1.83                                        | 100.00 | "                          |
| Robbins, Tenn.....                   | 70.57   | 15.19    | 7.97            | .....                 | 0.78  | 0.32      | 1.15                          | 1.15                         | .....           | 4.02                                        | 100.00 | "                          |
| Rock Island, Ill.....                | 60.64   | 22.81    | 6.10            | .....                 | 0.24  | 0.75      | 3.28                          | 0.57                         | 5.00            | .....                                       | 99.42  | Carboniferous.             |
| Galesburg, Ill.....                  | 68.69   | 17.95    | 7.25            | .....                 | 0.76  | 1.47      | 2.83                          | 2.83                         | .....           | 1.05                                        | 100.00 | "                          |
| Ottawa, Ill.....                     | 52.96   | 33.47    | .....           | 4.51                  | 3.01  | 2.91      | 1.10                          | 1.10                         | 2.74            | .....                                       | 100.00 | "                          |
| Clinton, Ia.....                     | 75.50   | 13.04    | { Iron 1.00 }   | .....                 | 0.50  | .....     | 4.50                          | .....                        | 3.00            | .....                                       | 100.90 | Hudson River shale.        |
| Burlington, Ia.....                  | 77.40   | 11.74    | 3.29            | .....                 | 1.60  | 1.91      | 3.76                          | 0.47                         | .....           | .....                                       | 100.17 | Carboniferous.             |
| Bloomington, Ill.....                | 67.80   | 11.55    | 4.31            | .....                 | 8.90  | 5.32      | 2.62                          | 2.62                         | .....           | .....                                       | 100.00 | Drift clay.                |
| Ft. Smith, Ark.....                  | 57.19   | 23.74    | 8.18            | .....                 | 0.53  | 1.04      | 1.53                          | 0.87                         | 7.31            | .....                                       | 100.00 | Carboniferous.             |
| Kansas City, Mo.....                 | 64.37   | 19.73    | 9.07            | .....                 | 0.82  | 2.32      | 1.89                          | 1.89                         | .....           | 1.80                                        | 100.00 | "                          |
| Leavenworth, Kan.....                | 58.45   | 21.96    | { Iron 8.43 }   | .....                 | 1.05  | 1.57      | 2.00                          | 2.00                         | 6.51            | .....                                       | 99.91  | "                          |



and over which the brick are hacked to dry. Sometimes a modification of this method is used in which the dry house has racks from floor to ceiling on which the brick are placed for drying. (3) A system of flues or tunnels into which the brick are run on cars, which will hold about 500 brick each. These tunnels are heated by means of furnaces or steam pipes. The third method in one of its various forms seems best adapted for handling large quantities of brick, as the brick can usually be dried in from 18 to 36 hours by this method, where it takes from one to five days on the dry floor and from five to ten days if dried in racks. The saving in time and cost of handling is also considerable. Outdoor drying is a method too slow and uncertain for practical use in handling large quantities of brick. Clays vary greatly in the facilities with which they may be dried. Clays highly aluminous must be dried with great care and often very slowly, otherwise they warp and crack, while those with much silica will stand forced drying. Thorough drying greatly facilitates the burning of the brick.

## BURNING.

There are two methods used for burning brick. The ordinary way in which common building brick are burned is in the up-draft or clamp kiln. This furnishes good ordinary brick, but it is almost impossible to get a uniform product, not over 40 per cent. of the brick in a kiln being available for "pavers." The down draft kiln secures a uniform and much higher temperature, a large percentage of the brick, from 80 to 90 per cent. in a well designed and well constructed kiln, being suitable for paving purposes.

In burning brick, the fire must be started slowly in order to "water smoke" the brick without cracking them. In the brick, as they come from the machine, there is from 20 to 30 per cent. of water; about 50 per cent. of this water is the water of the pores, and is removed at a temperature of 212° F. in the drying. The balance is lost at a temperature of about 1,400° F. in the burning. The loss of the physical and chemical water of the brick is accompanied by a corresponding loss in weight, and a considerable shrinkage in the dimensions of the brick, as may be seen from the following table:

|                | On leaving machine. | On leaving in dry-er. | Burned not vitrified. | Vitrified. |
|----------------|---------------------|-----------------------|-----------------------|------------|
| Weight.....    | 6.46lbs             | 5.79lbs               | 5.08lbs               | 5.08lbs    |
| Length.....    | 8½ ins              | 8 ins                 | 7½ ins                | 7¾ ins     |
| Breadth.....   | 4 7-16 ins          | 4 3-16 ins            | 3¾ ins                | 3¾ ins     |
| Thickness..... | 2½ ins              | 2¼ ins                | 2½ ins                | 2 ins      |

Average of 12 samples.

Slow firing is continued until the smoke passing off shows no further signs of the water smoke (steam), after which the fires are gradually raised until the temperature throughout the kiln is sufficient to vitrify the brick, at which point it is held until they reach the proper point of vitrification, which is shown by the trial pieces or whole brick taken out through inspection holes in the top and sides of the kiln. After this, the kiln is gradually cooled down and the brick removed. Too rapid cooling is detrimental, as the brick are rendered very brittle. By slow cooling the brick are annealed and rendered tough. The burning occupies from two to four days for water-smoking, from four to six for burning proper, and from three to five days for cooling.

Table II. gives some details of the methods of manufacture as used at different paving brick factories in the United States.

## QUALITIES OF PAVING BRICK.

In all lines of practical work, experience with a given material is the only satisfactory method of determining the value of its various qualities. As in the case of cement, stone and wood, paving brick must be selected with due reference to the uses to which they are to be put; that is to say, to the nature and extent of the traffic they are to encounter and the char-

TABLE II.—SHOWING METHOD OF MANUFACTURING PAVING BRICKS NOW IN PRACTICE.

| Locality.             | Kind of Clay.                     | Geological Origin. | Methods of Manufacture.                             | Method of Drying.                      | Character of Kilns.          |
|-----------------------|-----------------------------------|--------------------|-----------------------------------------------------|----------------------------------------|------------------------------|
| Brazil, Ind.....      | Fire clay and surface clay mixed. | Carbonif. & drift. | Dry pan.<br>Pug mill.<br>Stiff mud mach.            | On slat floor.                         | Down draft.                  |
| Decatur, Ill.....     | Surface clay.                     | Drift.             | Roller crusher.<br>Stiff mud mach. line.            | On rack in steam heated dry house.     | Down draft.                  |
| Bloomington, Ill..... | Surface clay.                     | Drift.             | Vertical pug mill.<br>Soft mud mach.                | In yard.                               | Up draft.                    |
| Galesburg, Ill.....   | Shale clay.                       | Carbonif.          | Dry pan.<br>Pug mill.<br>Stiff mud mach.            | On ears in drying tunnels.             | Square down draft.           |
| Galesburg, Ill.....   | Shale clay.                       | Carbonif.          | Dry pan.<br>Pug mill.<br>Stiff mud mach.            | On hot floor heated by furnaces below. | Round and square down draft. |
| Evansville, Ind.....  | Shale clay.                       | Carbonif.          | Dry pan.<br>Mixer.<br>Pug mill.<br>Stiff mud mach.  | Tunnel dryer.                          | Square down draft.           |
| Rock Island, Ill..... | Shale clay.                       | Carbonif.          | Dry pan.<br>Screen.<br>Pug mill.<br>Stiff mud mach. | Tunnel dryer.                          | Round down draft.            |

acter of the climate they are to withstand. A large percentage of clays are undoubtedly capable of producing brick suitable for country roads, light suburban travel and residence streets of towns and cities. From many can be made brick which will withstand the moderate traffic of the smaller cities of from 30,000 to 50,000 inhabitants. It is the writer's belief that clays can be found which, if properly manufactured and properly placed in the pavement, will outlive granite under the heaviest traffic, and some brick are now made which it is believed would prove economical under such traffic.

The color in a brick is no criterion of its value as a paving brick when comparing brick of various makes; but, in inspecting brick from a single factory, the color will usually furnish a fairly safe guide as to the relative hardness, when the inspector is thoroughly acquainted with the particular manufacture. Another criterion as to the character of any single make of brick is the comparative size. As the harder a brick is burned the smaller it becomes up to a certain limit, which must be determined for each make of brick, the unduly large brick may be unhesitatingly rejected as too soft. In general, a brick for paving purposes must be homogeneous, free from uncrushed or lumpy material, especially if such material is not united by vitrification with the balance of the material of the brick. Vitrification is desirable, but not essential, as many paving brick, especially those made in West Virginia, cannot be classed under this head. These are made from clays very near fireclays in character and are giving very good satisfaction, at least under moderate traffic.

In this country the climate in which the majority of paving brick is used is so severe that the disintegrating effects of frost are the most severe test a paving brick must stand, especially in streets of moderate traffic. Hence, one of the first requisites of such a brick must be that it will not absorb a large percentage of water. The permissible ratio of absorption cannot be definitely fixed at any given percentage, for it is found that this ratio varies with different classes of brick. One class of brick, which seems to be uniformly made from clays which approach near to fire clays in character, will admit 4 or 5 per cent. of water and still not crumble through the action of frost; while others, if not burned hard enough to render them impervious to more than 2½ to 3 per cent. will be rapidly disintegrated by the frost. A core or lamination affords a seam where the frost may enter and is inadmissible in paving brick. Fire cracks should be limited in number and extent. The presence of lime, in itself is not detrimental in limited quantities, yet this must not exist as lime pebbles, or it will render the product entirely unfit for use by

disintegrating and crumbling it.

The specific gravity of a brick is somewhat of an index of its comparative value, as the more material contained in it, the greater its density, and other things being equal, the greater its resistance to abrasion, crushing, etc. A certain amount of toughness is desirable in a paving brick, to prevent splintering and breaking under traffic. This quality, the writer believes, is at present overestimated, as when laid in the street a brick can splinter only to a limited extent at the corners after which the shape assumed is such as to greatly resist abrasion. The brick must be of sufficient transverse and crushing strength to resist all the demands of traffic with a sufficient factor of safety. Further than this these qualities are of little material value.

## TESTING THE MATERIAL.

In making tests for relative qualities of brick, nothing will take the place of experience. A few general suggestions, however, for making ready tests, such as are now in use, are offered with the hope that they may prove serviceable. The test for crushing strength is believed by the writer to be of little or no value unless in comparison of the value of high-grade paving brick. The test is difficult of application, requiring expensive machinery; and unless carefully made by skillful observers, under definite given conditions, the results are very uncertain and unreliable. The transverse strength can be determined with greater accuracy than the crushing strength; it also represents both the compressive and tensile strength of the material, and is, therefore, a better test of the qualities of the brick. In testing for ratio of absorption the brick should be placed in a drying oven and kept at a temperature of about 212° F. for 10 hours or more if they have previously been saturated. They should then be weighed, and after the weight is carefully determined, placed in a vessel of water and kept for 24 hours at a temperature of about 60° F., after which they should be taken out, the surface water carefully removed and again carefully weighed. The gain in weight, divided by the original weight, will give the ratio of absorption. The presence of caustic lime is easily told by immersing the brick from one to four days in water. If caustic lime be present it will make its appearance by breaking or cracking the brick or by "poppers" showing on the surface. The specific gravity can be readily determined. The test for toughness or abrasive strength is usually made in an ordinary foundry tumbler. The brick should be tested a few at a time, with about 100 pounds of "foundry shot," weighing not more than ¼ pound to the piece. Heavy pieces of iron should not be used in this test, as they break the brick to pieces instead of wearing it. The differen-



shapes of brick are apt to make a material difference in their wear during the first half hour. This is caused by some brick being manufactured with rounded edges and some with square edges; the latter, being more easily broken or abraded, cause a greater loss in the material so made. For this reason they should be weighed after the first half hour, and the results of the second or third half hour used for comparison.

#### SPECIFICATIONS.

The large majority of specifications for paving brick are entirely inadequate. They are vague and often meaningless. It should be remembered that each additional requirement cuts out certain classes of brick, lessens the competition, and in that way, and by reason of the extra cost in the manufacture of a higher grade article, increases the price of the finished pavement. It must also be observed that with the present demand for paving brick and the state of the manufacture in many places where factories have been recently established, it will often be impossible to obtain brick which will fall within the higher limit herein named. Hence, the engineer should assure himself of the best quality of brick which can be obtained in sufficient quantities for his use, before adopting specifications calling for any particular grades of paving brick.

#### THE PAVEMENT.

The use of brick for paving in the United States has been confined to the last two decades. Its first use was at Charlestown, W. Va., and at Bloomington, Ill., about 20 years ago. From these points, with their small beginnings, its use has spread until at present it is one of the most popular and widely used of all paving material. A discussion of the principles that underlie brick paving would be a discussion of the principles of all paving. This material simply offers a surface covering, smooth and even, but not slippery, durable, economical and highly sanitary. It must be laid on a foundation drained and prepared as for all pavements. Beyond this the success of the pavement depends on the proper selection of the material. With poor material it will prove a failure, as has been shown by the attempt to utilize common building brick at Nashville, Tenn., and elsewhere. With proper material it is an established success, and is destined, with the improvement in manufacture and the bettering and cheapening of the product thereby, to rank first in economy and availability of all paving material. In the majority of places it offers a possible local industry, when the availability of the local geological resources are better known and appreciated and the different methods of utilizing them in manufacturing are more thoroughly understood.

In first cost the pavement depends on the nearness of the manufactories and the local resources suitable for foundations. For light traffic the fragmentary materials (rubble, gravel, sand, etc.) or sand with a layer of brick laid on their side, or 6 inches of concrete, make good foundations, the selection depending on the local resources. For medium traffic, nine inches of stone or gravel, or six inches of gravel or stone, with a layer of brick laid on their sides, bedded in sand, or six inches of concrete, will give good results. For heavy traffic the stone or gravel should be at least one foot in thickness, or the concrete at least 9 inches. All sub-foundations which are retentive of water should be properly and thoroughly drained.

In the average city the net work of pipes and conduits laid below the street surface is the cause of frequent disturbances of the pavement which is often the leading factor in its destruction. The facility with which pavements can be taken up and replaced becomes, under such circumstances, quite important.

In this, brick pavement is second to none. The brick, being uniform in size and shape, can be returned to their places by unskilled labor, an important point in smaller towns and cities. This is especially true if the fragmentary foundations are used, and if sand only is used in the joints. Where either coal tar or cement grout is used in the joints, the brick taken up are difficult and often impossible to clean, and new material has to be substituted. With sand in the joints the old material is readily cleaned, and the sand, in two weeks' time after laying, renders the pavement as impervious to the seepage of surface waters as the tar or cement.

The durability of brick pavements is a subject open to inquiry, for the limited time they have been in extensive use has been too short to answer this from practical experience. The destruction of a pavement results from (1) the crushing by the wheel load; (2) the abrasion by friction of passing vehicles and the slipping of horses' shoes; (3) the impact due to the passage

of loads over a rough surface, and the impact from the shoes of horses. The smoothness of brick will, in the opinion of the writer, more than overcome the difference in abrasive resistance of the granite. The writer estimates the life of first-class brick pavements to be: For light traffic, 35 to 50 years; for medium traffic, 20 to 25 years; for heavy traffic, 10 to 15 years. The smoothness of brick renders it free from much of the objectionable noise of the rougher pavements. Its freedom from decay, and its non-absorption of water are sanitary qualities of considerable value. It produces little dust of its own and as it is not retentive of mud and dust, it can be readily cleaned. Being smooth without being slippery, it offers comparatively little resistance to traction, while affording a fair foothold for horses.

Table III. gives a concise statement of the manner of laying brick pavements in a number of cities of the United States, which will render the ordinary methods of utilizing this material quite readily understood.

TABLE III.—SHOWING CHARACTER OF BRICK PAVEMENT IN 42 CITIES OF THE UNITED STATES.

| EASTERN AND SOUTHERN STATES. |               |                                                                                              |                             |                     |                    |                          |
|------------------------------|---------------|----------------------------------------------------------------------------------------------|-----------------------------|---------------------|--------------------|--------------------------|
| City.                        | Years in use. | Foundation.                                                                                  | Depth of sand cushion, ins. | Size of brick, ins. | Filling of joints. | Average cost per sq. yd. |
| Hartford, Conn.....          | 1½            | Sand.....                                                                                    | ...                         | 3x4x9               | Tar                | \$2.75                   |
| Wilmington, Del....          | 2½            | Broken stone and sand.....                                                                   | 2½                          | 2½x1½x8½            | Sand, tar or grout | 2.00                     |
| Seranton, Pa.....            | 5             | Gravel, sand or 4 ins. concrete.....                                                         | ...                         | 2½x4x8              | Tar and sand       | 2.10                     |
| Cincinnati, O.....           | 3             | 6 ins. concrete.....                                                                         | ...                         | 3x4x9               | Coal tar           | 2.50                     |
| Columbus, O.....             | 7             | Broken stone or concrete..                                                                   | ...                         | { 2x4x8 to 3x4½x9 } | Tar or grout       | 1.50 to 2.25             |
| Dayton, O.....               | ...           | 6 ins. concrete.....                                                                         | 2                           | 2½x3½x7½            | Tar or grout       | .....                    |
| Findlay, O.....              | 3             | 8 ins. broken stone, 1 ins. gravel or sand.....                                              | ...                         | 2½x4½x8½            | Coal tar           | .....                    |
| Massillon, O.....            | 3             | 6 ins. sand.....                                                                             | 2                           | 2½x4½x8½            | Sand and tar       | .....                    |
| Evansville, Ind.....         | 3             | 6 ins. concrete.....                                                                         | ...                         | 2½x4½x8½            | Sand               | 1.70                     |
| Ft. Wayne, Ind.....          | 1             | 6 ins. broken stone.....                                                                     | 2                           | 2½x4x8½             | Sand               | 1.55                     |
| Indianapolis, Ind..          | 2             | 6 ins. concrete.....                                                                         | ...                         | 2½x4½x8½            | Tar and grout      | 2.40                     |
| Lafayette, Ind.....          | 3             | 8 ins. gravel, 2 ins. sand, course brick flatwise.....                                       | 1                           | 2½x4½x8½            | Sand               | .....                    |
| Terre Haute, Ind..           | 1             | 8 ins. broken stone.....                                                                     | 2                           | 2½x4½x8½            | Grout              | 2.25                     |
| Detroit, Mich.....           | 3             | .....                                                                                        | ...                         | 2½x4x8½             | Coal tar           | 2.00                     |
| Charleston, W. Va..          | 22            | 3½ ins. sand and tarred boards.....                                                          | 1½                          | 2x4x8               | Sand               | 1.15                     |
| Wheeling, W. Va..            | 10            | 8 ins. gravel.....                                                                           | 2                           | 2x4x8½              | Coal tar           | 1.35                     |
| Mobile, Ala.....             | 5             | Sand and course brick flatwise.....                                                          | 1                           | 2½x4x8              | Sand               | 1.50                     |
| Memphis, Tenn.....           | 4             | 6 to 9 ins. concrete.....                                                                    | ...                         | 2½x4x8½             | Asphalt            | 2.78                     |
| Louisville, Ky.....          | 1½            | 6 ins. concrete.....                                                                         | ...                         | 2½x4½x8½            | Coal tar           | 1.65                     |
| WESTERN STATES.              |               |                                                                                              |                             |                     |                    |                          |
| Alton, Ill.....              | 2             | 6 ins. broken stone, course brick flat.....                                                  | 1                           | 2½x3¾x7¾            | .....              | 2.16                     |
| Bloomington, Ill..           | 18            | 2 ins. cinders, 2 ins. sand, course brick flat.....                                          | 1                           | 2½x3¾x7¾            | .....              | 1.40                     |
| Galesburg, Ill.....          | 6             | 6 ins. sand, course brick flat.....                                                          | 1                           | 2x3¾x7¾             | Sand               | .....                    |
| Jacksonville, Ill..          | 4             | 6 ins. cinders, 1 in. sand, course brick flat.....                                           | ...                         | .....               | .....              | .....                    |
| Ottawa, Ill.....             | 2             | 6 ins. sand, course brick flat.....                                                          | ...                         | .....               | .....              | .....                    |
| Peoria, Ill.....             | 6             | 6 to 8 ins. gravel or 6 ins. concrete.....                                                   | 1                           | 4x5x12              | Sand               | 1.74                     |
| Quincy, Ill.....             | 6             | 8 ins. broken stone, 2 ins. sand, course of brick flat.....                                  | 1                           | 2½x3¾x7¾            | Sand               | .....                    |
| Rockford, Ill.....           | 1½            | 6 ins. broken stone, 2 ins. sand, 6 inches broken stone, 2 ins. sand, course brick flat..... | 1                           | 2½x3¾x7¾            | Sand               | 1.34 to 1.74             |
| Rock Island, Ill..           | 4             | 6 ins. broken stone, 2 ins. sand, 6 inches broken stone, 2 ins. sand, course brick flat..... | 1                           | 2½x3¾x7¾            | Sand               | 1.65 to 1.40             |
| Springfield, Ill..           | 6             | 6 ins. cinders.....                                                                          | ...                         | 2x4x8               | Sand               | 1.50                     |
| Kenosha, Wis.....            | ½             | 6 ins. concrete or broken stone.....                                                         | 1                           | 2½x3¾x7¾            | Sand               | .....                    |
| Burlington, Ia.....          | 5             | 6 ins. broken stone, cinders or sand, with course of brick flat.....                         | 1                           | 2½x4½x8½            | Sand               | 1.65                     |
| Clinton, Ia.....             | 4             | 6 ins. broken stone, with sand.....                                                          | ...                         | 2½x3¾x7¾            | Sand               | 1.35                     |
| Cedar Rapids, Ia..           | ...           | 2½ ins. sand, course brick flat.....                                                         | 1                           | 2½x3¾x7¾            | .....              | .....                    |
| Council Bluffs.....          | 4             | 4 ins. sand.....                                                                             | ...                         | 2½x4x8              | Sand               | 1.32                     |
| Davenport, Ia.....           | 5             | 8 ins. broken stone, with sand, 6 ins. broken stone, course brick flat.....                  | ...                         | 2½x3¾x7¾            | Sand               | ( 1.38 ( 1.70            |
| Des Moines, Ia.....          | ...           | 4 ins. sand, course brick flat.....                                                          | 1                           | 2½x3¾x7¾            | Sand               | .....                    |
| Dubuque, Ia.....             | ½             | 6 ins. concrete.....                                                                         | ...                         | 2½x3¾x7¾            | Sand               | 1.69                     |
| Keokuk, Ia.....              | ½             | 5 ins. broken stone, 3 ins. sand, course brick flat.....                                     | 1                           | 2½x4x8              | Sand               | 1.68                     |
| Omaha, Neb.....              | 5             | 6 ins. concrete.....                                                                         | 2                           | 2½x4x8              | Sand               | 1.95                     |
| Hannibal, Mo.....            | 2             | 4 ins. broken stone, 3 ins. sand, course brick flat.....                                     | 1                           | 2x3¾x7¾             | Sand               | .....                    |
| Atchison, Kan.....           | 5½            | 4 ins. sand, course brick flat.....                                                          | 1                           | 2x3¾x7¾             | Sand               | 1.65                     |
| Ft. Smith, Ark.....          | 3             | 6 ins. concrete.....                                                                         | 2                           | 2x3¾x7¾             | Sand               | .....                    |



Written for the CLAY-WORKER.

## HINTS ON BRICKMAKING.

No. 82.

BY R. BRICK.

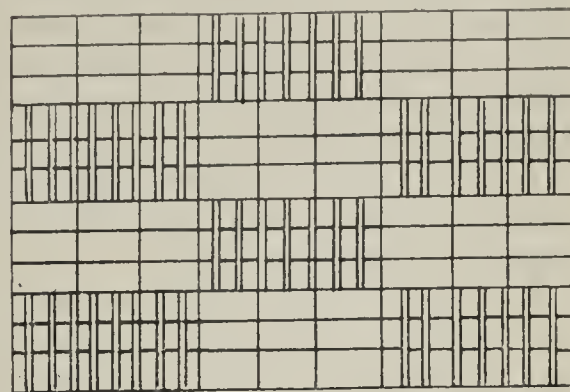
REPRESS BRICK FOR FACING WALLS.  
[CONTINUED.]

**A**FTER the bricks are repressed and taken to drying floor on pallets, the next thing to consider is the drying. The length of time necessary for drying them without damaging in any manner, how quickly they may be safely dried, is dependent on the composition of the clay. They may bear drying in 24 to 48 hours by artificial heat and two to four days by natural process; this must be determined by practical test. They should, however, be thoroughly dried before they go into the kiln, being more dense than common brick, they are more liable to whitewash in watersmoking. To avoid any risk, have them dry, and when dry, place the bricks and pallets on spring trucks and roll them to the kiln, the tosser should pick up one brick, pass his hands over the edges to remove any little flanges, or particles from the face, then toss it with the fingers of both hands resting on the lower flat surface of the brick.

Now comes a very important part of the work, setting them properly. The foundation of common bricks on which they rest should be perfectly level, then set first course crosswise of the course of common bricks on which they rest, carefully setting the best face up; then set a second course on the first facing them, that is, one directly on the other; then a third course upon the second in like manner, setting best face down; then reverse fourth course, setting it at right angles with third course; then a fifth and sixth course, one directly over the other: then reverse seventh and continue as in first three until as high as desired. In setting with common bricks they can be set six, nine, twelve, fifteen, or eighteen courses high. They can be set in blocks two bricks square, three over three; or three bricks square, three over three; or, if bricks are too thick, they can be set three bricks square, eight over three lengths each way, making blocks of 24 bricks in each course. The ac-

companying diagram shows them set the latter way eight over eight lengths and checkered; that is, the ends of the bricks in one square or block comes against the sides of the brick in the adjoining block. This prevents the bricks from careening during the burning when settling, which they are apt to do unless braced on every side in this manner. The bricks may be set two high, then reversed, or three high, as shown in diagram, or four high; three high is perhaps the golden mean. This gives every brick one straight face, and one-third of them smooth and straight on both faces. The setter should wear

setter should set one brick directly over the other, either on sides or ends, if it



projects it will leave a lip on the edge of the overhanging brick. The importance

of proper setting can not be over estimated. It matters not how well the bricks may have been made and handled if they are not set properly they will be badly damaged in the burning.

The next process is the burning of the brick. Unless well burned, they are worth no more than common brick. In burning, the first thing is to dry them slowly. Right here will say, that the common bricks under the pressed brick must be thoroughly dried before they are set. If they are set damp the moisture thrown off from them will come in contact with the pressed brick in an up-draft kiln; or, in a down-draft kiln, damp, common brick, set on the pressed brick would have a similar effect. If pressed brick are subjected to too high a degree of heat while watersmoking, they will whiten, more or less, on the surface; varying in accordance with the amount of moisture in them, or the common brick near them. So it pays to avoid all risk by taking sufficient time to expel

the moisture, and at no period of this process should the heat be too high. The arch brick in the kiln should never show red, but be kept down to a black heat until dry. When dry, increase heat gradually until the settling heat is applied and hold this until finished. The pressed brick should be heated uniformly in every part before shrinking heat is applied, then color of face will be uniform. If, however, the shrinking heat is applied to the brick before it is as hot in the middle as it is on the surface, it will shrink first on the surface. This will cause the bricks that face each other to part at their outer edges; this allows



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slippers without heel pieces. Carpet slippers are good; these make no impression on the face of the brick. The sides of these blocks should be kept smooth, so that in settling one brick will not catch upon a projecting brick of the adjoining block and be twisted out of shape.

This diagram shows the brick set three courses high, one upon the other, or facing, then reversed, and twelve courses high in all, and eight bricks crosswise, resting on three lengthwise, and running full width of kiln except three lengths next each side wall, which should be common bricks to insure uniform color of pressed brick. The



the flame to come in contact with face of the brick to whatever depth they part. They vary from one-eighth to one-quarter of an inch, then we have what is termed a marginal border or strike around the face of the brick which ruins its appearance. This can be entirely avoided by giving it time to get well heated to its center before it is subjected to shrinking heat.

Then, again, the settling heat should not be applied until all the bricks, those on top as well as the bottom courses, are well heated; if this heat is then retained the required length of time, all the bricks will be uniform in color and free from marginal discoloration. While the bricks are settling or shrinking, the heat should never be lowered in degree, for if allowed to go down it will effect the color, which will not be as bright as if kept at uniform temperature, when the kiln is burned. Care should be taken to avoid rapid cooling; this should be as gradual as the heating of them. If cooled too rapidly the color is affected, checks will appear on the edges, and the resonance and strength will be lessened.

In another article the handling and packing for shipment will be discussed.

Written for the CLAY-WORKER.

### TALL CHIMNEYS.

BY D. W. STOOKEY.

IN WRITING of chimneys, in the CLAY-WORKER for October, page 356, Mr. Geo. S. Tiffany says:

"I have a friend who has a stack 110 feet high, for five down draft kilns, and he says, 'There's not a foot of it for sale.'"

Without wishing to speak unfavorably of tall chimneys, I would like to advance the idea that the size of the opening in a chimney is as important, as the length.

While this chimney with "Not a foot for sale" was giving entire satisfaction, it might have performed the same functions if it had been lower with a greater sectional area. It was required to carry a certain amount of mixed gases within a given time. The amount that any flue, pipe or orifice will discharge within a given time depends both upon its sectional area and the velocity of the fluid passing through.

Chimneys for burning several kilns at the same time must supply drafts sufficient for all that may be attached at the same time, but the mistake must not be made

that the height of the chimney must be proportional to the number of kilns that it is to serve. In fact, experience, observation and the testimony of practical men, given in clayworkers' conventions, and through the CLAY-WORKER, both in the columns devoted to reading matter and to advertisements, all go to substantiate the statement made in a former article that tall chimneys are not necessary.

The modern, improved down draft kilns, built of any desired length or capacity, are, almost without an exception, provided with a number of low flues or chimneys perched along the walls, and the tall chimney does not appear at all.

### ADDING TO THE HEIGHT.

Many a chimney that does not seem to have sufficient capacity is thought to be too low, when it is possible, and quite probable that it is as high as is consistent for the best results with its sectional area. As it is beyond the range of possibility to enlarge its section without practically building a new chimney, the only thing left to be done is to increase the height. As this was probably made proportional to the sectional area, in the first place any addition that may be made at the top, is manifestly disproportionate as well as a confession on the part of the designer that he erred in judgment when the chimney was built. Being out of proportion to the diameter the added height can only work at a disadvantage and cannot produce as good results as the same length had it been added originally in connection with a proportionately increased sectional area.

The head producing the draft of a chimney is equal to the difference in the weights of the column of heated air in the chimney and that of a column of the cool outside air of equal height and sectional area.

The difference in weights of the internal and external air is due to their difference in temperature. We find three elements combining to produce the draft, viz: the height, sectional area and the temperature of the column of air contained within the chimney. Either of these may be reduced a limited amount by proportionately increasing the others.

### FRICTION.

One argument favoring the use of low chimneys with large sections is the friction of the gases upon the sides.

This is much greater proportionately in long pipes and those of small areas.

The principles of the flow of liquids may be applied without sensible error to the flow of gases in chimneys urged upwards by the differences in weight, due to the expansion of the heated gas within.

The friction is so great and increases so much with the increase in length that it cannot be ignored. After a series of carefully conducted experiments with water flowing through pipes of different sizes and lengths, the two following principles were established:

1. "The discharges in given times with pipes of the same length, and with the same head of water, are proportional to the squares of the diameters.

2. "For pipes of different lengths and of the same diameter, the discharge was inversely proportional to the square root of the lengths."

"Couplet, in 1730, found that a pipe of stone or iron, 600 fathoms in length and 12 inches in diameter, with a head of 12 feet of water, discharged one-tenth of that which would have been obtained from a simple orifice."

The force that is applied in moving the gases in a chimney is very small at best, and care should be exercised in removing all difficulties in its way. The obstructions on the grates and in the kiln are considerable and must be overcome by the chimney.

Gases are practically perfectly elastic and without viscosity, but they still meet with resistance by friction in passing through pipes.

### STABILITY.

The matter of stability is one that must be considered in building tall chimneys. The taller the chimney the more substantial must be the base, and this involves greater expense.

In some places the nature of the soil may be such that a proper base for a tall chimney could not be obtained without a great outlay of money.

The superimposed materials of high structures entail a severe test of the substances of the foundation and lower parts and require that none but the best of materials shall be used. Very careful work by skilled workmen is essential to the proper construction of tall chimneys. Chimneys with unstable foundations, those built of poor materials and by unskilled mechanics, are dangerous to life and property, on all sides within a ra-



dus equal to their height, and while they stand, are a standing menace to all who come near.

#### WIND AND STORMS.

The effect of wind and storms upon tall chimneys is something beyond the conception of those not posted in such matters. The swaying of the top of tall brick chimneys is easily observed and is sufficient to move the position of the center of gravity of the stack through a very considerable arc.

This swaying tests the foundation on different sides, calls into play the elasticity of the materials of which the chimney is built and tries the adhesion of the different parts.

#### TALL CHIMNEYS NECESSARY.

Sometimes the circumstances are such that tall chimneys or passages for the discharge of furnace gases are necessary. It is well known that surrounding objects such as trees and high buildings, often have an injurious effect upon the draft, and that satisfactory results can only be had by carrying the top of the chimney above them.

At Dubuque, Iowa, there are several factories located at the foot of the bluff of the Mississippi river. At this point the bluff is quite abrupt and the furnaces are so close that the draft would be very imperfect. In order to overcome the difficulty, chimneys have been built upon the top of the bluff and connected by flues or air passages with the furnaces below.

As an example of a tall chimney, the one built recently for the Fall River Iron Co., may be mentioned. This one, according to the *Industrial World*, "From the top of the granite foundation to the cap is 350 feet; the diameter at the base is 30 feet, at the top 21 feet; the flue is 11 feet throughout, and the entire structure rests on a solid granite foundation, 55 x 30 x 16 feet deep." This is thought to be the tallest chimney in the United States.

#### COMING CONVENTIONS.

The National Brick Manufacturers' Association, Chicago, Jan. 23-27, 1894.

The State Brick, Tile and Drainage Associations meet as follows:

Indiana—Indianapolis, Jan. 3-4, 1894.

Illinois—Springfield, Jan. 16-17, 1894.

Iowa—Des Moines, Feb. 7-8, 1894.

Ohio—Columbus, Feb. 13-14, 1894.

Written for the CLAY-WORKER.

#### BRICK BURNING AND SETTING.

Serial No. 5.

BY J. W. CRARY, SR.

**I**N MY last article on this subject, I concluded my remarks about some down draft kilns, and said that I would explain what I consider the best up draft kiln. A word more about down draft kilns is suggested by an article in the last Sept. CLAY-WORKER, written by our very clear-headed friend and lucid writer, D. W. Stookey.

It appears that a brother brickmaker

burning, then advises him to burn his kiln over as it stood.

It is very evident that the owner of this kiln (Mr. Jos. Marxer, of Millstadt, Illinois,) got badly lost in his explorations of down draft kilns. He could burn brick in up draft kilns, but his ideas of down draft kilns was all an "iridescent" dream.

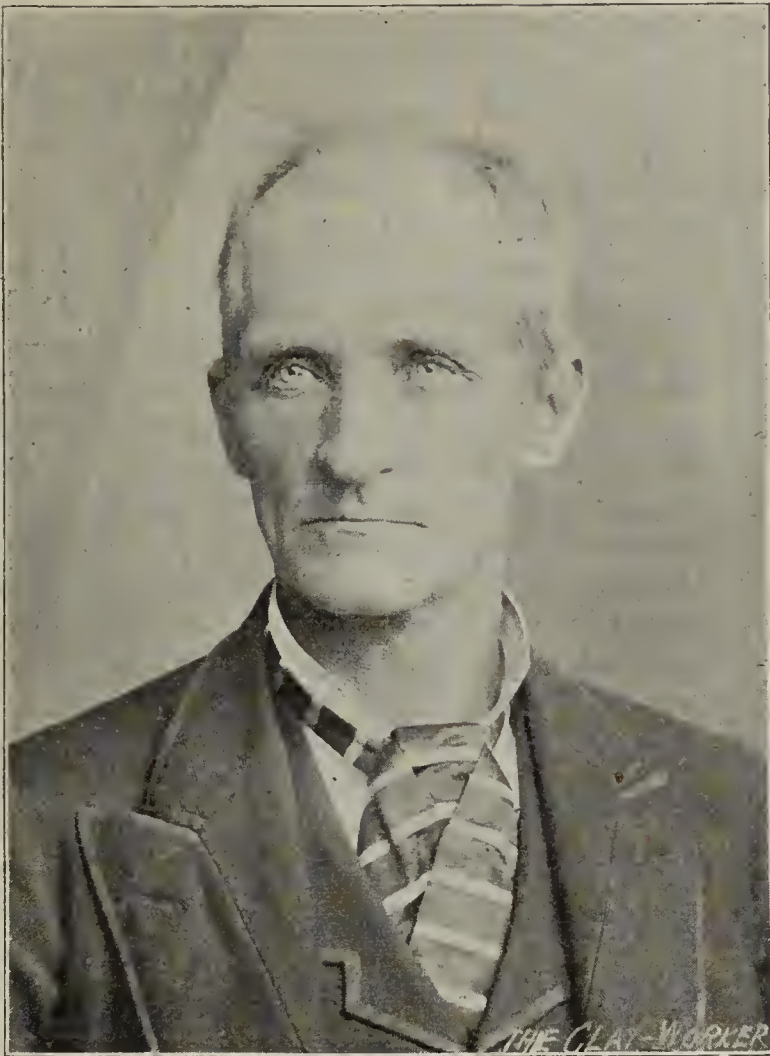
Mr. Marxer has not been a regular reader of the CLAY-WORKER for the last three months; if he had been, he could have seen that any brick kiln, burned only to soft or salmon brick, can be successfully reburned without being reset, provided the arches are in good condition. If Mr. Marxer could have seen the top of his down draft kiln as he could have seen the top of an up draft kiln, he would have known what to do and when to close his kiln.

#### LOOKING AT A SMALL UP DRAFT KILN AS I USE IT.

I build a "clomp" or kiln, about twenty-five feet square inside. It will have six arches, four brick wide benches, (about 3 feet,) the arches will be two brick wide or about 17 inches. The outside benches will be half the width of the inside. There will be a doorway 8 feet wide at each end of the kiln, open from bottom to top. The walls of the kiln will be three feet thick at the bottom, and eighteen inches thick at the top, they will be plumb on the inside, and "battered" by offsets. On the outside they will be fourteen and one-half feet high from the bottom of the kiln. There will be a hollow space 1½ inches wide, in the center of the walls from the top of the furnaces up to the top of the clomp, then

it will be covered by "coping". In building the walls, every third course of brick will be a bond or header, and at the hollow space the headers will be four inches apart. The furnaces will extend out eighteen inches from the wall of the kiln, so that they will be 4½ feet deep or nearly 5 feet from the brick kiln to the outside iron door.

If coal is to be the fuel, and the clay is fusible, or the kind that shrinks or settles in burning, an ash pit should be made one-third the way across the kiln, with suitable bearings for grates. The grates should be thin and about thirty inches long. The ash pits would be about thirteen feet from outside c-



FRANK ALSIP, SR., SUPT. HAYT & ALSIP CO., CHICAGO.

having a down draft kiln, got in inextricable trouble about his kiln. He kept up his fire a long time, saw that he had a red heat at the bottom of his kiln, and concluded that it was well burned, so closed up, of course, pleased with his down draft effort. He dreamed of his nice red brick until his kiln was cool enough to open, when his hope and faith turned to sad disappointment at the sight of a perfectly clear, uniform salmon burn. Then the unfortunate brother wrote a letter, and wanted some good authority to let him know if he could safely burn his kiln over without resetting it? Bro. Stookey gives him a very good and intelligent lesson on brick



furnace back in kiln, and it should be about sixteen inches deep. It will be seen that there would be a space in the middle of the kiln about eight feet long that would have no grates. If soft coal be used, it will burn very well on the solid hot bottom. If hard coal be used, a little wood can be thrown over to make all the necessary heat in middle of the kiln, but it will be found, by practice, that the middle of the kiln will be hot from the concentrated draft from each side at the middle. I have tried grates all the way through the arches, and found that I could do as effective burning with the grates one-third of the way across the kiln, and save a great deal of labor in firing and in cleaning ash pits.

Good iron doors are set in furnaces with a door for ash pits. If the clay is easy to settle these doors can be closed when the kiln is done burning, but if the clay is refractory and don't fuse, it requires a very great heat, and when the kiln is closed, the ash pits must be left partly open until it is seen that the heat will not melt the grates. An expert will see when to close the doors of the ash pits.

Now it will be seen that this kiln is different in several respects from the old-fashioned up draft kiln. The old up draft kiln was about thirty feet wide and often thirty-five to fifty feet long. There was a great deal of trouble and labor in getting the fires to work regular and uniform through the kiln, and "cold spots" would always be found unless the "watersmoking" process was carefully and expertly watched and attended to. I have burned kilns of over 700,000 brick (twenty arches,) very wide and long. I found no difficulty in burning them by my process, (which I will fully describe in closing this article), but the labor and trouble was much greater than I have in kilns of my own construction.

#### THE RIGHT WAY AND THEORY OF SETTING BRICK IN MY KILN.

A brick kiln properly set is, in theory, a smoke stack of innumerable, irregular, tortuous flues, which, if aggregated, would exceed fifteen times the area of the doors of the furnaces. A brick kiln is only about fourteen feet high, and if the spaces for draft do not afford a free draft for all the gases of combustion and the escape of watersmoke, it is impossible to produce a proper and sufficient heat to burn a kiln. The outside bench of an arch should be a brick and a half

or two brick thick. The inside benches should be four brick wide. The arches should be two brick wide. The bottom of the kiln should be paved level and smooth. The benches should be set zigzag or, as we say, skintling. The brick about  $\frac{3}{4}$  of an inch apart, and six brick high. The top course of benches from which the overhangers are started, should be set close, but there must be no other tight course in the kiln, except the one covering the closing of the overhangers; this single course should be set tight, as it is over the centre of the arch, and will tend to spread the heat. Two binding courses, set open and zigzag, are put on just above the overhangers, then one course set, running across these and set so that five brick will rest on two courses, or about one inch apart. On this running or transverse course the body of the kiln stands.

The setter should set up one course at a time, as high as he can reach. In setting skintling it is the only way to set true and fast. We can not set skintling up in blocks, as we can "three over three;" two courses or more, of skintling may be carried along together one after the other.

A kiln of brick for up draft should be forty to forty-five brick high, and should have a binding course about half way up, and same at third course from the top. Care should be taken to set them an inch apart and regular. Platting of bats may be put on top an inch apart.

#### THE RIGHT WAY TO MAKE A SURE GOOD BURN OF THIS KILN.

Having all things ready and in good condition to set fire to this kiln, the fire should be started slow in the mouth of the furnace. Three sticks of good wood will do to start with. Fires should be started on both sides of kiln at the same time. As soon as a draft is had and the watersmoke is seen, fire may be increased until the watersmoke is near like cold or exhausted steam. As soon as five or six feet of the *heads* are dried off, the fire in the furnaces should be increased to a dull red heat, and when the watersmoke gets near the middle of the kiln the arches should be brought to a red heat clear through; this heat should be kept up steadily, until it can be seen all over the top of the kiln, then the heat in the arches should be increased to as high a degree as the overhangers will stand without fusing. As soon as a spot begins to settle, cover it with fine damp clay; this stops the heat from coming

out at that spot, and forces it to cooler places with increased energy. These places will soon begin to settle and they in turn, must be covered. So the process of covering with fine clay must be continued until the entire top of the kiln is covered. If there be a cold spot, the fire and draft will come up through it as soon as the kiln is covered all around it, and in a short time it will be as well settled and burned as any part of the kiln. I never pay any attention to a cold spot or try to work it out by any change of fires or draft in furnaces or arches.

#### A UNIFORM, STEADY HEAT SHOULD BE KEPT IN ARCHES.

The idea of letting in a draft of air at any place in the kiln in order to force the fires to some cold spot, or unburnt place, is a mistake and a positive injury, whether in up draft or down draft. The heat should not be diminished at any one point of combustion. If in an up draft kiln a change of heat is necessary, it should be effected by a damper (fine clay) on top; if in a down draft kiln, by a damper at the bottom. If an even, regular heat be kept in the arches, the heat will diffuse itself through the kiln according to the dampering or covering on top. As soon as a spot is covered with fine clay the consumption of fuel is diminished in proportion. Say the top of the kiln will measure one hundred superficial yards, a one hundredth part of the fuel is saved, while the maximum heat in the whole kiln is retained, diffusing itself to points where needed, and being deflected from points that are burned. Such points are not over burned, and the heat is equalized from bottom to top.

When a kiln is burned, as I have directed, and the entire top is covered, the arches will keep to the maximum heat with very little fuel. No heat escapes only from radiation or absorption by the atmosphere. The heat should be kept up in the arches five or six hours after the kiln is covered; this makes the heat uniform throughout the whole body of the kiln. It is as hot at top, just below the covering, as it is at the bottom, and the minerals in the clay are well oxydized and the brick are *annealed*. This annealing process is of the utmost importance in making a perfect burn.

The reader will indulge my egotism if I tell him how and when I first discovered, or rather evolved by experiment, the art of annealing brick. The U. S.



Custom House, in New Orleans, was being built about forty-one years ago. Several hundred thousand brick was wanted for the groined arches, competing bidders for the contract to furnish them was required to furnish a strong, tough brick that could be cut to a fine, sharp edge without breaking. I was called upon by one of the bidders to go to his brick yard and superintend the making and burning of a kiln for this purpose. I made and burned a kiln, and covered it so deep with fine clay that very little heat could escape from the top. It was two weeks before it was cool enough to open. When all the samples of the bidders were tested by an expert, in the presence of United States Engineer, in charge, the brick that I had burned was pronounced superior in all respects for the work in hand, and my friend bidder got the contract, though his bid was the highest. It is possible that I was not the first to find out the art of annealing brick, however that may be, with me it is entirely original, and for many years I kept it to myself. I do not claim perfection as a brick-maker, nor am I too old to learn. The possibilities for progress in the clayworking art are yet shrouded in mystery, and can only be developed by patient, persistent study and practice.

AS TO BRICK KILNS, I AM NOT WEDDED TO ANY SPECIAL KIND.

I have found the up draft kiln, as I use it, very efficient and economical. I long since thought of a down draft brick kiln before I had ever heard of one, but I did not have sense enough to appreciate the advantage, so I preferred to improve and stick to the up draft kiln. In this kiln we have perfect combustion of fuel, we have easy and complete control of the heat, we can see, at a glance, just where and when it has done its work, then change it at will, and utilize all of it to the best advantage, and be perfectly assured of a good burn. As I have said in previous writings, I think a kiln for continuous burning, can be constructed to work with the greatest economy, but all the conditions of supply and demand must be favorable, so that the kiln can be unceasingly at work. To make it pay well, it should run 365 days in a year, and the brick should be sold and shipped about as fast as burned;

they should go direct from the kiln to the cars or boats.

P. S.—When my young "Down draft" friends have done their excellent criticisms of my "Up draft" writings, I will take pleasure in paying them my kindest regards and respects.

Written for the CLAY-WORKER.

#### TECHNICAL EDUCATION.

A FEW suggestions, in regard to a course of study for such students as would like to follow up a business, in which the manipulation and burning of clays is its chief feature,



C. D. B. HOWELL, SEC'Y HAYT & ALSIP CO., CHICAGO.

seems in order after reading Mr. Crossley's valuable paper in the September issue of the CLAY-WORKER.

Before attempting to establish a school merely to meet the wants of such young men, it seems to me the better way to investigate the facilities in the best of our scientific schools for carrying out just such a scheme as Mr. C. mentions. It is plain that such industries, as we represent, offer a broad and rich field for scientific men, and that steps should be taken at once to provide a course of study and practice which would prepare men to take responsible positions in it.

The simplest and most inexpensive way of doing this is certainly the best

method to adopt at the start, for though incomplete and not altogether satisfactory, it is something which might be arranged with little difficulty, and furnish all the necessary information and experience for designing an independent school. We want to see the plan in operation for a few years before attempting to enlarge upon it.

This is like building a factory, the arrangement of which is to be the best in every detail; it cannot be done without many years of experience and careful study of the business, to know from practical observation how each machine and each department can be made and set up so as to be the perfection of economy and efficiency.

It cannot be denied that this is a most important issue to the coming generation of young men, who are soon to be of us in later years. Nor is it less true that we, who are to be associated with them, are the only ones to take the necessary steps toward inaugurating such a course of study in some city where they may be fully prepared to meet the many problems which still remain unsolved.

All through my college life, which lasted five years, I noticed one thing in particular, that the students gave little thought to the future but, as a rule, applied themselves very closely to the work in which they were engaged.

The idea that they would have to confine their efforts to some special line of business, when they got out of school was a matter of little consequence to them, feeling sure that if they attained high standing in any studies they pursued, only success could be their reward. It never occurred to me when prosecuting my studies at the Institute of Technicology, or when I was teaching chemistry there, that this was or would be a field for scientific men. The professors would speak of, and explain the mysteries connected with almost all the other industries in their lectures and, as a result the students would come to the conclusion that only such lines of manufacture, as were spoken of in lectures and about the laboratories, needed the services of scientific men. But few of the men who hold important positions in our best schools know anything about the length, breadth and



richness of our field for scientific investigation. To educate men so as to be both practically and theoretically versed in the art of manufacturing brick, tile, pottery, etc., and to be capable of taking the entire responsibility of any such factories, we should have one of our prominent scientific schools, with the advice of a committee of practical men representing the different trades, arrange for the students a course of classroom and laboratory work, setting aside one day in the week for practical service in a factory near at hand as an apprenticeship. There are scientific schools located in large cities where almost all the clay industries are represented.

It certainly seems as through these factories, with satisfactory arrangements, would furnish all the practical experience necessary to the student, if he were obliged to work there one full day in the week and the scientific school give him abundant knowledge in mathematics, chemistry, physics, drawing and perhaps, living languages, assuming at admission to the course, he would be prepared to pass examinations in the common English branches.

CHARLES FERRY.

Written for the CLAY-WORKER.

#### FACTS ABOUT THE CONTINUOUS KILN.

THE great developments which are constantly being made in all branches of manufacturing renders it absolutely necessary that anyone concerned in the management of a certain branch thereof should constantly be on the alert for such new improvements that will, to any material extent, lessen the cost of production and thereby increase the profits of the concern.

This statement may be justly applied to the brickmaker of the present day, as his profits are generally commensurate with the amount of skill, care and judgment exercised in selecting his appliances and running his plant on a true economic basis.

The wide-awake, progressive brickmaker has excited a great deal of energy and inventive skill in reducing the cost of producing the green brick ready for the kiln, but here his attempt at economy generally stops. Not only does he waste from 60 to 80 per cent. of the heat energy of the fuel, but apparently he considers it an absolute necessity to have a certain per cent. of under-burned brick in his kiln, which he perhaps will

sell at cost to get them off the yard, and a large per cent. of bats which, after having cost fully as much to produce as the good brick, now requires an additional expense to haul them to the dump.

The next important step to be taken in this branch of industry will be to reduce the cost of burning and improve the quality of the product.

It is evident that it is not economy to reduce the cost of burning at the expense of the quality of the product, because the days of ship-shod, half-done work are fast nearing their end, and there is a constantly growing demand for better work all over the country. Hence the one that can produce the best brick never experiences any trouble in disposing of them at a remunerative price.

To the writer's mind it is a well established fact that any material saving in fuel cannot be obtained except by the use of the perpetual or continuous system of burning, but as to the ability of the continuous kiln to fulfill the second and most important requirement mentioned, there is a great doubt in the minds of most American brickmakers, owing to the fact that a few of these kilns erected in this country have not given entire satisfaction. The builders of some of these kilns apparently have ignored the most important requirements necessary for burning a good brick, but the continuous kiln is being perfected very rapidly, and the day is not far distant when the same will be generally adopted for burning all kinds of brick, from the finest quality of front brick or paving brick, down to common building brick.

If the Editor will afford me the space, I will try to tell the readers of the CLAY-WORKER what I consider some of the essential elements that go to make the continuous kiln the best and most economical method of burning all kinds of brick.

#### ESSENTIAL REQUIREMENTS OF A CONTINUOUS KILN.

The conditions necessary for burning a certain grade of brick of a certain clay in the ordinary up or down draft kiln are soon learned by the burner; he knows what length of time, degree of heat and velocity of circulation is necessary during the different stages of watersmoking, burning and annealing, and he knows also that any material deviation from these conditions is certain to result disastrous to the product,

and we can mark it down for granted that in a continuous kiln, where these processes are carried on simultaneously, provisions must be made to meet these varying conditions in the various sections of the kiln at the same time, which are attained periodically in the ordinary kilns.

If these plain facts were borne in mind by builders and operators of continuous kilns, we would not hear of so many lamentable failures with the kiln, but the fact of the matter is, that in a good many kilns of this type, the material is watersmoked one day, brought to red heat the second day and followed by white heat the third. The annealing course is carried on in the same ratio, and there is certainly no clay in existence that would produce a marketable brick with such treatment, and it will take some time for a properly constructed and operated kiln to remove the prejudice that such proceedings have inculcated on the minds of the American brickmakers.

Furthermore, the kiln must contain means for regulating and equalizing the heat from top to bottom of the kiln, and especially the intense heat in the finishing section, and I wish to lay particular stress on the fact that this cannot be accomplished by manipulation of the exit dampers in this type of kiln, which hereafter will be demonstrated as impractical, but must be accomplished by controlling and equalizing the volume and temperature of the feed-air, whether it passes from the cooling brick directly into the active fire, or if it be conducted to the fire otherwise.

If some means are not provided for controlling the feed-air in the continuous tunnel kiln, it will enter in larger volumes through certain channels and of a lower temperature in other channels, thus rendering it impossible to maintain an even degree of heat.

A continuous kiln, in order to be suitable for burning paving brick, must also embody means for confining the higher temperature on the material for a considerable time after firing is ceased in order to properly anneal or temper the same; for this reason the ordinary continuous tunnel kiln is not suitable for burning first-class pavers, because all air necessary for the combustion of the fuel passes directly from the cooling brick into the burning sections, thus lowering the temperature of the hot finished brick too quick. PETER YOUNG.

(To Be Continued.)



## THE AUDITORIUM.

Chicago's Architectural Masterpiece,  
Where the Brickmakers Will Hold  
Their Next Annual Convention.

WE often pass over great achievements without thinking what is really implied. We are in the habit of taking as a matter of course much of what is set before us. A true regard for the seriousness of all things brings much more of interest and value to us than comes from less thorough and thoughtful methods. Our N. B. M. A. Convention this season will be held in the Auditorium Hotel at Chicago, beginning Tuesday, January 23. A very satisfactory rate has been made and there will be an opportunity to see and study the great structure. Central in this great pile is the Auditorium Music Hall, seating something over five thousand people. This Hall contains an immense organ and a stage equipment not excelled by any theatre in the world. It is supplied with ponderous hydraulic lifts which elevate or lower various sections of the stage into the positions required under the varying conditions of stage performance as now given. It

may be well to know that the stage is arranged in sections so that preparations can be made for following acts and scenes during the performance. For instance, preparations in the setting of scenery, and arrangement of furniture may be made in the lower section while a performance is going on immediately above it. The stage is divided into a series of great elevators each being, say, three stories in height and occupying various sections of the stage when viewed from front to back. The convenience of this arrangement may be understood when one stops to think of the ordinary methods employed in stage setting and management. The acoustics of this

great room are perfect. The means of exit and entrance are thoroughly satisfactory. Great quantities of properly warmed air furnished to the occupants, and as the air becomes foul from breathing it is properly drawn from the room. From an artistic standpoint this great Auditorium is eminently satisfactory. It is unique in outline, elegant and refined as to detail, harmonious and beautiful as to color.

Fronting on the lake there is a portion of this structure which is devoted to the Hotel. Its popularity is so great that there has recently been constructed across the street from the main building an immense pile known as the Auditorium Annex, which is connected with the original structure by an underground tunnel that is in itself a wonder-

lors and rooms above are beautifully furnished with splendid materials, than which the world can furnish none better. There is a cafe and restaurant on the main floor. But the principal dining room is at the top of this great building. The ceiling and side walls are formed by a great barrel vault. Altogether this beautiful room has exhausted all the resources of the architect, the sculptor and the decorator. The kitchen of this Hotel is also at the top of the building which is a location eminently suited to this department of the Hotel. The odors of cooking cannot permeate to other parts of the building and there are found good ventilation and light in a part of the structure which could not readily be used for other purposes. One of the most

beautiful rooms in connection with the Auditorium is the banqueting hall. This room was an afterthought. After the opening of the Hotel the necessity for such an apartment was made conspicuous, and in searching for an available location, space between the great trusses over the Auditorium was utilized for this purpose. As so often happens, the accidental was the means of developing a

unique, harmonious and beautiful room.

The Wabash Avenue end of this building is divided into offices, as is the tower part above the Auditorium proper. Thus, within the four main walls there is found a magnificent audience room, a well equipped Hotel which has outgrown its present quarters, and a complete modern office building. It is the acme of American enterprise. Here is a building, every foot of which is utilized for commercial purposes, and, which, on the other hand, preserves in the highest forms the vital principles of the best art. There are few buildings in the world which stand for so much in variety of commercial purpose, inge-



APARTMENTS.

EUROPEAN PLAN.

THE AUDITORIUM, CHICAGO.

AMERICAN PLAN.

ful piece of work. Passing down a short flight of marble steps one emerges into a marble lined passage so brightly lighted with electricity as to be fairly dazzling, and reminds the beholder of the wonders of fairy land. It runs beneath the street and connects the great edifices as closely and as comfortably as an ordinary hall. It is needless to say that everything about the Hotel is fireproof, and that all is done that can be thought of to contribute to the comfort and enjoyment of the guest. On the main floor as one enters the office he finds the floors, wall surfaces and ceilings decorated with beautiful onyx, richly colored marbles and elegant mosaics. The par-



nuity of arrangement, solidity of construction and splendid artistic development. The mechanical equipment of this structure is a marvel in itself. There are numerous power plants, electric light apparatus, water supplies, all of the highest and most advanced type as known and understood at this time.

It is fitting that a body of men who have shown such wonderful enterprise and spirit of advancement as have the clayworkers during recent years should hold their convention in a building which is typical of the energetic and indomitable spirit of American enterprise.

Written for the Clay-Worker.

### STREET PAVING BRICKS.

#### 5th Paper.

BY ALFRED CROSSLEY.

#### PAVING BRICK REQUIRE MORE SKILL THAN COMMON BRICK.

THE third and last division of this subject, is that of the best methods of manufacture. This includes the making, drying and burning. Right here is where the chance comes in for skill and ability to display themselves. With these two qualities at the head, a successful result may be obtained even with somewhat unsuitable or doubtful clays, while with the best of clays, without this ability, failure is almost certain to result. This saying has become trite and yet from the oft-recurring instances in which its truth is exemplified, there is as much need to repeat it as ever. A certain amount of slip-shod, rough-and-ready, rule-of-thumb work may be possible in a common building brick yard, and still it will be a successful institution (financially), but the same kind of work on a yard devoted to street paving bricks exclusively, would mean the most absolute ruin. A common brick kiln may turn out say fifty per cent. rough hard, twenty per cent. overburned arch bricks, and thirty per cent. salmon, and yet every brick be sold and a profit result, but the paving brickmaker must turn out every brick vitrified and fit to pass the inspector, and every brick that will not pass is a dead loss to him unless he has some other outlet for them. Hence in the paving brick line a knowledge of the business and the ability to apply it is what counts a big figure toward a successful result.

#### HOW PAVING BRICK ARE MADE.

The method of manufacture of paving bricks is almost identical with that

often employed for building brick. As is well known there are three distinct methods in use for making bricks, viz.: soft mud, stiff plastic, and dry press. Good paving bricks can be and are made by the soft mud process, especially if they be re-pressed. The soft mud process includes both hand and machine made. Hand made bricks are practically out of the discussion. It is doubtful if a single new paving brick plant in the United States started in the last five years has adopted this method. Soft mud machines are still used to some extent, but they belong to a period that is fast passing away. Bricks cost more to make by this process and for paving purposes are not any better if as good as those made by the stiff plastic process. The latter process is the one most largely adopted and so far experience has proved it to be the best. At the same time, the dry press process has its advocates. Such however are mostly those interested in the sale of dry press machines. As the success or failure of a paving brick plant depends very largely on the way the bricks are made, it is important that this part of the question be thoroughly understood. The question is, which process best produces the essential characteristics of genuine paving bricks, viz.: hardness, strength, toughness and non-porosity? In the plastic process the clay is ground, tempered, pugged, until its natural plasticity is developed, and the whole clay mass made homogeneous, and this condition assists the clay in vitrifying before a melting heat is reached. By this method a strong, tough brick is produced, even before it goes into the kiln. In the dry press process the clay is ground fine but not pugged, it goes to the machine in a dry (or rather semi-dry) granulated state and the moulds are filled with it in this loose condition, and under immense pressure is compactly formed into bricks. But here is nothing toward the conditions wanted in a paving brick. The natural plasticity of the clay is held latent, and the brick itself is simply an aggregation of fine but separate particles of clay tightly pressed together. It has often been said, by writers or speakers on this paving brick question, "Get all the clay into the brick that is possible." This is good practical advice, but the condition in which it goes in is very important. No one can deny that the dry press machine will put more clay per cubic inch into a brick than any other, but it is

not in the condition to make a sound, tough brick. Nevertheless all this argument in favor of the stiff-plastic process would not amount to anything if dry-press bricks gave the same results in the kiln that plastic made brick do. But such is not the case.

#### OBJECTIONS TO THE DRY-PRESS PROCESS.

The principle of the dry-press process gives the bricks an artificial refractoriness, up to a certain point, that is a positive disadvantage. Fire brick makers have to recognize this principle. In making fire bricks a dense, plastic body very much lessens the refractoriness of such a brick, while a granular body increases it. It is well known that dry press bricks take more fire to burn than plastic bricks, although the reason may not be so well known. Here the object is to obtain a vitrified body, and in a dry press brick (the principle of its manufacture having, as stated, artificially increased its refractoriness) a stronger heat has to be obtained in order to make it vitrify, and here is where the danger comes in. It resists the effect of the fire until the melting point is reached, when its artificial refractoriness vanishes and the kiln is in eminent danger of melting together. With plastic made bricks the case is entirely different, the principle of their manufacture favors ready vitrification, and this begins to take place before the melting point is reached. The makers of dry press machines often produce samples of vitrified bricks that are little short of perfection, and such samples, with the persuasive arguments of the machine agent, have often proven very misleading to the embryo brickmaker. It is comparatively easy to produce vitrified bricks by the dry process when burned in small sample kilns, but to burn them in commercial sized kilns of 100,000 to 200,000 capacity, and vitrify them from top to bottom, is quite another matter. In the manufacture of paving bricks by the stiff-plastic process the clay should be thoroughly well prepared. Shales and semi-fire clays are best prepared by grinding in a dry pan and tempering in wet pans or in a good pug mill. The former puts the clay in the best condition, but the pug mill will do a great deal more work in proportion to cost and space occupied, and for many clays is practically good enough. One of the most important points is to grind the clay very fine.

(To be Continued.)



Written for the CLAY-WORKER.

## BRICK WORK.

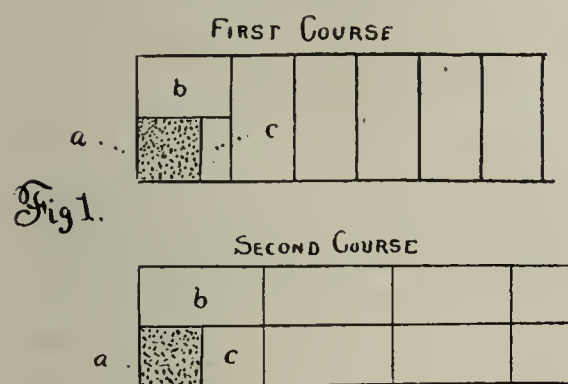
"DON'T think much of their brick-layin'," remarked a stubby man in a snuff-colored overcoat as he viewed the remains of the Ford's Theatre Disaster a few weeks after the dreadful falling of the floors. For some unknown reason, masons, as a rule, wear snuff-colored overcoats. If you see a snuff-colored overcoat ten blocks away, you can be sure it covers the anatomy of a member of the bricklaying fraternity, or as they more tenderly call it,— "the craft."

The stubby speaker turning about disclosed a face that was stubby as its owner was stubby, but for all it was a jovial face and invited a question.

"And what is the trouble?" I asked.

With this invitation he pointed out to where a fracture disclosed the composition of the wall, and the manner of arranging the bricks. While the wall seemed of ample breadth, and sufficiently ponderous for the structure, the bonding was not as perfect as it should have been. And no better evidence of the truth of the workman's remarks could there be than a crevice or two showing in the remaining walls. But "Sh—," said my new companion; "Let's don't talk so loud, that young fellow is a reporter, and I don't want to be mixed up in this."

Taking up the thread of thought suggested by this toiler, I wandered away, and shortly afterwards took a look at some new houses, in the construction of which I was interested. They were at work upon the window seats and door-

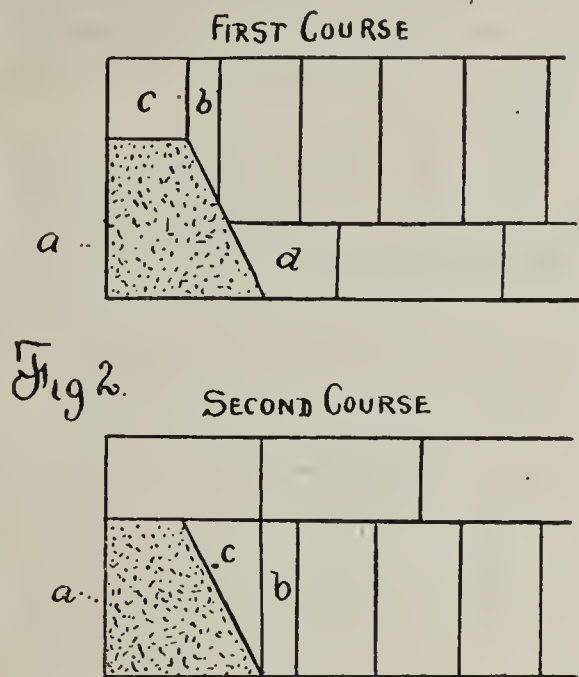


ways. I was pleased to find that the workmen handled their trowels as we used to do. They knew what a reveal was, and one of the workmen pricked up his ears when I spoke of a "rybat." His conversation showed what I suspected, that he was a Scotchman, for that term is the Scottish for reveal, being in all likelihood a corruption of the word rebate.

## SOME TRADE PHRASES.

A window or door opening may have its sides or interior parts so placed as to be at right angles to the remainder of the wall. The name of *jamb* or *check* is applied to the construction. Where there is a projecting portion, the inner part alone is called the jamb, while the projecting portion is named the *reveal*.

In ordinary work the reveal is made half a brick thick or deep. But where superior work is desired, it is well to make it much deeper, as depth is the valuable feature after a close fit. There are several types of reveals, prominent among which are the splayed and square reveals. As the names indicate, the former has a splayed form and the latter is a square recess.

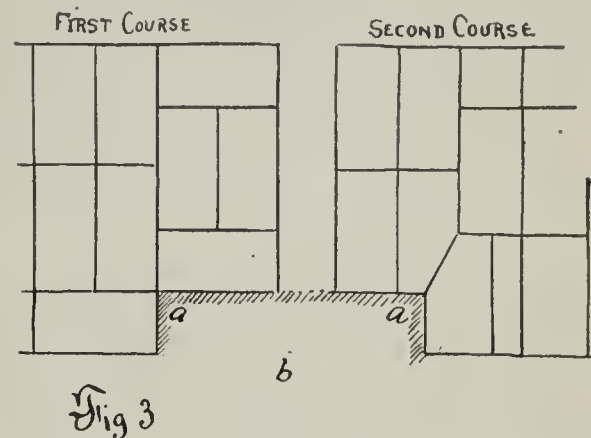


In Fig. 1, are shown the two alternating courses in a plain one brick wall. In the first course, *a* is the reveal or offset, and which is square. *b* is a three-quarter brick, and *c* a bat. The remainder of the course is made up of headers. The second course shows *a* the reveal, which is identical with the course below, *b* a whole brick, and *c* a half brick. The latter is known as the shoulder of the reveal. It will also be noticed that the remainder of the second course is made up of stretchers, and that the wall is thoroughly bonded.

In Fig. 2 is illustrated a splayed reveal as shown in a wall a brick and a half in thickness. It will be noticed that in the first course, the reveal *a* is made by means of a bat *c*, a splayed closer *b* and a splayed bat *d*. The second course is made by means of a half closer *b* and a splayed or rubbed half brick *c*.

An application of the square reveal occurs to me, and which may illustrate

the utility of both. It is in forming recesses at intervals in walls. For instance in a series of blind windows. In Fig. 3 is shown the left hand half of the first course, and the right hand half of the



second course. The remaining halves are like the portions shown, only reversed. *a* is the reveal, *b* the recess. The construction recommends itself as admirable for the purpose. NIMBUS.

Written for the Clay-Worker.

## DRYING BRICK.

BY S. GREEN.

## APPLYING EXHAUST STEAM.

WITH the necessity for very careful distribution, and an easy course, in the use of exhaust steam, I have been especially impressed.

Some years ago, care was taken by me, in the arrangement of the pipes and fittings, to such an extent as to possibly seem to be somewhat superfluous in the view of some pipe fitters, yet the effort met with success; as it was observed that the condensed water and waste steam, issuing from the fourteen radiators, in which about five thousand feet of piping had been used, was about equal in quantity at the many outlets from which it could freely escape.

Since then, at a brick yard where but little attention had been given to the manner of connecting the engine exhaust pipe with the radiators, the details having been rather left with the people of the place, serious results occurred.

In use of "live" steam the pressure is so great that the heat is forced to all the parts with comparative uniformity; and with exhaust supply the result is somewhat similar, though in lessened degree, because of the lower pressure, and not being restrained at the discharge, yet, as ordinarily arranged there is considerable pressure needed to force the exhaust to the radiators, and this tends to insure the supply to the different radiators.

When the pipes are arranged as



standing radiators, with steep drainage; and are supplied with an active current of air, and so abundantly that such a high degree of temperature cannot be maintained as ordinarily; and thus in passing over the pipe surface, carries off the heat more rapidly and receives the supply of engine exhaust so readily as to materially relieve the engine, the pressure is very low, and more care must needs be taken to divide and distribute the supply of steam.

If two radiators are to be supplied, it seems to be important to carry the exhaust pipe to a point between, and nearly equal distance from them, and have it enter the branch of a T with the reduced ends of the "run" leading to the radiators in opposite directions; and if more are to be supplied, to have more branches arranged in order to secure the most equal distribution of the very sensitive supply of steam.

I know of a brick yard where a connection had already been made with the ordinary arrangement of pipes, depending merely upon the current created from such heating, and the pipe to the radiators was of the same diameter as that of the engine exhaust; and but little heat could be forced to the dryer without creating serious obstruction to the engine.

When fans were applied inside of the dryer and occupied the car space of one of the central tunnels, not only was the drying effected in one fifth of the time before required, but the radiation from the pipes inside of the dryer was increased to such an extent as to take a much larger proportion of steam and greatly relieve the engine, though with no material change in the former arrangement of pipes.

So plainly was the exhaust steam shown to be successfully used in making this trial, that the manager said he wished to capture still more of the escaping steam, and another pipe of the same diameter, was connected with the other side of the T from, and close to, the engine, and between it and the back pressure blow-off valve; and twice the room was thus provided for the exhaust to flow from the engine.

A horizontal pipe of considerable length, should provide at least half as much more conveying capacity than the vertical exhaust pipe near the engine. The manner of connecting the second pipe supply to the first radiator it reached, had not received much attention; it met a T with the branch

leading directly to and close by, the standing radiator arranged for it to first supply, and it seems to take the "lion's share," and to the exclusion of a similar and more distant radiator, since erected; and the result is, that though the last connected does well with an independent "live" steam supply, it is of but little use with such an unevenly distributed exhaust steam, and free course source.

The allowance for inlet, the runs of pipe of the radiator, and the outlet, is liberal, even for exhaust steam, and yet this very freedom proves to be especially wasteful in connection with conditions so favorable to the easy reception and use of engine exhaust steam; as it passes through the nearer connected pipes, without being condensed beyond their radiating capacity, and to waste, while those more remote are not fully employed.

It may seem rather strange that no more drying occurs during the 10 hour day run, when so much more power is used, and heat imparted in the exhaust, for the preparation of the clay, and making the brick, than at night with so little power employed. But with the free course for exhaust steam through radiators especially adopted for its use, about as much heat can be obtained as when "live" steam is employed and necessarily restrained at the outlet to prevent other than the water from escaping; and though considerable more steam may freely flow through, it does not appear to impart much more heat, and the pressure is so slight, in either case of quantity supplied, that but little more exhaust steam will be diverted or forced to the radiators that are but partially employed.

This experience has been related at considerable length, because it proves the exceedingly low pressure existing under favorable use of exhaust steam; and so much more occasion for care in arranging the supply consistent with the desirable free course provided, and this matter seems to be rather disregarded in the ordinary arrangement of pipes for the purpose, or not as carefully considered as its requirements appear to fairly command, yet there may not be so much occasion for discrimination as generally applied, and especially steam pipe dryer people are inclined to regard the back pressure they experience as objectionable and recommend the use of live steam in preference; and it, and even some further aid, seems to

be needed to develop fair capacity from such dryers.

In the accompanying use of fans inside, the employment of exhaust steam is strongly recommended, and it is probably the only case, where bricks are to be dried, not only because its adaptation may be made quite as effective as "live" steam, but so little back pressure exists as to not be appreciably indicated on a steam gauge used to test, and especially desirable is its use to save the great amount of heat that may otherwise go to waste.

The easy and simple remedy for the difficulty herein noted, is to check the outlets from the radiators where a seriously wasteful quantity of steam escapes to such an extent as to let but little steam issue, merely sufficient to insure the fair clearance of the condensed water, and in a manner similar to that adopted in the use of "live" steam, in order that more steam may be required to flow to the more distant, or not as easily supplied radiators. But the better remedy is to see that the engine exhaust pipe or pipes, are so arranged as to distribute about the same amount of steam to all the pipes and still retain the free course at the outlets, and when the other conditions are favorable with but comparatively little pipe used to accomplish as much condensation and thus loss occur from friction. The result of having the exhaust from the engine completely reduced to condensed water, will surely indicate that the heat has been fairly radiated.

#### A GOOD RECORD.

THE following item was clipped from a Connecticut local paper:

*To the Editor of the Journal and Courier.*

Nov. 16—M. E. Jacobs of Berlin, brick manufacturer, has closed a very successful season, having made a total of 6,843,000 of brick, breaking all previous records with one machine. If any one in North Haven has made any such amount with one machine we would be glad to hear from them.

This success reflects great credit not only upon Mr. Jacobs and his Superintendent, Mr. Fred. Shares, but also on his whole operating force, and particularly the "New Haven" Machine, which has been his sole dependence for five consecutive years. He has produced more than one million brick a month every month his works have been in operation.





## OFFICIAL ANNOUNCEMENT.

Eighth Annual Meeting of the National  
Brick Manufacturers' Association,  
To be held at Chicago, Ill.,  
January 23 to 27, 1894.

To the Members of the N. B. M. A.:

GENTLEMEN:—It has been determined to hold the Eighth Annual Convention at Chicago beginning Tuesday, January 23, 1894 and continuing the balance of the week.

## THE PLACE OF MEETING

Will be the beautiful Banquet Hall in the Auditorium Hotel. This famous hostelry has also been selected by the Executive Committee as headquarters for the members and their friends during the week of the Convention.

## THE HOTEL ACCOMMODATIONS

Will therefore be of the very best. In case of inclement weather the delegates will not have to brave the elements at all, as it will not be necessary for them to leave the hotel unless they wish to do so. Such commodious and elegant quarters have never before been obtainable. A uniform rate of \$3 a day on the American plan will be made to delegates and their friends. Those preferring to stop on the European plan will be accommodated at \$1.50 a day where two or more room together. Considering the character of the Auditorium these are very favorable terms. The Auditorium is one of America's largest and finest hotels. It is so spacious and so elegantly equipped that luxurious entertainment can be afforded our entire membership.

## REDUCED RAILROAD RATES

Have been arranged for on the certificate plan over all principal lines.

Each person desiring the excursion rate must purchase a first-class ticket and pay full fare to Chicago, taking a printed certificate from the Ticket Agent stating that ticket has been purchased at the regular rate. This when countersigned by the Corresponding Secretary will entitle the purchaser to a return ticket at one-third the regular fare, thus

making a two-thirds fare for the round trip.

Those desiring certificates should present themselves at the ticket offices at least thirty minutes before the departure of trains.

Should any ticket agent fail to have a blank certificate, a certificate or receipt for the amount paid, stating that it is for one first-class fare and bearing the agent's stamp should be taken, and will enable the Secretary of the Association to obtain the reduced rate returning which can not be done if proper receipt or certificate is not taken.

## THE PROGRAMME

So far as arranged for is as follows:

FIRST SESSION, TUESDAY, 2:30 P. M.  
Enrollment of New Members and Roll Call.  
President's Annual Address,

Anthony Ittner, St. Louis, Mo.  
Report of Treasurer,

John W. Sibley, Coaldale, Ala.

Election of Officers.

Installation of Officers.

"The Year's Record,"

General discussion, led by Frank McAvoy,  
Philadelphia, Pa.

NOTE—At the close of each address or essay, the subject under consideration will be fully discussed.

TUESDAY EVENING, 8:30 O'CLOCK.  
Annual Powwow, under the auspices of the  
Chicago Brick Manufacturers.

The following essays and discussions have  
been arranged for.

"Glazed Brick. Their Origin, Value and Use,"  
Geo. B. Fngle, Chicago, Ill.

"American Enameled Brick,"  
Josiah Miller, Oaks, Pa.

"How Can We Secure Trained Help?"  
General discussion, led by Edward Orton,  
Jr., Columbus, Ohio.

"The Brickmaker," Essay.  
J. B. McHose, Boonsboro, Iowa.

"Brickyard Ethics," Essay.  
Donald McDonald, Louisville, Ky.

"Profit and Loss in Brickmaking,"  
General discussion, led by a member of the  
Western Pennsylvania Brick Exchange.

"Is the Dry Press Process Suitable for the  
Manufacture of Paving Brick?"

General discussion, led by Alex. Neidringhaus,  
St. Louis, Mo.

"Vitrified Paving Brick,"

"Brickmaking for Profit and Glory (?)"  
General discussion, led by Jos. Fairhall,  
Grape Creek, Ill.

"Oil as a Fuel for Burning Brick," Address.  
W. S. Purington, Galesburgh, Ill.

"Setting Brick in Kilns,"  
General discussion, led by.....

"Progress of Brickmaking in the South,"  
Essay by A. S. Blaffer, New Orleans, La.

"Waste of Fuel in Drying and Burning,"  
General discussion, led by.....

"The Dry Press vs. the Stiff Clay Process,"  
General discussion, led by L. G. Howard,  
St. Louis, Mo.

"Consolidation as a Cure for Demoralizing  
Competition," Address,

John Parry, North Cambridge, Mass.

"Drying Brick,"  
General discussion, led by.....

Friday and Saturday will be given up to side  
trips about Chicago. Each visitor will be presented with a beautiful souvenir badge by the  
local committee on entertainment.

## AN EXHIBITION ROOM

Will be provided in the hotel where those desiring may display specimen brick—green or burned—tile, etc.

## EVERY BRICKMAKER IS INVITED

To join the Association and it is earnestly desired that all who can will come to the Convention and take an active part in the effort to advance the material interests of the entire clayworking craft.

## HOW TO BECOME A MEMBER.

Craftsmen desiring a copy of the Constitution and By-laws of the Association or the Official Report of the last annual meeting, can obtain same by addressing the Corresponding Secretary, T. A. Randall, Indianapolis, Ind. The requisite of membership is an interest in the manufacture and use of brick and the payment of an annual fee of \$2.00. Craftsmen who are unable to attend the coming convention, but wish to identify themselves with the National Association and to secure a copy of the Official Report of the Chicago Convention, are requested to send their name and address to the Secretary for enrollment.

Respectfully,

THE EXECUTIVE COMMITTEE.

ANTHONY ITTNER, *President*

THEO. A. RANDALL, *Cor. Sec'y.*

"IT'S AN ILL WIND THAT BLOWS  
NOBODY GOOD."

James Taylor, who for eight years past has been superintendent of the New York Terra Cotta Company's Works, has severed his connection with that Company and is now enjoying his first season of rest for many years. We are glad to announce that he has promised to devote some of his leisure moments to the preparation of a series of papers for the CLAY-WORKER. Our readers will be gainers by the operation, for Mr. Taylor is both an entertaining and instructive writer. His vacation will be a short one we opine, for so thorough a workman, one so energetic, practical and skillful, will not long remain idle.

## SOMETHING TO BE PROUD OF.

T. A. Randall & Co.:

Enclosed I hand you \$2.00 for a year's subscription to the CLAY-WORKER. Without any knowledge of the brick business, and with inexperienced help, I made brick and won the "Badge" over five competitors in a "Show down," and I owe it all to the CLAY-WORKER.

Linden, Ind. W. B. MONTGOMERY.



## BRICK YARD SKETCHES.

In and About Chicago.

FOR many months past, Chicago has been in the mouths of well nigh every civilized people on the globe, and some who are not civilized. Now, the eyes of the brickmaking craft of America are turned toward the Windy City, for soon the enterprising representatives of the oldest industrial interest known to man, will meet together there in Annual Convention.

No other community in the country possesses more of interest to clayworkers than does this wonderful city. The very name Chicago has become synonymous with enterprise and achievement the world over. Her brickmakers are noted for these qualities and a visit to a few of the many extensive plants in that vicinity that usually run the year round, will enable one to familiarize himself with all the modern methods and appliances known to the craft.

## THE HAYT AND ALSIP CO.'S. BRICK WORKS.

It was our pleasure recently to visit the new plant of the Hayt & Alsip Co., in company with the senior and junior members of the firm—Mr. H. C. Hayt and C. D. B. Howell, and at the works were joined by Mr. Frank Alsip, Sr., the Supt. Portraits of these gentlemen are given on preceeding pages, and a glance at their kindly, genial faces will

ing the great Chicago fire, the two men came to Chicago from Iowa, formed a partnership and began the manufacture of brick on the west branch of the Chicago river, using horse power, soft mud machines, making 18,500 brick a day, which was then thought to be enormous.

This firm was the first to burn brick with coal in that section, an experiment



SANDING AND SPATTING GREEN BRICK.

that their neighbors thought very hazardous. Afterwards they erected similar plants at two other points, and in 1883 established their first stiff clay yard at 43rd and Roby Streets. The first year they made four million brick. The plant is still running with the original (Chambers) machinery.

## THE NEW YARD.

In the spring of '93, they purchased 90 acres of land one and a half miles from Blue Island, one of Chicago's manufacturing suburbs, on the Calumet Terminal Railroad, and have built a

the machine itself, made by Mr. Alsip, who is of an inventive turn and a very skillful mechanic.

At the time we visited the new yard the first kiln had just been opened. The brick were too hot to be handled, but were evidently very good, and gave promise of a splendid product. Those who think that Chicago building brick are poorly made and inferior, will change their opinion after a visit to this plant. Seldom have we seen a better common brick.

## ONE DISADVANTAGE

Under which they labored was a lack of water. One of the first things they did was to bring their new Barnhart Steam Shovel into use for the purpose of excavating a "Water hole."

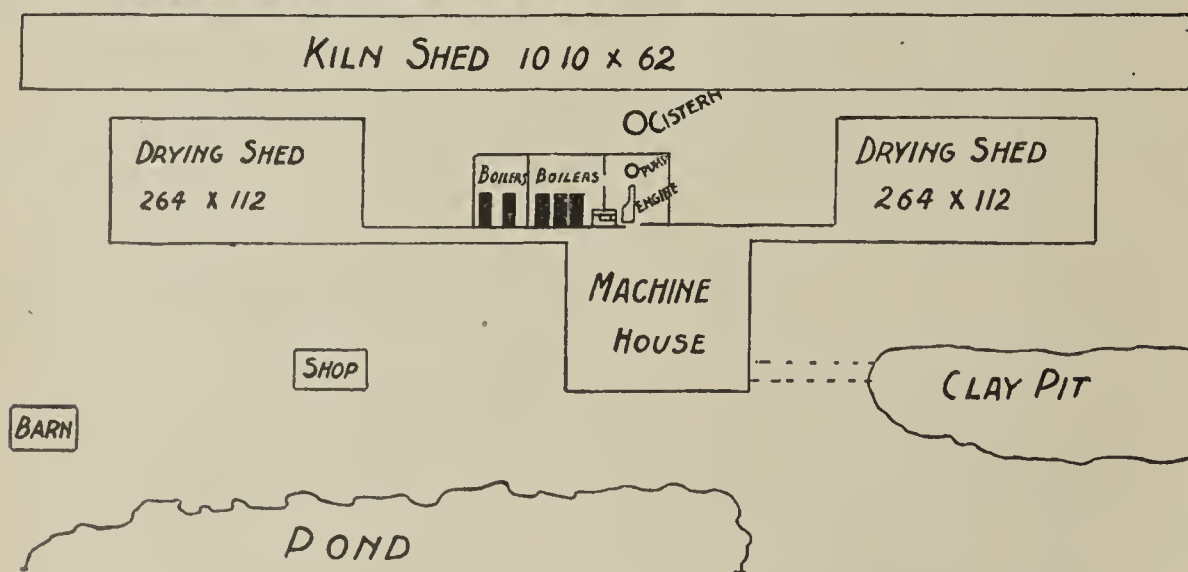
The clay is thirty feet or more deep. They now work it to a depth of twenty-five feet. It is hauled in cars up an incline by cable and dumped into a Drake granulator, which feeds it into a pair of immense conical roller crushers, and stone separators. Then it is carried by belt conveyor to a second pair of rolls, which are set to grind finer than the first, thence up again by belt into another granulator where water is added and it is dropped into a Chambers machine. The second grinding and mixing was done at first, to reduce lime pebbles, which they feared would be a serious nuisance, but luckily the clay is comparatively free from them, but they find that the quality of the brick is sufficiently improved to justify the continuance of the additional grinding and pugging.

We present a sketch of the ground plan of the plant. The machines are set on a line and run the streams of clay in opposite directions. The brick are cut and edged automatically and carried on a belt, running the full length of the dry floor, some 350 feet or more. From the offbearing belts or conveyors the brick are taken by boys, placed on trucks and wheeled to such portion of the dry-floor as desired, where they are set on end.

## A STEAM HEATED DRY-FLOOR.

These dry-floors are novel in construction. Each floor covers an area of about 264 by 112 feet. After leveling up the ground a board floor is laid, which is covered with inch pipes, placed an inch apart. These are covered with sand, and a course of brick laid on the flat, completes the floor, which is heated with exhaust steam in the day time and live steam at night. Over 90,000 feet of

## R.R. SIDING



GROUND PLAN HAYT &amp; ALSIP CO'S NEW PLANT.

tell our readers as plain as words, that we were accorded very courteous treatment, made to feel at home, and invited, cordially, to come again, which we will certainly do when opportunity offers, for we thoroughly enjoyed the trip.

The firm of Hayt & Alsip is one of the oldest and best known among Chicago brickmakers. In 1872, follow-

fine modern plant. There are two Chambers Machines, each with a daily capacity of 80,000 or more—just twice the original capacity. This increase in capacity is due, in part, to the better preparation of the clay before feeding it into machine, made possible by the invention of crushers, disintegrators, etc., etc., and partially to improvements in





HAYT &amp; ALSIP CO.—THE DRY FLOOR FILLED WITH GREEN BRICK.

inch pipe was used on both floors, which will hold 400,000 brick at one time. As the brick are placed on the floor on end a boy sifts sand over them, and with a board, to which is attached a movable handle, carefully spats or smooths them down. They dry in twenty-four hours and are then trucked to common, square clamp kilns, set 42 high, cased and daubed and burned with coal in six to seven days, nearly twice the time required to burn ordinary Chicago brick.

We learn that since our visit they have made and burned nearly six million, and we heard one of their competitors remark that he thought they were among the best brick made about Chicago. Rather a high compliment, considering the source.

## THE LARGEST BRICK PLANT IN AMERICA.

On our way back to town we stopped off between trains at Purington, a station on the Rock Island Railroad, a mile north of Blue Island, near which is the great Purington-Kimball Brick Co's. Works. Under the guidance of the masterly general Superintendent, Geo. H. Drew, we made a hurried trip over the works, which means a good hour's walk, for they cover many acres.

The writer had not visited the works for several months, so, of course, found several new and interesting features, for the manager of this plant, (D. V. Puring-

ton,) is nothing if not progressive, and an invention or improvement, if of any practical value, soon finds a place here.

## AN ELECTRICIAN IN A CLAY HOLE.

One feature we hoped and expected to



CASING UP.

see was conspicuous by its absence. Early in the spring, they permitted an Electric Company to put up a dynamo for the purpose of running the steam shovel by electricity instead of steam power, which it was thought would

prove a great convenience. The projectors were very sanguine, and at that time were quite anxious for the CLAY-WORKER to herald to its readers the news of an innovation—the advent of electricity in the brickyard—but alas! while theoretically, it promised much, practically, it was not a success, and after an expense of much money, labor and time, the scheme had to be abandoned as impractical.

The steam shovel is still just what its name implies, and at the time we last saw it, was diligently carving great furrows in the face of mother earth.

## A NEW SCHEME.

We found a new and successful feature, however, in the form of a home-made dummy engine. Mr. Drew conceived the idea of hauling the clay from shovel to foot of incline where the cable is attached, by steam power. His "John Bull" engine is the result. It is an odd looking affair, made of an old boiler, a water barrel and some scrap iron, and other ingredients, as required. But it does the work of about forty horses. With it a train of six or eight cars of clay is hauled very much quicker and easier than two horses could haul one—especially in wet seasons.

In September '92 an additional tract of forty acres, adjoining the old plant, was purchased and a new two-machine plant was making brick upon it the following December. The plant is, in many ways, a model one of its kind. Every department is orderly, and the machinery is kept scrupulously clean, something, we are sorry to say, cannot be said of



HAYT &amp; ALSIP CO.—HAULING IN CLAY.



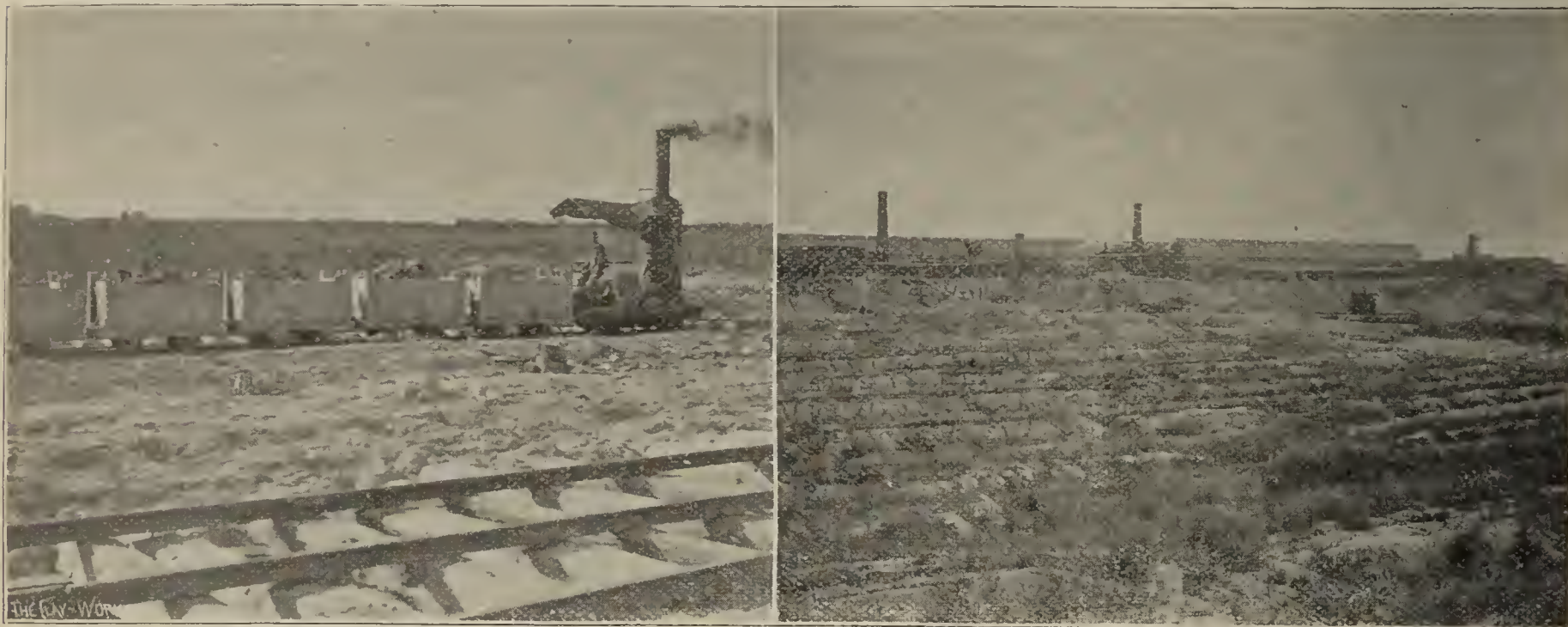
many plants. They were putting things in readiness to shut down. The kilns were all filled with green brick, or those in course of burning, and an emergency kiln was being set outside.

These works have a total yearly capacity of over 120 million common

one and the same thing. "Mike's" experiences were rich and juicy, and can best be appreciated when heard from his own lips. Suffice it for this narrative to state that in 1880 he returned to Chicago, a wiser, if not richer, brickmaker, and with two others started a soft mud yard.

brick, but this year will make less than half that quantity.

Both yards are equipped with Chambers machines. At the time of our visit but one was running and that on short time. His present plants embrace an area of sixteen acres. The clay is



PURINGTON-KIMBELL BRICK CO.—IN THE CLAY HOLE—DREW'S "JOHN BULL" LOCOMOTIVE.

brick, or 15 million to each machine. This is an off year and they will hardly make more than half that quantity. When running full time, their daily shipments average 60 car loads of brick, and yet it has been said that he who presides over this vast business, actively supervising and directing it all, is not a practical brickmaker. If those who utter such nonsense only realized how asinine it sounds to those acquainted with the facts, they would retire behind the barn and kick themselves to death, and in one case, at least, this result would prove a public benefaction.

#### MICHAEL MYERS' YARD.

Among the Chicago delegates to the N. B. M. A. Convention at Louisville, who scored personal triumphs, "Mike" Myers, led the van. His quaint good nature captivated the fun-loving brickmakers, and throughout the meetings wherever "Mike" was, there was a crowd.

Mr. Myers has had a long and strong experience in the brickmaking business. When but a mere lad he began work on a yard, and has passed through all the stages, from trucker to proprietor. In 1879 he was lured to Kansas City by the flattering tales of greatness in store for that then booming city. He thought he knew how to make brick, but found, in short order, that making brick there and making brick in Chicago, was not

In a few months one partner died, and as the other did not believe in machine-made brick, Mr. Myers determined to "branch out on his own hook," and so purchased a Chambers machine,

dug by a Marion Steam Shovel and conveyed to machines in dump cars, in the usual manner. The brick are cut automatically and carried along on an endless belt some two hundred feet long, from which they are picked two at a time and placed on trucks by boys, who soon become very expert, and are taken either to an open yard and hacked in rows under sheds, with movable tops, that are easily raised or lowered as occasion requires, or to a steam-



AN EMERGENCY KILN.

and began the manufacture of stiff clay brick. Success crowned his efforts, and he now owns two large yards at 33rd and Blanchard Streets, South Chicago. Last year he made sixteen million



THE PURINGTON-KIMBELL CO'S TRANSFER SYSTEM.



heated dry-floor, 200 by 100 feet, which is used in winter or during wet spells.



The brick are burned in cased and daubed clamps, set 44 high and 33 feet wide. Wood is used for about 18 hours to warm up and get draft, and then finished with coal in 5 to 6 days.

A CHANGE OF SCENE AND A MORE CHEERFUL LAY.

The wail of dull trade, poor prices and hard times that goes up from so many cities this year of our Lord, 1893, is not heard among the brickmakers of the city of Brotherly Love. We recently made a flying trip East, and spent one day with friends McAvoy. Discouraged craftsmen would do well to follow suit and have a chat with "Frank" on the work of the past season.

His story is one of much interest, and tells of a very busy and profitable year that contrasts strangely with the tale of woe on the lips of so many. Not more strangely, though, than the new yard erected this year will appear to the eyes of fastidious craftsmen looking for a modern plant. The plant is not modern, at least, in one sense—there is no mortgage upon it, and no discarded machinery, kilns or appliances lying about, nor heaps of bats to be seen, and yet, nearly all the equipment is second-hand stuff; at least, so Frank says, and one can't look into his honest blue eyes and doubt any statement from his lips.

Early in the year the far-seeing senior member of the firm, Mr. Thos. B. McAvoy, an honored ex-president of the N.B.M.A., saw that they would probably be unable to supply the growing demand for their brick with their then capacity, so a new tract of land was purchased. It comprises 17 acres, a block beyond their old yard, and is unprepossessing in appearance. Brick have been made from it

off and on for twenty years or more, and to the casual observer it appears as if the clay was pretty well worked out, but not so to the practical eye of Mr. McAvoy, whose good judgment is proven by the fact that they have already made eight million hard brick of very superior quality on this new yard, and Frank says they are just beginning to find the clay.

T. B. MCAVOY & SON'S NEW PLANT.

In February the work of erecting buildings was begun. A second-hand Chambers machine was put in place, also engine and boiler, though they were really as good as new, as their efficiency has proven. The buildings were constructed



MICHAEL MYERS' YARD—THE STEAM SHOVEL.

entirely of old material and present a picturesque appearance.

Frank was at the Louisville Convention to some purpose, for while there he investigated the Standard Brick Dryer and as a result, a four-tunnel dryer was built at the new works, and has given very satisfactory results. He says he still thinks that a hot floor dryer is very hard to beat, but he didn't have room for one at this yard, and now that the Standard has worked so well, he is glad of it.

TOO MUCH SPICE.

They have ten distinct varieties of clay and an equal number of varying grades of sand to contend with, but Frank is equal to the emergency, and throughout the season has been turning out as fine hard brick as any one need care to see. The larger portion of them have gone into sewers at \$8.00 to \$10.00 per thousand.

The clay is taken from different parts of the field, as seems most convenient, and hauled to machine in carts, dumped into a pair of Chambers rolls, thence to pug mill and machine with wire cut off

and edger off bearing belt, from which boys take them and pile them loosely on iron cars, across which is laid strips of wood 2 x 3 x 36 inches. The brick dry much better this way than if placed on metal pallets. They go direct to dryer, which does its work well in 30 hours, the clay being of a tender nature, requiring slow, careful handling. After being taken from the dryer the brick are placed on barrows or trucks, and wheeled to old style dutch kilns with grate bars running entirely across. The kilns are 27 x 37 feet, set 38 high, hold-



THE BOSS—THE TRUCKER.

ing about 200 M. They burn with hard coal and are particular, demanding the very best grade that can be obtained, regardless of price, for Mr. McAvoy is positive that better brick can be made at less cost with good coal than with an inferior quality. They burn 5 days and nights and can average 95 per cent. hard brick, but the demand for salmon



FRANK MCAVOY AND HIS OFFICE.



makes it undesirable to do so.

The success of this plant is a monument to Mr. McAvoy's skill, for no one less practical and proficient in all the details of the work could possibly have accomplished such results as he has. As Frank says, "The yard isn't very pretty, but the brick are as fine as they make them."

Written for the CLAY-WORKER.

### BRICKMAKING ON THE HUDSON.

#### BURNING WITH COAL.

SINCE my last letter Mr. Walsh has burned his second coal kiln, or should I say Mr. Sutton's, as he was the one in charge. Monday, Oct. 18th, at eleven o'clock he set fire. In my last article, I said that he spread the wood across the arch. In this kiln he just prepared the wood as in the arch as to start a wood kiln, some small sticks in the mouth, poured kerosene on, touched a match and away it went, without any discomfort of smoke. By four o'clock, P. M. he had the fire in about the length of a cord wood stick, by shoving some of the live coals back and then throwing coal on them. In the first kiln the wood in the bottom formed coals. The difference in time in starting fire in the other head was about five hours,

ter the first fires had been worked in some distance from wet wood, cut they would go, and kerosene or light wood have to be used to get it started. None of that, as the mouth wood burned down a shovel or so of coal thrown on and it was off. By midnight the fires were together. What a difference! The wood kiln would require the men around it, throwing over wood, working the fires in, having started the night before. In twenty-four hours there was a good heat in the arch, and on Friday afternoon at six P. M. the last shovel of coal was thrown on in two arches, as there was a back-work spot, the other five arches had been out all day. Four days and six hours from start to finish.

On the next yard they were burning a kiln of seven arches and were six days

low one, and cause it to go down still lower. No rustling iron or sliding pole, no extreme heat when you turn fires, as you go along and rustle the coals in the mouth. Run the slice bar in the arch to lose the clinkers, throw in what coal is needed, set on the arch and ash doors tight, put in the spy hole brick, a man with a daub following you, daubing both doors and spy hole. Go around on the other head, set the doors off about four inches, pull the spy hole brick out and then rest. No hurrying to get wood in



SORTING THE BRICK.

the mouth when you open her, to stop the cold air from rushing in. You have the heat and no cracking and warping as of wood, but silent as the frost it is doing its work—and well, in competent hands.



T. B. McAVOY & SONS—FILLING A KILN.

as the wind caused a draught to set through the arch, there was some smoke but nothing to speak of, and in less than a half hour, was all over. No smoking out of arches or standing, blower in hand by the hour, to keep first one arch from going out and then another, or af-

ling the second hand what to set up—a large stick for middle, or two smaller ones for quarter, with a full set of headers, or when it was starting to settle, have an arch come and the next stand up, or having to fire hard to start it, with the thought of having the fire work off in the

EMPTYING A KILN.

at it, and were then ahead of the usual time. The coal kiln did not need any extra work, such as carrying up daub to stop cracks, as there were none. When the kiln settled, the start was all over and uniform, no going on top and tel-

One of the main points is in setting the benches. With wood, it is customary to set them so that the course above laps the one below and so that all courses butt or hack them. With wood the draft drawing in the arch drives the flame through. With coal, that does not exist. In setting, all the bench brick should be set one over the other, which will give a free circulation of heat from arch to arch, which will tend to burn them out better. This, no doubt, has been one of the causes that has wrecked the hopes of some who thought they had all the knowledge they required to burn coal. Looking at a kiln burning, all seemed well, but they open their kiln to find the bottoms all light.

Another point is to have all things that are required around the kiln in



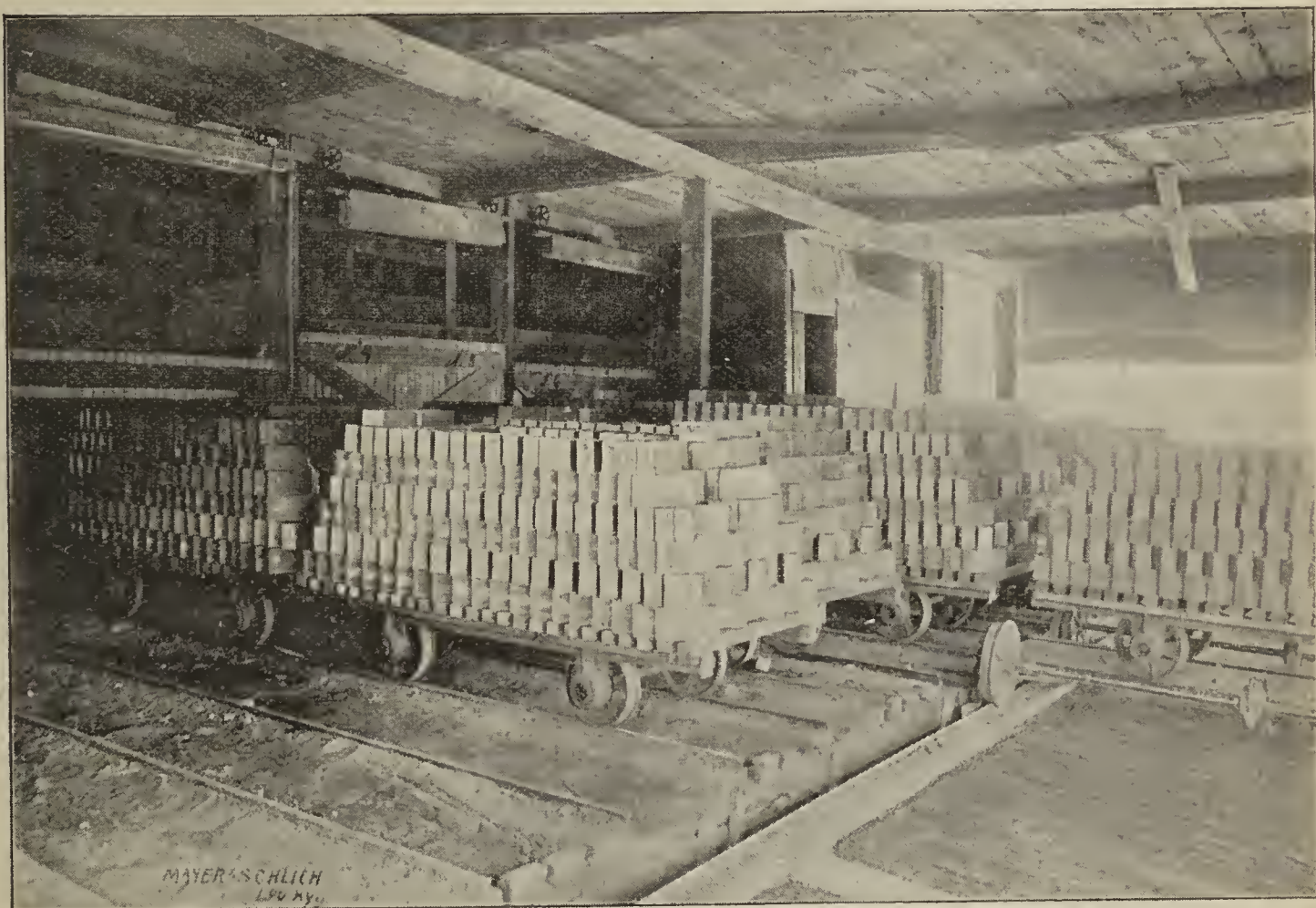
good shape, as ash doors large enough to cover the hole when daubed, not made of tin, as it is sometimes used, and not large enough at that, so that every time fires are turned, are obliged to go to the yard and get soft brick to fill up the space. With the rests for the bars heavy enough, so that they will not melt off and let a section drop in the ash pit, stopping a free draught. And, above all, have some one that has burned brick with coal, around the kiln, so that his foreman will see how it is done, not that it can be learned in one lesson, but if he wishes to continue and take the risk, he has an idea how the heat is increased or controlled as required. One of the leading manufacturers on the Hudson asked his foreman if he thought he could burn with coal if he saw one in operation. He replied that he thought he could. The boss sent him to a yard where they used coal all the time. He watched them, entered all movements in a book. When he came home the boss asked him if he could make it go with coal. "Why," he replied, "It is as easy to burn as with wood." They prepared a kiln, and the boss told him to go ahead and burn it. He was not long in finding out that he was like "Tom Watson" he did not know "where he was at." He came to the conclusion that he did not have the knowledge he thought he possessed. His little book contained more that he did not know, than that he did. They have burned with wood since. The owner is anxious to use coal and tried to get a man that had burned coal to come and burn a ten-arch kiln. He plead other engagements, possibly that was the cause. His experience of coming to burn a kiln that was all prepared and possibly not set in the best shape, and some of the outfit not to his liking may have been the cause of his not burning it. Who knows? Certainly there was a reason.

#### THE COMING MAN

Is the foreman and brick burner in this section who can use coal, and they are few in number. One of the

reasons that more yards have not changed from wood to coal is the want of knowledge, as well as the state of trade—two factors that tend to retard the use of coal. The men who use wood spent years to learn the method. They do not wish to see anything new come in, and there is a "feeling" against the introduction of coal that may be working in "secret" that the burner of whom I have been speaking may have discovered. A man's reputation, as well as injury, to the use of coal may be very easily accomplished. We may say that a manufacturer engages Mr. Sutton to burn a kiln. He comes per appointment and finds, say a twelve or fifteen arch kiln to

and boss, when, as a stranger, he comes to introduce the use of coal. Keep awake, some one says. Yes, he has shoveled all the coal that has been thrown in the arch, and knows that if she is not tampered with will come out all right. While burning, Mr. Walsh's kiln Mr. Sutton never left the kiln only to get his meals. The feeling in favor of coal is extending. One of our largest firms has engaged Mr. Sutton to burn a kiln for them, and very wisely has him on the yard seeing that it is set as it should be. The opinion is, that after the use of coal in this kiln, and being burned by one with the ability of Mr. Sutton, it will replace the use of wood



T. B. McAVOY & SONS—BRICK DRIED, READY FOR KILN.

burn, he has no one with him, but depends on the foreman or what labor is furnished. When night comes he lays down on the coal, telling the man who is with him, which in all probability will be the foreman, to watch her, as he is a judge of what a hard brick heat is, and to call him in an hour. In that time he does a little experimenting, by setting the doors on tight or by putting in the spy hole brick with the result that when he calls the burner she is melting down. His orders were not to touch her, but curiosity or something "worse" prevailed and the damage is done. Washington's orders of none but Americans on guard at night, should be one of the agreements between burner

and lead to the saving of many thousand of dollars each year, as they make over thirty million per year.

#### A CYCLONE.

The ship Brick seems to be destined to meet all sorts of weather. She no sooner passes through one storm than another comes along, so that some of the captains say: "Oh, Lord! what next?"

About four years ago there came a very sudden blow, when the firm of Peck, Martin & Co. failed, not effecting any of the other firms, and no failure since then, although the past summer has been one of a nature to try the fortunes of all. The captains were congratulating themselves that they were doing well in spite of the low prices and



lack of demand, when on the 16th of October a cyclone came, that the weather bureau did not report, the failure of Canda & Kane, foot of West 52nd St., New York City.

"What was the extent of the damage?" was anxiously asked. "Would there be any salvage?" was next asked. "Yes, the salvage is about seven hundred thousand dollars, the damage about five hundred thousand dollars. Meet us next week and we will adjust." Next week came around with all hands on deck except the members of the firm. In looking over the salvage list, things did not seem to be satisfactory. A committee of three was appointed to look the matter over and report, which they did, with the recommendation that all the salvage would amount to forty cents on the dollar, with a proposition from the firm of ten per cent. cash, the balance in notes, six, nine and twelve months. As Bill Tweed said: "What are you going to do about it?" Some who want to get judgement are met with this advice from one who had been looking into the matter very carefully, and is one of the largest creditors, "If you do you will not realize ten cents on the dollar."

#### THE EFFECT

Will reach from South Jersey to Albany. The Hackensack manufacturers are not in it. Simply because they have not been sending any brick. The only note that was held here was due in September and was paid. As in a former number mention was made that the agent for an increased percentage guaranteed the sale. In this case some has fallen in such hands. There is some paper out that will have to be taken care of by both the agent and manufacturer, as it has been discounted.

#### THE LOSSES.

As is generally the case, the losses will fall on some of the brick manufacturers. There is one manufacturer on the Hudson who had a contract with the firm creditor for \$52,000. It is a large sum to accumulate, but when you ship five or six barge loads a week, and receive a note for forty-five days, with some extended notes, it is not to be wondered at. There is probably not an agent but who holds some of their paper. Take the aggregate losses and they will make a snug sum, as they are divided up among many. One firm has twenty-eight thousand dollars, another six thousand, another an even five. Among the individual holders there is one who

has fifteen thousand, another twenty-eight thousand, other with larger and smaller amounts. The firm of Canda & Kane did a business of over two million dollars last year, and have been in business twelve years and have failed for a half million. It seems as though there must have been a bad leak in the concern.

#### MARKET.

When a skipper looks at his barometer and sees that it is falling, he knows that after a time there will be a change and it will commence to raise.

The brick skipper has, for the past two months, noted his barometer day after day, week after week, gradually falling, until at present date it looks as if the bottom would fall out. Why is it? Have the manufacturers overstocked the market? I may say "No" and "Yes." It is a market in the condition of a sick man. They bring him quail on toast, but he cannot take it. Just so with the buyer—there is the stock, the best that has been put on the market at this season of the year for many years, on account of the dry summer, and at a price that would tempt him to purchase, but he has no call for it, and no prospective use for it, does not want it, and in three days time navigation might close.

Some of the manufacturers keep sending under these conditions. Necessity, no doubt, is the reason in some cases; in others, the manufacturers hope that there may be an improvement in the market and they will have stock on hand when it occurs. From twelve to twenty barges at the dock each day, and some of them stay there three weeks or more. One of the barges from here was just twenty-eight days from the day she was loaded till she reached the yard again. It would require a Col. Sellers to see that there was any money in that trip.

The agent's path is not a very smooth one. He tells the buyer that he is losing the chance of his lifetime. The buyer says not a word, and starts to go away, when the other fellow offers and sells him a cargo at a rate below that he thought it could be bought for, and he had not even made an offer. The agent thought he had done well to sell.

The following prices will speak for themselves, as they were the closing rate on December 2nd:

Pale, no demand, \$1.50 and \$1.75 per M; New York Hard, general run and selection \$4.12½ and \$4.62½ per M; Up

River Hard, \$4.25 and \$4.75; Fishkill Hard, \$4.50 and \$4.87½; Haverstraw, Ordinary, \$4.25 and \$4.62½; Haverstraw, Good, \$4.75 and \$4.87½; Haverstraw, Choice Cargo, \$5.00. Top prices \$5.00, and Hudson River brick have been sold as low as \$4.00 per thousand. Take \$1.37½ for freight and commission from such prices, and what remains is but a small sum.

The present cold snap may cause a slight increase in buying, as dealers may purchase a cargo or so for future use. The manufacturer in many cases will load extra boats, for fear the river will close, so that in all probability there will be no change in prices, as the supply will be more than demand.

The year 1893 bids fair to close on the brick market with very low prices as the rule.

A. N. OLDTIMER.

#### ANNUAL MEETING OF THE ILLINOIS BRICK AND TILE ASSOCIATION.

THE following is the programme of the meeting of the Illinois Brick and Tile Association, which will be held at the Capitol Building, Springfield, Ill., January 16 and 17, 1894.

The morning session of Tuesday, January 16 will be devoted to the enrollment of members and the reading of reports. The afternoon session will be devoted to the reading of the annual address by J. E. Chandler, president of the Association, the report of the executive committee on the World's Columbian Exposition, and presentation of official ribbon and photograph to the Association. The following papers will be read:

"The Preparation of Clay Before Using,"

Lincoln Solfisburg, Aurora, Ill.

"Brick and Tile Burning,"

L. H. Martin, Dwight, Ill.

"Steam Drying,"

J. M. McCabe, Fairmount, Ill.

"Farm and Road Drainage,"

Mr. Kenward, Roberts, Ill.

#### QUESTION BOX.

The morning session of January 17 will be occupied by reading papers upon the following subjects:

A paper—"Hollow Building Blocks,"

Geo. S. Tiffany, Tecumseh, Mich.

"Drainage and Irrigation,"

J. J. W. Billingsley, Indianapolis.

"Drying by Hot Air,"

Frank Lawrence, Ray, Ill.

"Methods of Tempering Ware in Kilns,"

Discussion led by the president, J. E. Chandler, Bushnell, Ill.

"Brickmaking," J. H. Hays, Taylorville, Ill.

#### AFTERNOON SESSION.

Report of Treasurer, John McCabe,

Rushville, Ill.

Election of Officers.

Bills Against the Association.

A paper—"Cart Horses,"

Thos. Bonfield, St. Anne, Ill.

"Hard Roads,"

Hon. D. W. Smith, Springfield, Ill.

#### QUESTION BOX.

Arrangements have been made to establish headquarters at the Hotel Palace, where comfortable quarters will be provided for all.

J. E. CHANDLER, President,

G. C. STOLL, Sec'y.



Written for the CLAY-WORKER.

## CHEMISTRY FOR CLAYWORKERS.

## Paper No. 17.

BEFORE leaving the subject of chemical affinity I will endeavor to show you, as I promised to, in the CLAY-WORKER for September, the *modus operandi* of separating the constituents of gunpowder and getting each part back in its original state. This is in reality a step in *quantitative* analysis, which we are quite ready to admit, is a little premature, but, we apprehend it will do no harm. It becomes necessary to explain that there are two kinds of analysis, the first is called *qualitative* and the other *quantitative*; the first determines what any substance consists of, regardless of the quantity of each constituent, assuming, of course, it is a compound substance, and the second ascertains the quantity or weight of each constituent; for example, a piece of white metal is found and a request is made to find out what it is; now by the qualitative method we ascertain that it consists of tin, copper, and antimony. The quantitative method is resorted to to find out, how much of each, and the result shows:

|          |        |
|----------|--------|
| Tin      | 88.00  |
| Antimony | 8.00   |
| Copper   | 4.00   |
|          | <hr/>  |
|          | 100.00 |

This is Babbitt's metal, with which you are all familiar.

Now it has been ascertained for you qualitatively that gunpowder is composed of charcoal, sulphur, and saltpetre and it only remains for you to separate those three articles and weigh them separately to arrive at the quantitative composition. First then, you know quite well that saltpetre is soluble in water and that carbon and sulphur are not soluble in water you make use of this fact then to separate the saltpetre, which you can do in this way. Put some gunpowder in a beaker, or a Florence-flask,—these are vessels made of thin glass and are very handy for boiling substances in—say half an ounce of powder, boil this in about three ounces of water for five minutes; this will break up the mixture for the saltpetre is dissolved by the water and held in solution. Now, pour this into a funnel into which you have placed a filter paper, have a vessel under the funnel to catch the water as it comes through; when it has all run through, wash the

filter with some more hot water, catching this also, and you will have the saltpetre in the catching vessel and the sulphur and charcoal on the filter. By evaporating this solution you will have all the saltpetre back unchanged in its properties.

In a similar manner you may separate the sulphur and carbon, you have only to take a liquid which dissolves sulphur and is not a solvent for carbon; bi-sulphide of carbon will do this. You must first dry the residue of sulphur and charcoal on the filter paper, then put it in the bi-sulphide of carbon and warm it for some time in this liquid, the sulphur will dissolve, it may then be separated from the carbon by filtration, the carbon remaining on the filter, and you have only to allow the bi-sulphide to evaporate to have the sulphur back in small crystals.

As bi-sulphide of carbon is not a very nice re-agent to work with, it may not be out of place to caution you a little as to its properties; it is very volatile and inflammable and, as I have said before, poisonous, its odor is shockingly disagreeable. On account of its inflammability no lamp or flame of any kind should be brought near it. The warming spoken of above, must be done by placing the vessel containing it in a bowl containing warm water, *warm* water mind you, not *hot*.

You have now resolved gunpowder into its constituents and got each one by itself, it only remains to dry the charcoal on the filter and weigh each substance separately to finish the analysis, which would stand thus:

|           |        |
|-----------|--------|
| Saltpetre | 75.00  |
| Carbon    | 15.00  |
| Sulphur   | 10.00  |
|           | <hr/>  |
|           | 100.00 |

This analysis you will observe, has been accomplished entirely by the use of solvents, without in the least altering the substances excepting the dissolving and evaporation of the solvents returned as the substances in their original character. This is an exceedingly simple example of analysis, and besides giving you some idea of the process, it is a good example of a mechanical mixture that might easily be mistaken for a chemical compound.

We will now leave the subject for the present and take up the interesting subject of *heat*.

Frequent mention of heat has already been made in these papers, and time

will not be misspent in studying up the laws and properties of this potent agent. Every clayworker has some idea of the importance of this indispensable factor; he may study its properties as he views them manifested in the kiln, the dryer, and under the steam boiler; these may be called some of its higher forms of power, or powers of high temperature; he may study it in winter freezing up his ponds, bursting his water pipes and solidifying his clay bank. These are its lower forms or powers of low temperature. These two phases of its power are so evident to our senses that we have no trouble in recognizing them, but its power is not so evident at moderate temperatures.

In studying the properties of heat we must lay aside an equally popular and powerful factor called *cold*. It may at first appear paradoxical to assert that heat and cold are one and the same thing, a difference in degree only. Either term would answer our purpose equally well in expressing temperature. Hot and cold are comparative terms and run into each other without limit; therefore we want something more definite. What we are pleased to call cold is only the absence of a certain quantity of heat. The term "cold" is very convenient in common parlance and will on that account be retained, but as a separate and distinct property of matter we must dismiss it; that is, we will retain the term, but abandon the idea.

Cold, heat and temperature are all indefinite terms, unless we affix to them some kind of measure. Length, width and height are equally indefinite, without a definite scale to measure them by. Fortunately we are provided with scales or measures for both. Thermometers and pyrometers measure temperature for us; by temperature we must understand the *intensity* of the heat, not the quantity of it, unless it applies to the same substance.

There are three thermometers in use, but as only two of them are used in this country we shall only describe them. The first and best known is Fahrenheit's; this is the one with 212 for boiling point, and 32 for the freezing point of water, and it's zero at the temperature produced by a mixture of snow and salt.

The Centigrade thermometer is similar in every respect to the Fahrenheit with the exception of the divisions on its scale. The boiling point of the Centigrade is at 100, and the freezing point of water is at zero, so that from the freez-



ing point to the boiling point of water on the Centigrade it is 100 degrees, written 100°, while on Fahrenheit's scale there are 180° from freezing to boiling point. It is therefore evident that 1° Centigrade is equal to one and four-fifths Fahrenheit degrees, or one degree Fahrenheit is equal to five-ninths of a degree Centigrade. I think this would look plainer in figures instead of words.

Thus,  $1^{\circ}\text{C.} = 1\frac{4}{5}\text{F.}$ , or  $1^{\circ}\text{F.} = \frac{5}{9}\text{C.}$  We arrive at this by making a fraction of the degrees between freezing and boiling points on each scale. Thus,  $\frac{100^{\circ}\text{F.}}{180^{\circ}\text{C.}} = \frac{5}{9}$  and  $\frac{180^{\circ}\text{F.}}{100^{\circ}\text{C.}} = \frac{9}{5}$  or  $1\frac{4}{5}$ .

It is absolutely necessary to be familiar with both thermometers, for while Fahrenheit's is the one most commonly used for ordinary purposes, the Centigrade is the one used almost exclusively in scientific pursuits.

W. WAPLINGTON.

Written for the CLAY-WORKER.

#### DOWN IN MEXICO.

##### Sixth Paper.

THE Editor of the CLAY-WORKER has rather brought us to task for not seeing more of brickmaking while in Mexico, or at least for not saying more in the letter which appeared in the last issue of the CLAY-WORKER about the manners and customs of the Mexican brickmakers. Well, the fact is, we were something like the boy who went out to a neighbors for dinner; when asked if he would have some corn bread, said: "No, I thank you, I can get corn bread at home." So we thought brickmakers might like a little change of diet and would possibly prefer a mixture of *some brickyard*, a good deal of bull fight, a dose of silver mine, a very small portion of Mexican Pulque, (most brickmakers claim that Old Rye is good enough for them,) some mountain scenery and quite a considerable of beautiful Mexican maiden, swimming about in the limpid streams that flow from the hot bowels of the earth.

While in the city of Mexico we were particularly interested in a brickyard situated in the south-east edge of the town. The yard itself, or the drying ground proper, was about 300 feet square, with a wall of stone all round, about six feet high, laid in solid cement. The whole ground had been graded perfectly

with a fall to the centre from two sides, and then cemented smooth and hard as a floor, in fact, making a regular drying floor. This yard is situated on the edge of a stream, about the size of an ordinary canal; in fact, it is a canal, for it runs in an artificial bed. This stream is fed from a boiling spring, flowing directly up from the ground at the foot of the mountain out beyond Chapultepec. The clay is obtained in the mountains about a mile from the head of the stream, and is brought on donkeys in a similar manner to that described in a former article. The clay is loaded on flat boats and floated down to the brickyard. This work is done by special contract, then the making of the brick is by contract with a different set of men. There were possibly a dozen different men making brick on this yard, each for himself. The owner set apart a floor space for each man and paid him so much per thousand for the brick on the yard, then another man had the contract for wheeling and setting in the kiln, and still another for burning.

The brickmaker before going to work rigs himself out in a regular Dahoma costume, which is nothing more than a pair of breeches cut off right at the thighs. He wears neither shirt nor hat. In this regalia he is ready to sail in, no matter how deep the mud.

There was but one of the brickmakers using any kind of power for tempering his clay, and this one had a donkey and a boy tramping the mud in a small pit. Each man would go to the boat on the canal and carry his clay in a sack on his back, held by a strap across the forehead. He would bring two or three sacks full, then mix it up and temper it with his feet, then turn out his brick in a single loose bottom mold, 3 x 6 x 12. The clay was of a very short nature and would stand working in this way nicely, so that on this smooth cement floor, they turned out a very handsome brick. They had one round open top kiln that would hold about 100 M American-sized brick. The wall was very heavy, being about three feet thick at the top. The brick were wheeled on barrows up an inclined gangway to the top of the kiln and let down to the setters by ropes.

The fuel used for burning was any and every substance that would burn, principally a little wood and good deal of horse manure. The burning, of course, was not of a kind to turn out sewer brick or street pavers, but was just

sufficient to kill the fishing worms, and answers all purposes for that market. At this yard several years before we were there, they had attempted to use an old style soft mud machine, but it proved a failure, possibly more on account of the ignorant help than anything else. However they claimed that these large brick made with the firm pressure of the machine would crack so badly in drying that they would lose fully two-thirds or more, and for that reason they stick to the old method.

Another yard we visited on the west side of the city is worked on the same plan. However, they burn none of their product. This is strictly an *adobe* yard, using straw for mixing with the clay, just as they did in olden times, so if any member of the N. B. M. A. desires to mention *bricks made with straw*, it is not necessary for him to refer to the children of Israel, but simply to his neighbors down in Mexico, who are making brick in this manner at this very time.

We were much interested in another brickyard at Pueblo, situated right in the heart of the town. This yard was well luted, hard and smooth, just like a good hard yard in this country. It was let out to a number of single brickmakers on the contract method similar to that described in the city of Mexico, only in this case each man was obliged to provide his own clay. The only clay to be had was in the mountains surrounding the town, and found in pockets between the rocks. The brickmaker takes to the mountains with shovel, a bucket of water and a sack. He digs out his clay, soaks it with the water he has carried with him, tempers it and fills his sack, then goes down carrying all the mud he can waddle with the help of a strap across his forehead, makes up the batch into a few brick, then off he goes for more clay, possibly this time in an entirely different direction. These men can be seen coming and going in every direction like bees to a hive. Although this clay seems very tender, it will bake so hard in one day, drying without a crack, that you can hardly break them with the roughest handling.

Brick manufacturers in our part of the country have been striving hard for the past few years to get to the top of the ladder in the art, but find much yet to be learned; still, when our methods are compared with those just described, we can hardly complain of our advancement.



## IN IT FOR '94.

The Coming Machine is Here and will Prove a Boon to Brickmakers.

THE tendency of the times is all one way so far as brickmaking is concerned, and that is toward increased capacity. Every brick-maker throughout the land is scheming to get a larger and better output. The result is a demand for powerful machinery that will mould the clay rapidly and stiff enough to admit of the green brick being handled quickly without getting out of shape. To do this work a machine must be very powerful, the strain caused by working very stiff clay is excessive in the extreme.

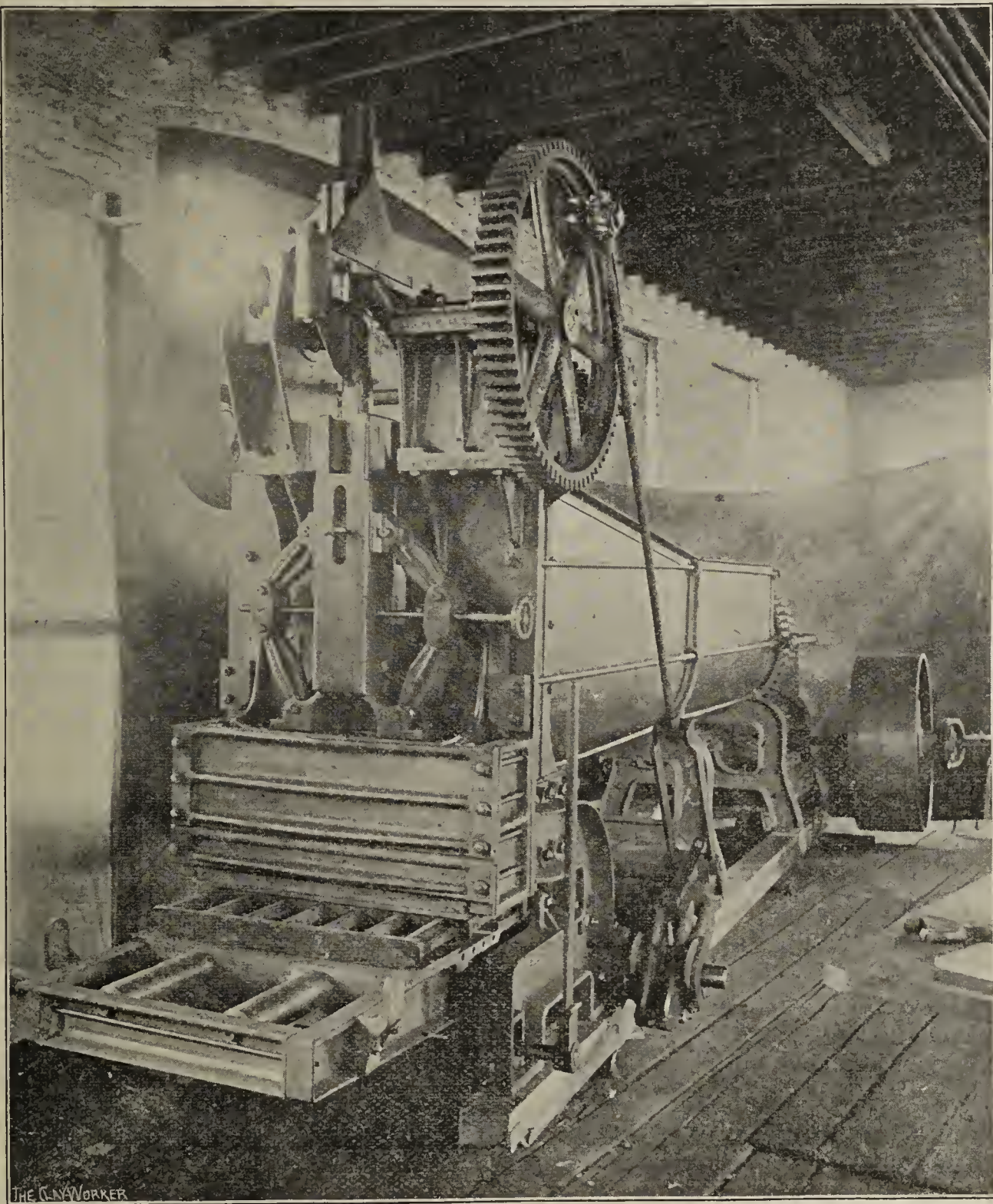
Nothing about a brick yard is more expensive and exasperating than a weak machine that is frequently breaking down, causing a partial or entire stoppage of work about a plant while repairs are being made; appreciating these facts, Messrs. C. & A. Potts & Co., the well known clay machinery manufacturers, of Indianapolis, set about to produce a machine of sufficient strength to enable them to guarantee its users against such evils. This they have done and offer the trade a new all iron stock brick machine that is a marvel of strength.

The accompanying illustration will convey to the reader an idea of the masterly manner in which this machine is constructed. It has several peculiar

features; for instance, it differs from all other soft mud machines in the manner of regulating the pressure on the mould box. The travel of the plunger is governed by toggle joints connected with a right and left screw, thus enabling the operator to increase or diminish the pressure in an instant, much or little, as may be desired, by simply turning the screw. A new release device is provided; it operates positively and is a certain

tion clutch. The working parts are all on the outside and easily accessible. This machine is believed to be the acme of strength and durability, and therefore insures the one all important feature—large capacity. For full particulars write to C. & A. Potts & Co., Indianapolis, Ind., who also manufacture a line of stiff clay machinery, designed especially for the making of paving brick. Any one contemplating the erection of a

paving brick plant is requested to write them for estimates on the entire equipment. The Potts Disintegrators, of which they make several different sizes, are generally admitted to be unequalled for grinding hard clay. It, too, is a machine of large capacity and grinds the clay thoroughly, either reducing or throwing out all stones, etc. These machines became so popular that several imitations have been put on the market which as might be expected are not as efficient and satisfactory as the original Potts Disintegrators. This firm also manufactures a complete line of brickyard supplies, including dump cars, pug mills, barrows, elevators, hoisting drums,



C. & A. POTTS & CO.'S NEW ALL IRON STOCK BRICK MACHINE.

safeguard against breaking of moulds should a stone or any other similar obstruction get into the mould-box. The crank shaft which operates the plunger is made from forged steel. The gears are all large in diameter, with wide faces, and are unusually heavy and strong. It is driven by a 44x12-in. fric-

brick moulds, mould sanders, clay granulators, revolving dump tables, kiln doors, grate bars, and in fact everything that goes to make up a first-class brickyard and will mail free to any one applying for it a new catalogue, fully illustrating and describing their entire line of clayworking machinery.



## VERY SATISFACTORY.

Mr. Anthony Ittner, the honored president of the National Brick Manufacturers Association, has the well earned reputation of making as fine red pressed brick as is produced in America. The following letter is evidence in point and self-explanatory:

ARTHUR DRANSFIELD,      FOUNDED 1838 BY  
Secretary.                      WM. MACLURE.

NEW HARMONY WORKINGMEN'S INSTITUTE.

NEW HARMONY, IND., }  
September 12, 1893. }

MR. ANTHONY ITTNER.  
St. Louis, Mo.

DEAR SIR—We have now used about 50,000 of your No. 8 Belleville Stock Brick, which for richness of color and general excellence, cannot be surpassed. Out of the entire shipment none have been broken nor defaced so they could not be used on the front of the building. The waste in cutting is so small, owing to their superior cutting quality, that the fragments from the whole lot of 50,000 would not make more than an ordinary barrow load.

Respectfully,

ARTHUR DRANSFIELD.

Mr. Ittner is prepared to furnish just such brick in any quantity promptly and at reasonable prices. He manufactures a very extensive line of ornamental brick, as may be seen by referring to his "ad" on page 571.

## LOSSES IN BRICKMAKING.

**P**ERHAPS the greatest loss sustained in the manufacture of dry pressed brick is that resulting from the constant "break downs" of the presses themselves.

The machine man blames the operator, and says he is careless or incompetent. No doubt he is in some instances. More often these "break downs" are caused by bad construction and poor workmanship, the natural result of building machines by contract.

It is a well known fact that most of the so-called "makers" of dry press machines are not manufacturers at all. They let the building of their presses to the lowest bidder, usually at so many cents per pound of metal. Such methods of construction, and the inherent defects of complicated and ill-designed machinery, entail endless expense and loss of time to the user.

In sharp contrast to that class of machines is the Boyd Press, in design, in mechanical construction, simplicity and method of manufacture. Every press sold by Chisholm, Boyd & White is built in the splendidly equipped shops owned and operated by them, and is as

perfect as money and mechanical skill can make it. Each press is carefully tested before shipment, and is specifically guaranteed against breakage caused by defective material and workmanship.

The simple, compact mechanism, and the care exercised in its construction, have earned for the Boyd Brick Press an enviable record, surpassing all others for efficiency, durability and general excellence. A good illustration of this superiority is the fact that a carefully kept record of all the "Standard" Boyd Presses of the 1891 pattern shows the average cost of repairs to be sixty-three cents per month for each machine in daily use, or less than *one tenth of one cent* per thousand brick actually made. These figures represent the entire cost of all breakages from any cause.

A large per cent. of the presses upon which the above figures are based have not required repairs of any character, and though they have been in daily use, making their maximum output, are reported by their owners as in "First-class order and as good as new."

Compare this record with the known experience of brickmakers using the Contract-built presses, upon which an average monthly expenditure of from ten dollars upward is required to maintain them in reasonable working order. A little calculation will show that this amounts in a few years to practically rebuilding the entire machine; in fact, in a single year it amounts to the interest on at least twenty-five hundred dollars, a sum several times greater than the difference in first cost of the two classes of machinery.

Great as this expense is, it is the smallest part of the actual cost of break downs. The loss of new orders, the delays on contracts already taken, the stoppage of manufacture while the operating expenses still go on, the annoyance, vexation and general damage to business, amount to a far greater sum. In fact, the actual loss to brickmakers from using machinery built under contract, badly designed and worse constructed, is really incalculable.

CHISHOLM, BOYD & WHITE,  
Chicago, Ills.

## THE BIRD IN THE HAND.

To say old things are best is pleasant,  
Although it makes one stand aghast;  
For well he knows the Christmas present  
Is better than the Christmas past.

## VISITOR'S REPORT

Of Stewart Brother's Burn as Announced for November 28. 1893.

MAPLE GROVE, OHIO, Dec. 6, 1893.  
STEWART BROS.,

GENTLEMEN:—Performance is the highest test of merit.

Allow me to congratulate you upon the success of your Diurnal Tile Kiln. I was a little skeptical as to its burning tile in so short a time as was claimed for it, but, after making a trip to Mt. Victory, Ohio, on Nov. 28 and seeing a kiln of tile burned in it my skepticism vanished, and will say that it will do all that the Stewart Bros. claim for it, and that it surpasses any other kiln that I have any acquaintance with by far, as to time of burning and uniform burning. The kiln of tile referred to above was burned in 27 hours and was a good burn from top to bottom.

If the above will be of any use to you use it as you see fit. I remain

Yours, etc.,

J. G. WALTER.

OBION, TENN, Dec. 6, 1893.

I witnessed the annual burning in Stewart Bros. kiln at Mt. Victory, Ohio. The fires were started at 4 p. m., Nov. 28; the doors were closed for the night at 9 p. m.; fires were kindled again at 6 a. m., the 29th, and fired until 9 p. m., when the doors were again closed for the night; fired again at 6 a. m., the 30th, and finished at 1 p. m. The kiln was opened the same evening and some of the tile taken out. Tile showed to be burned thoroughly and evenly.

L. L. Fox.

At first sight the above reports may seem to disagree slightly, since one gives the time the kiln was actually fired, the other includes the time when no firing was done.

STEWART BROTHERS.

## A GOOD LOCATION FOR A DRY PRESS BRICK PLANT.

Wm. Haggerty, Box 212, Marion, Ind., writes that that point offers exceptional advantages for the establishment of a large building brick plant. There is an extensive deposit of fine clay, natural gas for fuel and excellent railroad facilities. They now have a stiff clay plant in operation, but desire to add a dry press plant for front and ornamental brick. He will be pleased to correspond with any one desiring to invest in what promises to be a very successful plant.



## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## A Familiar Voice From Colorado.

*Editor Clay-Worker:*

Yours of October 31st was received in due time requesting a short letter for the November CLAY-WORKER, I would have cheerfully complied, could I have spared the time, but Mrs. McCain has been so very ill since she returned from the east, that she required my undivided attention. However, if you have space in your December number, you can publish this short epistle.

I concur in the views expressed by Bros. Purington, Eudaly, Sibley, Blair and Fairhall. Brother Ittner's idea to draw out the "button hole fellows" is good. But how will or can it be done? My idea is to let some of us old cranks put some practical questions (verbally) direct to them and request them to give practical answers, so far as they are able to do so, and by this means draw out discussions on subjects that will be both interesting and profitable to the craft generally. I believe thoroughly in essays or papers being read at the Conventions. At the same time I think they should be brief, and to the point, and I am sure that every one of us "Old fellows" will sit still and pluck the fruit from the branches of all the young trees that have planted themselves in our venerable Association.

I was very, very sorry to read of the death of Brother Siner, I know it came nearer to me than to any other member of our association. Charlie and I off-bore bricks together when we were but ten years of age, and we were close friends until I left Philadelphia and went into the army. After I came back and went into business again in my native city, our friendship was renewed, and neither by word nor act from either of us has that life long friendship been severed. Charlie was honest and honorable in every transaction, a staunch friend and a splendid workman. I hope and trust that he has arrived safe on the other shore and when he presents his work for inspection, that it will be accepted by the Supreme Architect above, and there receive his reward.

Friend Randall, you ask me how is business with me and my neighbors.

There is no business in the brick trade, not a brick is making nor none being used but I am astonished that you eastern men are not full of business. You all allowed the repeal of the Sherman Act, and every one will be busy and prosperous. Now unless I am mistaken the Sherman bill has been repealed for some time; and the repeal of that bill has put Colorado in the "soup" for the time being; still I believe it will be a blessing for this state eventually, as it has already put vim in the citizens here, and they will develop their other resources of which there is more than in any other state in the Union. Raw material of all kinds and in inexhaustible quantities. The trouble with our people is they are not Americanized enough. They cater and bow the knee to royalty and legislate for the benefit of foreign countries, and let their own citizens cry for the necessities of life.

To get gold they'll perjure, sin and lie,  
Should the rest of mortals suffer and die;  
For if death was a thing that GOLD could buy,  
The rich would live, but the poor would die.

Should Mrs. McCain's health warrant me to leave her I shall meet with you at Chicago, and I hope to see the largest Convention we have ever had.

JOHN MCCAIN,  
Denver, Nov. 27th.

## Ho For Chicago.

*Editor Clay-Worker:*

Another Christmas come, another year gone. More memories in the lengthening course of recollection to sum up. Would that we could lay aside all that is sorrowful and only cherish that which is glad and heartsome. Among my most pleasant recollections are our Conventions. Those who never lay dull care aside and take no pleasant recreation know nothing of the pleasures of this world. A sage philosopher once observed that a rich man missed life's greatest and best enjoyment—that of resting when tired. He claimed that as a rich man never did enough work to get tired, consequently he never rested, he knew nothing of its sweetest pleasures, and just so is the brickmaker who knows nothing but work, who never takes a trip, his life is nothing more nor less than animal existence.

Mr. Editor, why don't you sound the tocsin loud and long of the great benefits arising from our annual meetings. Why don't you more fully set forth the pleasures and pastimes, the fun, the real down genuine amusements, derived

from these Conventions, as well as the business end of it, set it all forth in glowing type, so that all may read and learn.

January is the idle month for we brickmakers, even though our works may be running, business for the past season has been wound up, and it is too cold, and too soon to hustle for spring trade, let us then take a trip to the Convention, it will be overflowing with pleasure and profit. I believe Mr. Editor, that each year shows an increased attendance, brickmakers are learning fast the importance of these annual events. So beat the great drum loud and long, waken up the sleeping and still further enlighten the wide-awake. Let each and every reader do the same and I am satisfied that the Chicago Auditorium, big as it is, will be none too large for us. Yours fraternally,

EDWIN C. MCGRAW.

## The Importance of Little Things.

*Editor Clay-Worker:*

I wish to endorse the remarks of a charter member in November number of CLAY-WORKER, in the line of suggestions made by Bro. Purington in regard to the Question Box. Charter Member has certainly struck the keynote. Were I going to make any suggestions, I would simply say, give the Question Box a prominent place on the programme, and not leave that part of the programme until the last moments of the sessions, when everyone is longing for that sumptuous meal and, consequently, is in poor form for answering any questions, which to some at first might appear too simple to be worth considering, but when followed up, is like the question of matrimony—the popping of one question may bring out others, the answering of which may be of the greatest importance to those interested, and may be the means of helping some poor brother out of a world of trouble. How often it is that the little, simple and, apparently, unimportant things or acts do the business. Take our brick machinery as an example. It may be creaking, groaning, jarring and grating on our ears, but let your careful, painstaking and intelligent engineer come around, and with but a turn of a nut here, and a drop of oil there, all is fair sailing again, and it is a pleasure to see it do its work. And all this because the engineer knew what little, simple thing would be effective.

So, I think it may be with regard to



the Question Box. Pour on a little of the oil of kindly and intelligently answered questions, and see if there will not be as much learned by the general craft as from long drawn out papers, and possibly throw a flood of light on some poor fellow's pathway who has been perplexed for years over something he could not solve himself. Try it at Chicago.

As a helper, I enclose you a question or two. If the Executive Committee think there is anything in them, they can use them as one drop to fill up the Box. With kindest regards, I am

Very Respectfully,  
Carthage, Mo. I. C. WHEELER,

When You Get a Good Thing Keep It.  
*Editor Clay-Worker:*

Enclosed please find Express Order for subscription to your Journal. I preserve all copies of the CLAY-WORKER and have them bound at the end of each year. The valuable contributions to the literature of the industry represented make it invaluable for future references. A. H. BORMANN.  
St. Louis, Mo.

A Side Issue Suggested.  
*Editor Clay-Worker:*

With the steady drift in the direction of labor-saving appliances, the mortar box and mixer, which are always associated unpleasantly with buildings in course of construction, and in crowded thoroughfares are a source of danger, will probably ere long be a thing of the past.

Mortar factories have, of late years, been springing up in different parts of the country, turning out mortar in bulk, ready for use, and from which builders can order such quantity and quality of this material as they may need. By this arrangement the streets are never blocked by unsightly mortar beds, and it makes a large saving to the contractors in transporting lumber and labor of handling material. It makes him more independent of labor troubles and strikes. Another advantage will be, that the mortar being made in large quantities and mixed by machinery, insures it being the same quality at all times.

Why could not the brick manufactures in large cities put in plants and operate the same in connection with their brick plants?

The writer has seen estimates made

as to cost of manufacturing the mortar by machine and by hand. If these same figures will pan out, there is a good profit in the business. The power required to operate plants of this kind is light, there being very few, if any, large brick plants which would not have enough power to spare to operate a plant with a capacity of 7,000 cubic feet of mortar per day.

Several of the larger cities now boast of large mortar factories, which have proven profitable to the owners.

A. MIXER.

#### The Enameling Problem.

*Editor Clay-Worker:*

I heartily welcome S. L. deRoth, and find him a desirable addition to our small army of American writers on the Enameling problem. He seems to have recognized the fact that "I. H." is an Englishman; as such, my friend, is he not therefore a foeman worthy of your steel? Where, but in the "Motherland" of the enameled brick industry would you be able to find one more worthy? Why also should he be accused of giving us entirely wrong ideas? I have been unable to find anything seriously wrong with his article, and in fact, consider it one of the best, on the subject in hand, that has ever appeared in any American paper and to the initiated there is nothing confusing nor misleading in it. I have no doubt that "I. H." will lift up his hands in holy horror at the mention of Majolica glazes in connection with enameled brick. I, myself would be almost as horrified at that as I would be at the idea of using a "frit" glaze or the idea of using an enamel that could not be put on a green brick.

I am free to confess that I do not know to an absolute certainty whether a "true enamel" needs "fritting" or not. In fact I may not be able so make a "true enamel" and it may be possible that I do not know what a true enamel is, but I do know that bricks can be enameled while green and can show hundreds of thousands that have been made in that way. I know this to be a fact because I made them myself, notwithstanding the fact that it cannot be done, and I have not even the honor of Mr. Clayton's acquaintance either. I am speaking now of enameled, not glazed brick.

To change the subject we will now refer to the "slip and glaze" method. This, no doubt is "I. H.'s" specialty and he, like myself, has found that it is the

only profitable method to follow for the bulk of his manufacture and he also like "Yours truly" makes a large number of enameled brick when occasion demands it, but I don't think either of us have any use for "frit" in any form, except for the preparation of coloring matter, and I don't believe that either of us will risk our reputations on those colors that make it necessary to use a "frit" glaze, until we find one that will stand exposure to the weather as well as raw glazes do. Both S. L. deRoth and Mr. Clayton may have solved this problem to their satisfaction, but until "I. H." and myself solve it to our satisfaction, we will stick to the methods that have brought us success.

"I. H." in far off England and I (who never saw England nor heard of "I. H." until the CLAY-WORKER brought him to my notice a few months ago,) seem to be getting on amazingly well together but we may be at loggerheads shortly I started out to fight him, but his armor don't seem to have many loose joints in it, but it will become old after a while and then he will have to defend himself. I await the onslaught in fear and trembling, but when the time comes will try to hold up my end.

I think there is room in these columns for all of us, and the more the merrier, so let the friendly war go on. "By their works shall ye know them," and by our works will those outside the arena judge us; (and by our works, not our writings, will we stand or fall, be we transparent or "OPAQUE."

#### From Dry Press To Stiff Clay.

*Editor Clay-Worker:*

Enclosed find \$2.00 for the CLAY-WORKER for one year. Brick business in this locality has been very dull this season. We have run only about half time this summer, and have shut down now for the season.

The Adamant Brick and Tile Co., located at Fairdale, Kansas, about one-half mile from this place, have resumed operations again, although under a new process. They have torn out their dry press machines, which were of the Gregg make, and have put in a stiff mud machine, made by J. W. Penfield & Son. They have a fine bed of shale and are making a No. 1 paving brick. They are also preparing to burn with gas. They are having a gas machine erected on their yard, which they claim will be the cheapest process yet for burning brick.



They say they can burn paving brick for 37 cents per M. The gas machine will soon be ready for operation.

I am only a brick setter, and out of work at the present, too, but I cannot do without your valuable Journal, the CLAY-WORKER. There is so much information to be gained from your Journal that no one, interested in any way in brickmaking should be without it.

Vance, Kans. WIL. COURTNEY.

#### A Remedy for Jenkins.

*Editor Clay-Worker:*

Please allow me to reply to George H. Jenkins of last issue. There is a small brick and tile works not very far from ours, that experienced a like trouble, with a clay almost similar to his. Eighteen inches to three feet of black prairie soil, two to three feet of yellow joint clay and then a yellow shale. His manner of making was a little different from Mr. Jenkins, through rolls to mixer and into a Centennial stiff mud machine. They made very fine brick and tile, and dried same as Mr. Jenkins, and also struck the same "Snag." Some broke in drying, but more broke in burning, although seemingly thoroughly dry when set. By leaving out most of the black soil the breaking was lessened, but it was too expensive stripping and a waste of his material, so he finally decided to build a small dry house as an experiment. It proved so much of a success that he immediately built a large one equal to his capacity, and by this means got over his trouble.

The moral is plain. Could not Mr. Jenkins try the same remedy?

J. W. CARSON.

#### A New Brick Plant.

*Editor Clay-Worker:*

We have noticed, from time to time, pointed communications from this city relative to the brick trade, and we think it not amiss to send a few lines concerning the progress of business during the year. Since early spring the demand for good bricks has been constant; many large operations, notably Broad St., Station, Pennsylvania R. R., and the Philadelphia & Reading's new terminal, and the usual number of two and three story dwellings, with which our city abounds, have been erected. Prices have been firm, and in many contracts the prices have advanced one or two dollars on the thousand. Despite the good demand, several prominent firms

only run four days each week, thus cleaning out old stock and limiting their output. Aside from the larger operations the demand has been largely for hard bricks. The city has been and is now doing a great amount of sewer work and will spend on this line nearly three hundred thousand dollars this winter and coming spring. Fancy bricks in light and dark colors have also received the attention of builders, and it appears that they will soon displace the old red front brick for ornamental work. Architects are finding greater beauty and richer combinations in the varying shades of pink, buff and brown.

Near the close of February last, McCay & Co., Frankford, Philadelphia, succeeded in buying 60 acres of rich clay land situated on the Oxford Pike, Frankford, a large and rapidly growing suburb of Philadelphia. Since that time, with a large force of men, they have been busily engaged in transforming a fifteen acre wheat field into a modern brick yard. They have met with success. The new plant contains well-protected rack room sufficient for the drying of 500,000 machine made bricks. The enclosed new kiln of continuous style, capped with a stack nearly 100 feet high, is large enough to hold 600,000 bricks.

They have found a continuous kiln far better than the old dutch pattern; burning hard bricks from bottom to top, and from side to side. The only objection to it is that you cannot load direct from kiln. They have set up Potts & Co.'s soft mud machine with all of their improved modes for the quick handling of clay; also their disintegrator and sander for the making of superior full muddled bricks. They have just closed with the Simpson Brick Press Co., for their new and latest improved five-mold press, which achieved an envious record at the World's Fair; with this press, aided by the best machinery for preparing dry clay, they will be in position to give their patrons the best the market affords.

They have found your interesting and instructive journal very useful; and take this occasion to thank you for the hints so helpful to them.

Finally, we send you this letter in the belief that you are always desirous to let our fellow craftsmen know of the advent of a new yard, so well equipped and in charge of a practical and experienced brickmaker and burner.

J. J. McCAY.

#### Setting a Good Example.

*Editor Clay-Worker:*

Inclosed you will find P. O. order, the amount of my subscription to the CLAY-WORKER.

The past season has been a very good one for our business. There are four yards in this place. All brick on hand are in last kiln of summer's make. Before first of March yards will be all sold out.

We make drain tile; made 200,000 last summer; intend to turn out 500,000 next season. Drainage has only commenced here. We can sell all we can make. We intend building a large round down draft kiln, so we can supply the demand. Our present kilns are square. Our clay is first-class, burns a brimstone color, but very hard to burn. It takes from ten to twelve days to burn thoroughly. We burn with wood. One-half cord to the M is the least we can burn with.

The above refers to brick, but tile we can burn in three days. Wood costs us \$1.40 to \$1.75, for soft wood, \$2.00 to \$2.50 per cord, hard wood. At the above prices you would hardly advise us to use coal.

I have tried in vain to induce some of our brother brickmakers to subscribe for the CLAY-WORKER, but they are of the Ebenezer Jonathan style—a cut of which appeared in the January '93 number of the CLAY-WORKER. I am sorry to say we have too many of that kind here.

SMITH OF CANADA.



#### An Explanation From Our Friend.

Did I ever work? No, sir, I never contracted the habit. Work habit jest as bad as the opium habit. A man gits in the habit of takin' opium. Suppose he stops it; what becomes of him? Why, he dies! A man contracts the work habit. Stop his work, once—what does he do? Why, he starves to death—he dies! One jest as bad as the other, None in mine, thank you!—Puck.



## PROFITABLE ADVERTISING.

Everyone who reads, knows of the immense sums of money spent in advertising. Everyone who thinks, knows that such sums of money would not be spent if it were not directly and positively profitable.

There are degrees of profit. Profit is influenced by many things, and to a large extent by the ingenuity and ability of the advertiser. Primarily, he must have circulation. The main purpose in advertising is to catch the attention of a large number of people. Then this attention must receive favorable consideration, and if the promise of the advertisement is sustained, a direct and worthy business advantage has been gained.

One has only to look over the daily and periodical press to see the general motive of all advertising; and he has only to analyze the various methods to see the varying grades of ability which are exercised in this work.

## CONTINUITY THE IMPORTANT ELEMENT.

The same kind of advertising, the same general methods, cannot be adapted to all purposes. The style of advertising which will sell soap will not sell a brick machine. The clientage in each case is different. But in one point all advertisers meet on common ground. They wish to keep themselves before the public. The mere publication of a name and ones business is infinitely better than no advertising at all. We are soon forgotten after we are gone. We may proclaim our wares to the world, but as soon as our efforts have ceased others clamor for attention, attract our customers, close our field and we are, to an extent, out of the fight. One point of successful advertising is to keep everlastingly at it, to keep always in view. We then attract to ourselves those who are wanting what we have to furnish.

The mere attention of the public is not all. The attention must be secured. But a favorable impression of the article advertised does much to bring positive results. In the matter of machinery, the mere assertion of superiority does not carry conviction. Nearly all advertising does that. But an assertion of excellence accompanied by a plausible reason therefore meets with more favorable attention. A machine must be not only a good machine as to its general construction, one of good capacity, moderate in cost of operation,

but of all things, it should have the faculty of producing something of a good quality at a relatively low cost. This is the struggle in all branches of manufacture, excellence, combined with a low cost of production. This carries with it cost of operation when viewed from the various standpoints, and to some extent, the cost of the machine itself.

## SPECIFIC ADVERTISEMENTS BEST.

But the really important thing is, that the public should know that the machine is a money maker; that it produces a good article at a relatively low cost. Anything that will prove this adds weight to the bare assertion. The statement that the Hurricane Press is a money maker, that it is in use in the yards of certain men who are known to be money makers, that they are favorably impressed with it, is a good argument. It invites attention and enquiry. The customer writes for information as to details. The advertisement has done its part of the work of making the sale. The enquiry coming from an advertisement of this kind is more valuable than if it came in response to a general advertisement, which said that the Hurricane was "The greatest machine on earth and don't you forget it."

In the latter instance the impression was merely general. It simply gave the address of the machine to one who was wanting to buy. He probably wrote for a half-dozen circulars at the same time he sent for this one. He was not especially effected by the broad assertion of superiority. He was used to it. Buyers of machinery like to know that they are not alone in their purchases. One of the great advertisers of flour milling machinery uses the line: "This is the kind of mills we build." Then follows an illustration of the mill, a statement of its capacity and a letter of approval from its owners. Changing this with each issue of the journal, makes a good impression. The public learns to know that this concern is building a large number of first-class plants. On general principles the form of advertisement which is special is more profitable than that which is general.

## DON'T CROWD.

A great many advertisers of machinery make the mistake of crowding too much matter into a given amount of space. There are cheaper ways of issuing a catalogue than in the columns of a trade journal. The advertisement is expected

to secure the favorable attention of the buyer. This being done, the catalogue and the verbal explanation may do their part in making the sale. The list of what one has to sell may properly belong to any advertisement, but a complete description is seldom necessary, unless it be in the case of an essentially new device, in which instance, arguments rather than facts or examples must be resorted to.

Statements showing the advantage, the real business and commercial advantage, which may be derived from a certain purchase are the telling ones after all. This applies to any line of machinery. To do all this, to reach all this attention, the space must be so utilized, the advertisement must be so formed that it will attract attention. An attractive space, a good first line, followed by convincing statement and proof set forward in a picturesque business manner pays relatively the best. The name of the manufacturer need not go on the first line. It is what he does, what he has to offer, why he offers it and its money making qualities that are important. With these facts before one, the address of the advertiser will be found even if it is in small type at the bottom.

An advertisement should do something more than meet the eye of the one in want. It may show him that he is behind the times. That the rest of the world is ahead of him. It may prove it to him. This is creating business, but all the time this is in line with what was first indicated. An advantage of purchase must be shown.

In looking over the columns of the CLAY-WORKER one sees classes of advertisements to which the above statements do not specifically apply. In some instances a record or list of supplies brings to the mind of the reader where he may secure certain articles. He may not be needing them to-day, but with this advertisement staring him in the face every time he opens the paper he will have the name of the party furnishing these articles, in his mind the minute a want is created. Thus an advertisement may act as a reminder and yet serve its purpose.

## THE LAMENT OF THE OUT-OF-A-JOB.

Oh no, we never advertised; we thought we knew it all,  
Till biz'ness took a sudden slump an' pushed us to the wall;  
An' now we're knockin' 'round the world, our hopes unrealized,  
An' all because we knew so much, we never advertised.  
—Art in Advertising.



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, DECEMBER 15, 1893.

Entered at the Post-Office at Indianapolis,  
Indiana, as second-class matter.

## TERMS OF SUBSCRIPTION:

One copy, one year (in advance) - \$ 2.00  
One copy, one year (if not paid in advance) 2.50  
Six copies " " " " " " " " 10.00  
Ten copies " " " " " " " " 15.00  
Foreign subscriptions 50 cents additional.

Subscribers when ordering a change of  
address should give both the old and the new  
address.

ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL & CO.,  
5 Monument Place. INDIANAPOLIS, IND.

## THE PASSING OF THE YEAR.

With this number we close our twentieth volume. Another year, with its freight of memories, has been indexed and filed away for future reference. The record is made, its bright anticipations realized, or its griefs and disappointments, are now, alike, of little moment.

Standing on the threshold of a new year, our senses are given up to the things in prospect more than to those past. It is best so. The passing year has been an eventful one. Beginning with bright prospects and seeming universal prosperity, it developed depression and idleness and closes in uncertainty.

We hope and believe the coming year will reverse this order. There are many signs that point to a general improvement in the world of business. Our patrons generally report a notable increase in inquiries of a satisfactory character, and in some cases report sales and orders for spring delivery.

In this connection we call special attention to the "ad." of the Wallace Mfg. Co., on page 575. We are especially gratified with their success for the reason that it fully demonstrates the CLAY-WORKER'S superiority as an advertising medium. That firm has confined their advertising to the CLAY-WORKER exclusively during the past year. Others now see that they might have followed their example with profit.

For ourselves, we can look back upon '93 with gratification for the success that crowned our efforts to give the clay-working craft the best magazine ever published in our field. For '94 we have a still richer feast in store for our readers. With the January issue we will begin the publication of a most valuable and interesting series of papers on Clay-working in the Ohio Valley, from the pen of Edward Orton, Jr., which alone will be worth many times the subscription price of the CLAY-WORKER to every reader. Several other new, yet able writers, will contribute entertaining and practical matter, while all of our old and instructive contributors will continue to give our readers the benefit of their experiences.

We can, therefore, assure our friends and patrons that the CLAY-WORKER for 1894 will show marked improvement, though that is saying very much. No clayworker in America can afford to miss the January number. Now is the time to subscribe.

## CONVENTION WORK.

We are all better men for being known to our neighbors. We are all better clayworkers for knowing one another. The knowledge that our neighbors know us and see what we do, has a tendency to upbuild our morals, and, at the same time, is an incentive for improvement in our ordinary, every day doings. Acquaintance helps to elevate the standard of intelligence. Thus it is that by the mere coming together in Convention of clayworkers we are advanced. Our acquaintance is extended; there is more reason for wanting to be known as a successful clayworker; there is a stimulus in it. That is the broad, general advantage which comes from a meeting and association of this character. There is another—a technical advantage. The work of the Convention is educational, not alone along the lines of morals and general intelligence, but in special business and technical intelligence. We go to the Convention and return to our yards with a fuller knowledge of the practical, everyday details of our business. For these reasons wide-awake clayworkers cannot afford to stay away from the Convention. There may be those who have establishments so large and so prosperous, who think themselves so well equipped from a technical standpoint, that they feel it unnecessary to attend the meetings of this body. But

they certainly overrate their own abilities, and underrate the practical advantages to be gained by the discussion of the various details of the business. Our observations lead us to the opinion that those who have the fullest knowledge of the business of handling clay, those who are most solidly grounded from business and technical standpoints, are found on the floor of the Convention.

The idea advanced by some that practical men do not write papers, practical men do not make speeches about making brick, practical men do not write books, is clearly refuted at every Convention. The National Brick Manufacturers' Association is a progressive body, and represents the highest intelligence of the brickmakers of America, both from a practical as well as theoretical standpoint.

## HOLIDAY GREETINGS.

"It's guld to be merry and wise,  
It's guld to be honest and true."

—Burns.

It is well that there is one day in the year, which, by common consent is a day of relaxation and festivity; and a period longer or shorter, around it, which partakes more or less of the same features. No matter what may be the social chasm between the extremes of wealth or culture on the one side, and of poverty and ignorance on the other, the whole world, at least, the whole of christendom are close of kin on Christmas day. There may be a philosophy in this, which is more significant than is usually recognized, and more indicative of the brotherhood of man than at first appears.

At some periods and in some countries, the observance of Christmas has been very marked as a leveler of all social conditions.

Then in England, two or three centuries ago it was the custom of the landlords to invite their tenants and their families to the hall where at least one day, but often nearly a whole week, was spent on the most democratic level in feasting and dancing. The time between eatings and drinkings was taken up with all conceivable sports, so that the poet said:

"England was merry England when  
Old Christmas brought his sport again,  
'Twas Christmas broached the mightiest ale,  
'Twas Christmas told the merriest tale,  
A Christmas gambol oft would cheer  
A poor man's heart through half the year.

Not greatly unlike this was Christ-



mas in the South in slave times. Then slave and master were on familiar, if not equal, terms. Christmas day was given up to feasting. If all the hands, male and female, young and old, could not be feasted in the master's mansion large quantities of substantials and delicacies were sent to the quarters, and every slave from the two year old toddlers up to the superannuated "uncle" and "aunt" expected a present, and usually got it. Ordinarily all work was suspended during the Christmas week, and the time was devoted to visiting and mirth. So precious was this week to the slave, that for many years, it was, and to some extent even yet is, hard for them to learn, after coming to the North, that the demands of business would not allow a whole week of idleness and sport.

One feature of the Christmas holiday in all countries and in all civilizations, where it has been observed at all, has been its gift offerings. It is easy for a cynic to say that these are often costly and frequently comparatively useless. But what of that? Let those who can, remember whom they will with costly presents, but the poorer must never be despised because their gifts are humble.

Just when or how the beautiful conception of Santa Claus originated is not known. It seems almost like an inspiration.

Could human ingenuity devise a better conception for the embodiment of that universal love of children, which is known to exist? Santa's yearly offerings are chiefly to childhood. The great heart of humanity beats for childhood, and this embodiment of that sentiment in a fairy friend, who goes forth annually to distribute favors among children, is one of the prettiest sentiments known among men.

We shall not attempt to persuade our adult readers that there is a veritable Santa Claus, with sleigh and reindeers, distributing veritable favors during Christmas eve, but, we would be far from robbing childhood, the instructive and profitable amusement the legend affords. Let the children look for Santa Claus and may no little one look entirely in vain. Let all who are too old and worldly wise to be deceived by the fable, remember that there is in deed and in truth a universal love and care for childhood, and let us all cherish the unselfishness which the Christmas festival so much ministers to. If observed in this spirit young and old alike

will be happier and better for the week of merry making.

To our readers each and every one, we bid A MERRY CHRISTMAS.

#### A PROPHECY FULFILLED.

In view of what has recently transpired at Chicago, we are moved to repeat a paragraph or two from an editorial in our April, '92, issue. Then, as now, we firmly believed in the literal truth of the old adage that "Honesty is the best policy," and, in referring to an uncalled for and malignant attack on us by the editor of the *Brickmaker*, we quoted Beecher's trite saying, "It is best in business, as in other things, to tell the truth. A lie may mislead; for a time it may cover a weak point, but in the end, truth will strip off the mask."

In Mr. Davis's case the mask has indeed been stripped off and with an unsparing hand. The expose of his many misdeeds has been severe in the extreme. As we write, he lies a prisoner in jail, without friends and without sympathy. His course is run; our prophecy has come true. "An abiding success can not be achieved by duplicity and mere pretense."

#### HAVE YOU?

This is the gladdest time of all the year to the faithful editor. We are feeling pleasant. Very many of our subscribers have already made their yearly offerings. There are many more to follow. Those who have neglected the felicitous duty of renewing their subscription will please consider this a gentle hint.

#### TRADE LITERATURE.

We are indebted to Mr. Edward A. Barber for a copy of his new work entitled "The Pottery and Porcelain of the United States," an elegant book of nearly 500 pages and more than 200 illustrations, very many of which are rare works of art. The text shows the touch of a master hand, and is both instructive and entertaining. To those interested in the higher branches of clay work, it would surely be an appropriate and pleasing Christmas offering. It is published by G. B. Putnam & Sons, New York, is substantially as well as handsomely bound in cloth with gold title and top. Price \$5. We have an arrangement with the publishers that enable us to offer the book and the

CLAY-WORKER for 1894 for \$6. If you want it for Christmas send us your order at once.

We have received a copy of a very neat pocket catalogue of ornamental brick from the Coaldale (Ala.) Pressed Brick Co., all of the ordinary forms of pressed and ornamental brick are illustrated together with many new and beautiful designs. The worthy treasurer of the N. B. M. A., Mr. John W. Sibley, of Birmingham, Ala., is also treasurer of this company, and we take it, will be pleased to send a copy of the catalogue to any of our readers sufficiently interested to write him for it.

One of the most strikingly artistic title pages we have seen of late is that on the front cover of the Huyett & Smith M'fg Co.'s new catalogue, a book of 125 pages devoted to their system of drying brick and other clay products. Reader if you want to know something about drying, heating or ventilating, write the Huyett & Smith M'fg Co., Detroit, Mich., for their general catalogue No. 28.

We have to thank Chisholm, Boyd & White, Chicago, for a very good imitation of the Blue Ribbon awarded them by the World's Columbian Exposition for their exhibit of dry press brick machinery. It is certainly a thing of beauty, and we hope will prove a joy forever to that enterprising firm.

Our sanctum is decorated with a very pretty calendar for 1894 which bears in bold type the name and address of the Platt Pressed and Fire Brick Co., Des Moines, Iowa, and also conveys the information that that company makes a specialty of fine pressed buff and speckled buff brick and also manufactures fire, common and paving brick.

We have an office calendar of our own for 1894—a CLAY-WORKER calendar, which we will be pleased to mail to any of our readers desiring it. It is not as pretty as some, but it will bear close acquaintance 365 days in the year.

#### NOT IN IT.

In the November CLAY-WORKER we stated that our good friend, Anthony Ittner of St. Louis, had been requested to test some foreign and American clays. As a result, he is deluged with letters from those desiring similar service, and information relative to the proposed tests. To relieve him from further unnecessary correspondence, Mr. Ittner requests us to announce that he is not in the clay testing business. Our readers will please "take due notice and govern yourselves accordingly."





## THE NIGHT BEFORE CHRISTMAS.

‘T WAS the night before Christmas, when all through the house  
Not a creature was stirring, not even a mouse;  
The stockings were hung by the chimney with care,  
In hopes that Saint Nicholas soon would be there,  
The children were nestled all snug in their beds,  
While visions of sugar-plums danced in their heads;  
And Mamma in her kerchief and I in my cap,  
Had just settled our brains for a long winter’s nap—  
When out on the lawn there rose such a clatter,  
I sprang from my bed to see what was the matter:  
Away to the window I flew like a flash,  
Tore open the shutters and threw up the sash,  
The moon, on the breast of the new-fallen snow,  
Gave a luster of mid-day to objects below.

When, what to my wondering eyes should appear,  
But a miniature sleigh, and eight tiny Reindeer;  
With a little old driver, so lively and quick,  
I knew in a moment it must be St. Nick.  
More rapid than eagles his coursers they came,  
And he whistled, and shouted, and called some by name—  
“Now, Dasher! now, Dancer! now, Prancer and Vixen!  
On! Comet, on! Cupid, on! Dunder and Blitzen;  
To the top of the porch, to the top of the wall!  
Now, dash away, dash away, dash away all!”  
As dry leaves that before the wind hurricane fly,  
When they meet with an obstacle, mount to the sky,  
So, up to the house-top the coursers they flew,  
With sleigh full of toys—and St. Nicholas too,  
And then in a twinkling I heard on the roof,  
The prancing and pawing of each little hoof;  
As I drew in my head, and was turning around,  
Down the chimney St. Nicholas came with a bound.

He was dressed all in fur from his head to his foot,  
And his clothes were all tarnished with ashes and soot:  
A bundle of toys he had flung on his back,  
And he looked like a peddler just opening his pack;  
His eyes how they twinkled! his dimples how merry—  
His cheeks were like roses, his nose like a cherry;  
His droll little mouth was drawn up like a bow,  
And the beard on his chin was as white as the snow!  
The stump of a pipe he held tight in his teeth,  
And the smoke, it encircled his head like a wreath.  
He had a broad face and a little round belly  
That shook when he laughed, like a bowl-full of jelly.

He was chubby and plump—a right jolly old elf;  
And I laughed when I saw him in spite of myself.  
A wink of his eye, and a twist of his head,  
Soon gave me to know I had nothing to dread.  
He spoke not a word, but went straight to his work,  
And filled all the stockings: then turned with a jerk,  
And laying his finger aside of his nose,  
And giving a nod, up the chimney he rose.  
He sprang to his sleigh, to his team gave a whistle,  
And away they all flew like the down of a thistle:  
But I heard him exclaim ere he drove out of sight,  
“MERRY CHRISTMAS TO ALL, AND TO ALL A GOOD NIGHT.”

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- “BRICKMAKER’S MANUAL,”  
Morrison and Reep, \$3.00
- “BRICKMAKING AND BURNING,”  
J. W. Crary, Sr., \$2.50
- “TABLE OF ANALYSES OF CLAYS,”  
Alfred Crossley, \$1.00
- “DURABILITY OF BRICK PAVEMENTS,”  
Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

## Christmas Time Is Coming.

And these books would make a splendid Christmas offering for brickmakers old or young. A yearly subscription to the CLAY-WORKER also makes a very pleasing holiday gift.

All of these books and the CLAY-WORKER one year to one address for \$7.00. Order early and avoid delay.

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.  
ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.



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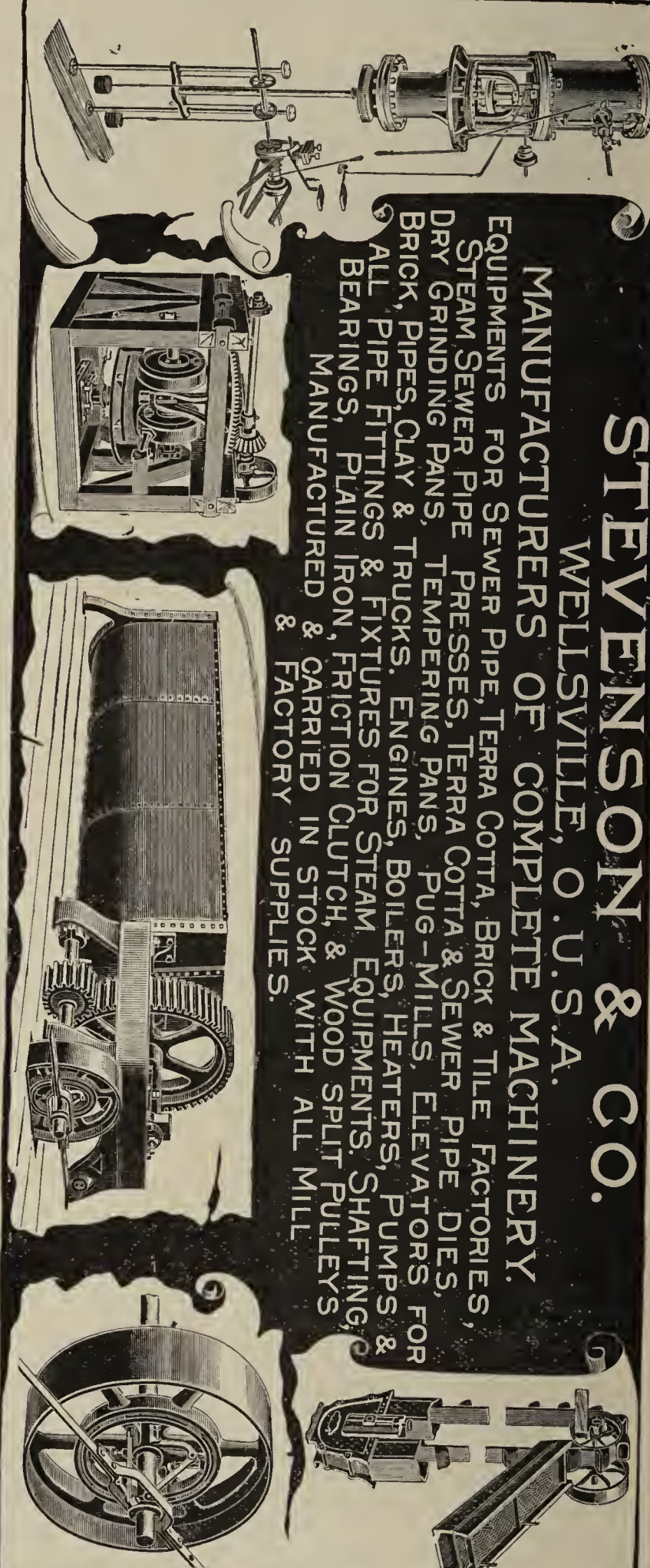
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WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS, FOR BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING & BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS, MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.



THE LARGEST LINE AND GREATEST VARIETY OF  
RE-PRESSES IN THE WORLD.

## The Columbian Re-press.

Its Record is Its Recommendation.

**READ!**

C. W. RAYMOND & CO.

DEAR SIR:—

Enclosed you will please find order for repairs. You will ship by freight soon as you can and oblige.

Yours truly,  
JAMES FLOREY.

P. S. This is my first order for repairs. I have run your Press two years and pressed about 2,000,000 bricks. The machine has not cost me one cent for repairs. Would not be without it, no matter what the cost would be.

Yours truly,  
JAMES FLOREY.

These repairs amounted to \$27.50.

• S E N D •  
• F O R •  
• C A T A L O G U E •

• S E N D •  
• F O R •  
• C A T A L O G U E •

The No. 1 Perfection,  
The No. 2 Perfection,  
The No. 3 Perfection,



The Columbian,  
The Columbian Special,  
The Columbian Grand.

C. W. RAYMOND & CO., Dayton, Ohio.



## EDITORIAL NOTES and CLIPPINGS.

Leard & Nickleson's tile kiln sheds at Scioto, Ohio, burned to the ground recently.

Mr. Jas. Clifford, West Superior, Wis., desires to communicate with parties using tale.

The Utica (N. Y.) Fire Brick Co.'s plant was destroyed by fire the 25th ult. Loss, \$200,000.

Kaltenbach & Frocht's brick works at West Reading, Pa., was slightly damaged by fire recently.

The brick plant at Waynesburgh, Ohio, has increased its force of employees and its facilities.

The Keifer Brick Co., Williamsport, Pa., suffered a loss of \$500 from a fire in their brick sheds.

The new brick plant at West Hamburg, Pa., has been completed, and they are now busy turning out orders.

Isaac Fox, Sr., a pioneer brick manufacturer, died at his home in Nicetown, Pa., at the advanced age of 81 years.

Some of the sheds belonging to the Milldale Brick Co., Southington, Conn., were damaged by fire recently to the extent of \$500.00.

Jones & Clemens, Anderson, Ind., have purchased new machinery, and as soon as it can be put up will commence the manufacture of paving brick.

Great Western Brick Co., Chicago, Ill., has been incorporated with capital stock of \$50,000. Incorporators, George R. Horsinger, C. T. B. Goodspeed, Wm. M. Northrup.

Jas. K. Blain, Canton, Ill., writes that he intends going into the brick business in the spring, and asks for a copy of the CLAY-WORKER as he "wishes to get posted on brick machines, etc."

Jas. Moore & Son are erecting a large brick plant at Eldora, Iowa. They will put in all the latest improved machinery and appliances and will have a capacity of 30,000 brick per day.

The Bonnot Co., Canton, Ohio, are having a good trade on a new Revolving Screen that saves the expense of an attendant. This company has a number of large machinery contracts on hand, and report trade as improved.

A. F. Howe, Allegan, Mich., writes that while the brick business has been very dull this season, better times are anticipated, and he intends to erect patent kilns and put in a dry press machine the coming season.

Mr. O. T. Denison, of Mason City, Iowa, looked in upon our sanctum recently. He had been making one of his periodical inspecting tours among brick plants, something brickmakers would profit by doing more generally than is their wont. He reports a fairly good

season in both brick and tile. He thinks the prospects are good for an increased volume of business and intends putting in a line of improved machinery, etc.

Samuel, Abraham and Geo. Lewis, Royersford, Pa., are interested in a new fire brick plant that will soon be erected in that city. The ground has been purchased and work on the buildings will commence in the near future.

The Simpson Brick Press Company have recently sold an entire plant in the East, including the magnificent five-mold press they exhibited at the World's Fair. Notwithstanding the hard times, this company reports business as being good.

An explosion of gas the 29th ult., under the floor of one of the drying sheds of Sieberling & Schrader's brick works at Jonesboro, Ind., resulted in a fire which destroyed the entire plant, utterly ruining the brick machine and engine. Loss, \$10,000.

Wm. Fisher, the veteran manufacturer of dry and wet pan crushers, of Pittsburgh, Pa., called at our office recently. His business for the past season, while not up to that of the previous year, has been fairly satisfactory. He considers the prospect for 1894 rather encouraging.

The Frost Engine Co., Galesburgh, Ill., report that while in common with all manufacturers they are conscious of general financial troubles, their orders have enabled them to continue work throughout the season. Inquiries are coming in more satisfactorily and there is a good prospect for old time activity the coming season.

Frank D. Brown, well known to our readers as the representative of the Whittaker Semi-Dry Press Brick Machine, has removed from Quincy to Chicago, Ill. Hereafter his address will be Room 53, Major Block, corner La Salle and Madison Streets, where he will be pleased to have any and all visiting brickmakers call upon him.

The New York Terra Cotta Co. has incorporated the Philadelphia firm of Stevens, Armstrong & Conklin, into their firm. The two works will now be operated as one. Mr. Henry Stevens and Ira Conklin are at the Ravenswood works; the other two partners are to remain at Philadelphia works, operating them as a branch of the New York Terra Cotta Co.

The buildings of the T. B. Townsend Brick and Paving Co.'s plant at Zanesville, Ohio, were entirely destroyed by fire the 24th ult., together with about 300,000 paving brick in the dry house. The loss is \$50,000, partly covered by insurance. One hundred and fifty men are thrown out of work. As the firm have enough orders to keep them busy next year, steps preparatory to rebuilding have been taken. The fire is supposed to have been of incendiary origin.

Mr. Z. Castlebury, for many years connected with the Southern Terra Cotta Works, Atlanta, Ga., has severed his connection with that firm. The business will hereafter be conducted by Messrs. P. Pelligrini, L. P. Hunerhopf and A. Fuggazzi. It is the purpose of the new firm to materially enlarge their works the coming season.

Attention is called to the advertisement of the Simpson Brick Press Company on page 523, which refers to the matter of the awards on brick machinery at the World's Fair. It will be seen from this that the Simpson Press carried off its share of the honors. We congratulate this enterprising concern on their victory, and believe that the many brickmakers using the Simpson Press in the United States and Canada will be pleased to learn of their success.

Wm. & S. H. Alsip, Belleville, Ill., inventors and builders of their well known square down-draft kiln bearing their name write that, thanks to the CLAY-WORKER, they have had a fairly prosperous year. They are at present putting in a battery of kilns for the Briggs Stock Lock Joint Paving Brick Co., at Shoustown, Pa. They are also building a plant for the Southern Illinois Penitentiary, Menard, Ill., where the brick are made by the convicts. They think the outlook for the coming season is quite promising.

Mr. Geo. W. Snyder, of Madrid, Perkins Co., Neb., writes us under date of December 6, asking for circulars of brick machines, etc., and then asks us to "Give him all the information in regard to cost of making brick without burning," and adds, for our edification, that "Portland cement there by the cars costs about \$4 per barrel." We presume Mr. Snyder wants to know just the cost of producing brick ready for the kiln. As he does not state the rate of wages paid in his section, nor any facts pertaining to the character of his clay, nor the method by which he proposes to manufacture, we do not feel equal to the occasion, and so must commend him to the tender mercies of the clay experts.

The Jarden Brick Co., of Philadelphia, have issued a well executed, colored lithograph of the new passenger depot, erected by the Pennsylvania Railroad Company at Broad St. This magnificent structure is justly called "America's Grandest Railway Terminal," and will long stand as one of the chief architectural glories of the Quaker City. The contract for the face and ornamental brick was awarded to the Jarden Brick Co. solely on the superior merit of its product, and the results have, in every way, justified the award. This Company has the largest dry pressed brick works in the world, having an annual capacity of about 60 million under one roof, being fitted out with seven large size Boyd Presses, Dry Pans, etc., all furnished by Chisholm, Boyd & White, of Chicago.



## HARD TIMES OR NO HARD TIMES

*We Have in the Past Few Weeks Booked Orders as Follows:*

Don Valley Pressed Brick Co., Toronto, Canada:

Big Wonder Brick Machine with  
Side Cut Board Delivery Table and  
Large Open Top Pug Mill.

Collins Brick Co., Grand Rapids, Mich.:

Big Wonder Brick Machine and  
Cunningham's Automatic Brick Cutter.

M. J. Rhodes, Worthington, Minn.:

Little Wonder Brick and Tile Machine and  
No. 2 Clay Crusher and Stone Separator.

H. J. Thistelthwaite, Sheridan, Ind.:

Little Wonder Tile Machine.

Todd & Graves, Thorntown, Ind.:

Little Wonder Brick and Tile Machine.

Clark & Davis, Michigantown, Ind.:

Little Wonder Tile Machine.

Boston Fire Proofing Co., Boston, Mass.:

Wallace Patent Pug Mill.

Chambers Glass Co., New Kensington, Pa.:

Wallace Patent Pug Mill.

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**NOTE:**—Notwithstanding the *Hard Times* our sales for September, October and November have exceeded the same months of 1892, which we attribute to the merits of our Machinery being better known. [See cuts on page 619]

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## The Wallace Mfg. Co.,

*Correspondence Solicited.*

**FRANKFORT, IND.**



## Ohio Valley News.

The demand for sewer pipe is very good just at present and the stock at each yard is very low, the shipment of many orders being delayed until certain sizes of pipe are made. This state of affairs will insure a steady run of the sewer pipe works through the winter. This is certainly a brighter outlook than any other industry in this section can boast of.

The long anticipated combination of sewer pipe manufacturers is now nearer completion than ever. The following well known representatives of this industry have been meeting at the Sewer Pipe Exchange in Toronto, Ohio, with this end in view: Jno. N. Taylor and T. F. Anderson, of Knowles, Taylor & Anderson, of East Liverpool, Ohio; N. U. Walker, of the N. U. Walker Clay Mfg. Co., Walkers, Ohio; D. J. Kennedy, of the Toronto Fire Clay Mfg. Co., W. F. Dunsbaugh, R. W. Francy, of the Great Western Fire Clay Co., W. B. Francy, of John Francy's Sons & Co., W. F. Myers, of The Ohio Valley Fire Clay Co., and P. Connor, of the Excelsior Sewer Pipe Works, all of Toronto, Ohio; W. B. Goucher, of Calumet Fire Clay Co., Calumet, Ohio; S. McAdvo, of the Empire Clay Co., of Empire, Ohio; Alfred Lythe, of Jno. Lythe & Sons, of Wellsville; James Cooper, of The Diamond Fire Clay Co., A. J. Baggs, of the Royal Clay Mfg. Co., and T. J. Evans, of the Uhrichsville Fire Clay Co., all of Uhrichsville, Ohio; R. F. Taggart and James Mullins, of the State Line Fire Clay Co., of East Palestine, Ohio; Jas. M. Porter, of McMahan, Porter, & Co., New Cumberland, W. Va.; Wm. H. Hartford, of the Myers-Hartford Clay Co., of Malvern, Ohio; C. A. Freeman, of Freeman Fire Clay Co., Freeman, Ohio; The Standish Fire Clay Co., of Andersons, W. Va.; The United States Fire Clay Co., of New Lisbon, Ohio; The Cincinnati Sewer Pipe Works, of Cincinnati, Ohio; The Pittsburgh Clay Mfg. Co., of New Brighton, Pa., were also represented. Mr. T. F. Anderson was elected President and Chas. A. Freeman, Secretary. Steubenville, Ohio, was selected, after much discussion, as the headquarters of the association. The association, when completed, will contain twenty-four companies with a capital stock of \$2,000,000. The location of the works is as follows: Toronto district, 9; Andersons', W. Va., 1; New Cumberland, 1; Wellsville, 3; East Liverpool, 1; New Lisbon, 2; East Palestine, 1; New Brighton, 1; Malvern, 1; Uhrichsville, 3;

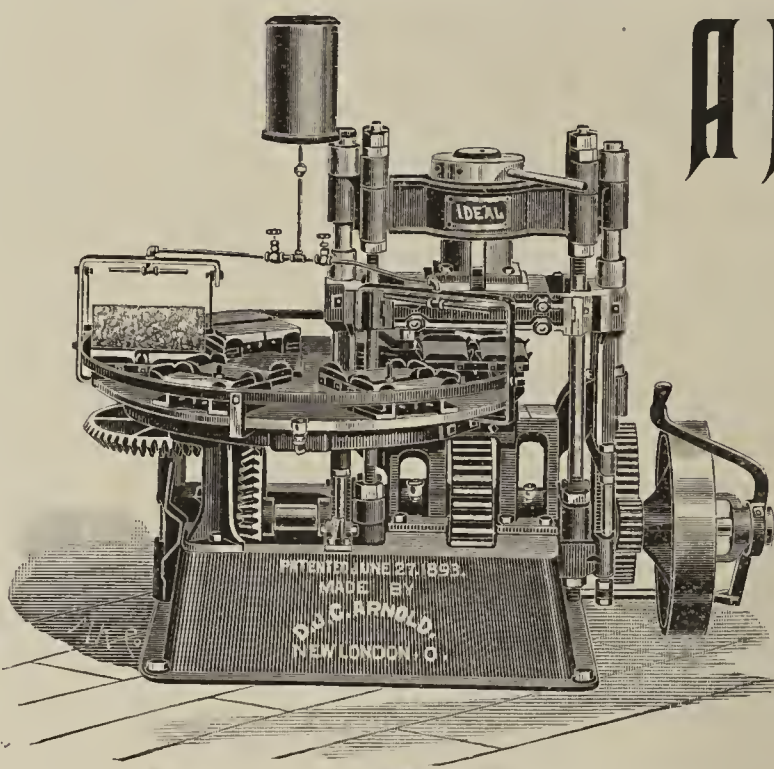
Cincinnati, 1. The deliberations of this association are largely secret; but it is reported on very good authority that the combination goes into effect shortly after the new year is ushered in.

The Calumet Fire Clay Co., of Calumet, Ohio, are making extensive improvements about their plant, enlarging the clay yard, rebuilding some kilns, and replacing their old boilers with an entire new battery of steel boilers largely increasing their steam capacity.

The frame building and engine room

over the clay shaft of Markle Fire Clay Co., at Markle, Ohio, was destroyed by fire Nov. 21st. One of the miners was being drawn up when the fire broke out and was about thirty-five feet from either bottom or top, the machinery refused to work and the watchman baffling the flames let him down to the bottom of shaft by hand, no doubt saving the fellow's life. He was badly burnt about the arms and legs in his brave efforts to save his companion. The loss is about \$400.

BUCKEYE.



## A NEW RE-PRESS

ORIGINAL IN DESIGN.

Simple,  
Compact and  
Durable.

New features not found in any other.

If you are interested, send for a full description. Address

D. J. C. ARNOLD,  
New London, Ohio.

## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

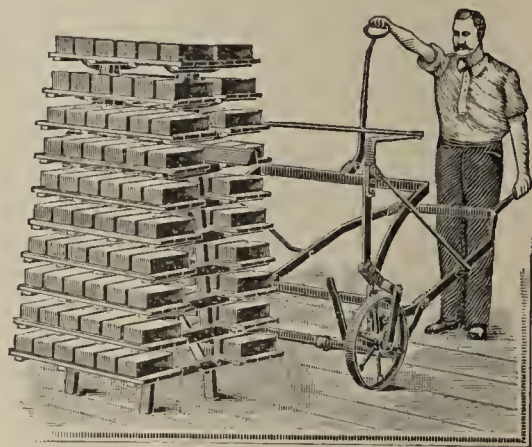
### WHAT USERS SAY OF THE MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."

We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

**MOCK BROS.,**  
**MUNCIE, IND.**

Mention the Clay-Worker.





## Victor Testimony.

Every agent admits that with the exception of the bicycle he sells

## Victor Bicycles are Best.

Such straws show conclusively the way the wind blows.

OVERMAN WHEEL CO.,

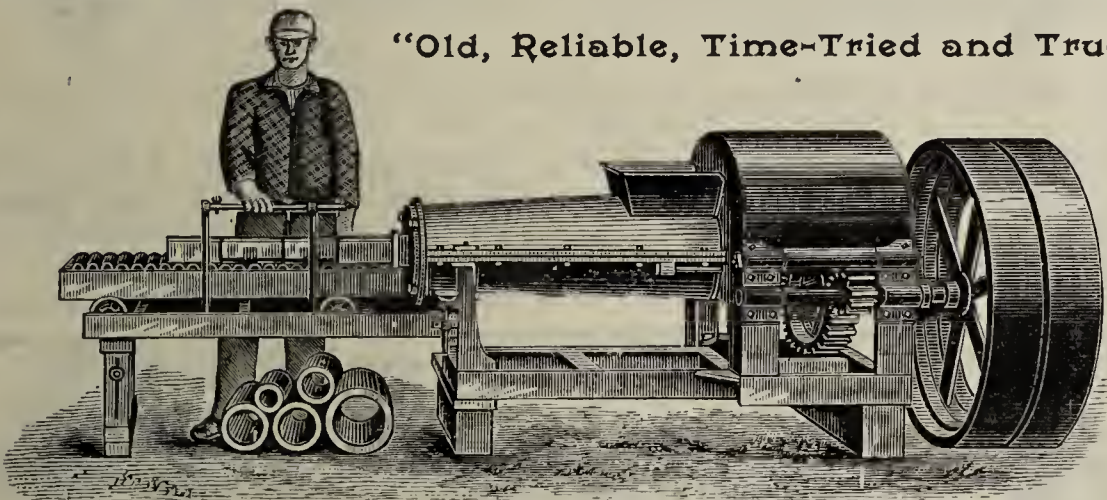
BOSTON,  
WASHINGTON,

DENVER,  
SAN FRANCISCO.



## KELLS & SON'S IMPROVED BRICK AND TILE MACHINES.

"Old, Reliable, Time-Tried and True."



### P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

**We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.**

*We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.*

For Illustrated Circulars, Prices, Etc., address

**KELLS & SONS, Adrian, Mich.**

## H. C. BAIRD & SON,

PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.

### FOR SALE, WANTED, ETC.

**Advertising rates in this column 25 cents a line, or 4 cent a word, each insertion; about seven words make a line—Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.**

**FOR SALE.** Six Tempering Wheels, steam geared, latest improved, almost new. Will sell cheap. Address, **PETER FELL,** Trenton, N. J.

**WANTED.** Position as foreman of fire brick, paving brick or sewer pipe plant. Has worked his way from water boy. Don't drink. Best of references. Address, **H. LINCOLN,** Midvale, Tuscarawas Co., Ohio.

**WANTED SITUATION.** As superintendent of brickyard, by a man who thoroughly understands the business. Best of references. Address, **R. L. SLAUSON,** Galesburg, Ill.

**CONTINUOUS KILN MAN** wants a situation as burner or foreman. Five years' experience with press brick, stiff clay, and soft clay brick. Good references. No guess work.

**"FUELLERO."** care "Clay-Worker."

**WANTED.** Partner or partners to manufacture clay and coal conveyors—in demand. Stock already made, \$3,000. Correspondence solicited and catalogue sent on application.

**L. BOUDREAU,** 170 East Spruce St., Manchester, N. H.

**FOR SALE.** One Henry Martin Steam Power Brick Machine, nearly new and in complete working order; also one Henry Martin Horse Power Brick Machine in good order. Address, **AYERS BROS.,** Toms River, N. J.

**FOR SALE.** One No. 4 Adrian Brick and Tile Machine with extra heavy Pug Mill, and smooth roll Crusher, with two sets of Dies and extra set of Augers. Suitable for common or paving brick, also tile. Good as new, only been run 4 months. Address, **A. FRIES & SONS,** Brookville, Ind.

**FOR SALE—ENGINE AND BOILER.** Twenty horse-power, all complete, with attachments and connections thereto, in good running order, ready for business. Cost \$1,100, will sell for \$225 cash. Will pay \$10 railroad fare to any one coming to see it and purchasing. This is a bargain, come at once. **J. W. EVERAL,** Westerville, Ohio.

**WANTED.** A thorough business man who understands the brick business to join with me and another party in organizing a company to manufacture paving and pressed brick in thriving western city, where there is no competition, and where a large amount of paving is to be done. Good clay and other facilities. Capital will be furnished, or part, if desired. Correspondence solicited. Address, **F. W. SNYDER,** Leavenworth, Kan.

**FOR SALE.** Brick plant at Sheldon, Iowa, a growing town of 3,000, three railroads, capacity 25,000 per day. Sales good, at \$8 to \$10 per M. Machinery, sheds and kilns in good order. Will take 200,000 brick at \$8 per M, and make terms easy. Parties owning plant not brickmakers and have other business. A bargain for some one. Address, **Box 505,** Sheldon, Iowa.

**HAVING** severed my connection with the Griffen Enamelled Brick Co., am open for an engagement. I am a graduate of the Rensselaer Polytechnic Institute with sixteen years' experience in white and colored glazes, slips, and enamels, as applied to pottery, enameled brick, or terra cotta. Have for the last six years been General Manager of the most successful enameled brick plant in the United States. Address, **HENRY R. GRIFFEN, C. E.,** Phoenixville, Pa.

**FOR SALE.** A brickyard containing 17 acres of land. Dry by the pallet system, 200,000. A Henry Martin Brick Machine, patent Elevator, and the best Continuous Brick Kiln in the world. Good clay for brick and tiling. Sold 3,000,000 brick the past year. There is always a good demand for brick, there being no stone quarry within 150 miles. Reason for selling, too much other business, my patent kiln taking a great deal of my attention. Address, **CARL F. KAUL,** Madison, Neb.



**WANTED.** A position by a practical brick-maker and burner as foreman or burner. Reference given. Address, "C", 12 1 k. Care "Clay-Worker."

**WANTED.** Position as superintendent or head burner. Experienced in the manufacture of bricks by dry and mud process. Can burn same in down draft, up draft and continuous kilns. Best recommendations. Address, H. SEEKAMP, 12 1 d. 1121 Autumn St., St. Louis, Mo.

**FOR SALE CHEAP.**—A Chief, soft mud brick machine. It is as good as new, having been used but little and is a good machine. Reasons for selling—going out of business. For full particulars address, OLD MANN, 6. tf. d. Care Clay-Worker

**I HAVE For Sale at Dunbar, Pa.** One soft clay Brick Machine, manufactured by Nolan, Madden & Co., of Rushville, Ind. The machine has never run two days. Reasons for selling same will be given by addressing J. F. SCANLAN, Receiver, 7 tf d. Rushville, Ind.

**I HAVE For Sale one soft clay Brick Machine.** steam power with 18 molds, manufactured by Nolan, Madden & Co., Rushville, Ind. This machine is at Deshler, Ohio, and has never been used. For particulars address 7 tf d. J. F. SCANLAN, Receiver, Rushville, Ind.

**WANTED.** A working foreman, thoroughly posted in dry press (Simpson) process, setting and handling, etc. Address with references THE RATHBUN CO., 10 3 c. Deseronto, Ontario, Canada.

**WANTED.** Situation as foreman of fire brick and fire proofing factory. Many years of experience and the very best of reference as to sobriety, ability, etc. Would prefer to locate in the far West. Address, F. P., 10 tf d. care "Clay-Worker."

**A FIRM** in New York dealing in building material, desires to get the agency for a first-class Front Brick. Manufacturers in need of such connections and can furnish a large variety in color and shape, will please address F. B., 11 2 1t, care "Clay-Worker."

**WANTED.** Situation as superintendent, by a reliable brickmaker with good references. Soft or stiff mud process preferred. Can furnish plans and erect new works. Understand brick contracting work. Will take stock in a good yard. Good book keeper. Address, "RELIABLE," 11 2 2p. Care "Clay-Worker."

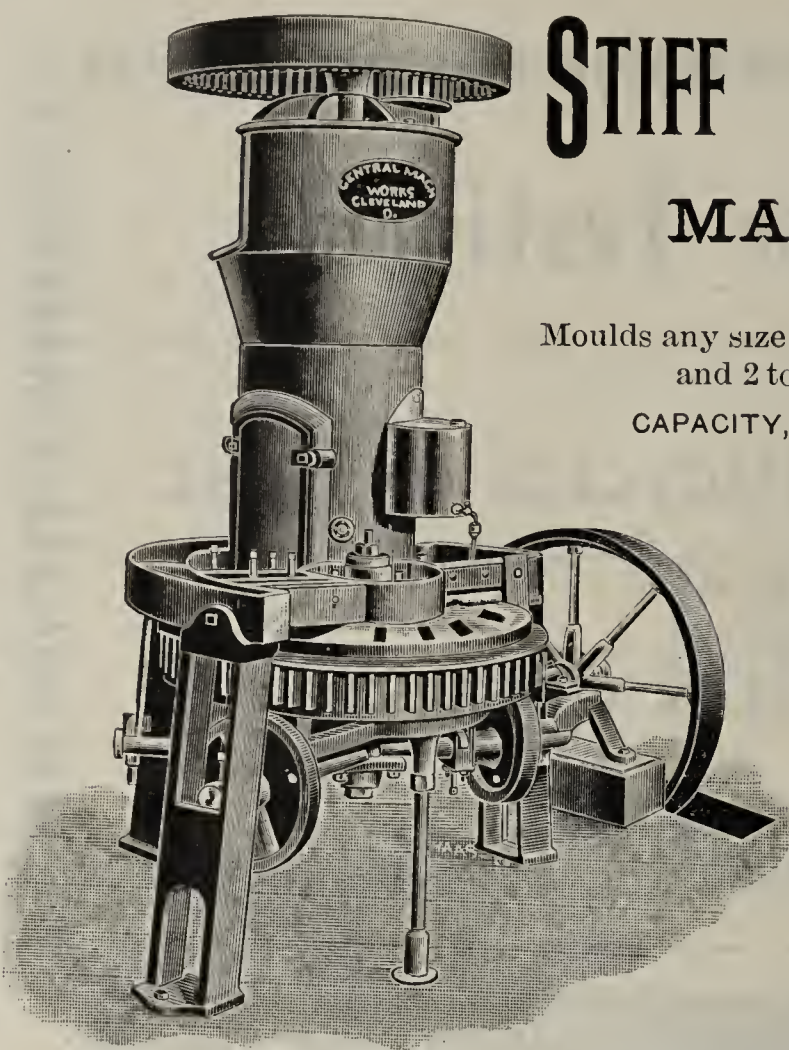
**WANTED.** Position as Superintendent of Dry Press, Soft Mud or Paving Brick Plant. Best of reference given. Would like to take hold of yard that has not been successful and put it on a paying basis, part salary and part interest in net earnings. Any company needing a first-class man, write at once. Address, "J. H. L.," 11 tf d. care "Clay-Worker."

**WANTED.** A partner by first-class Dry Press brickmaker, also a salesman of machinery, knowing all about the manufacture of dry press, mud and paving brick business, either as salesman for machinery or superintendent of first-class brick plant. Address, "H. J. H.," 11 tf d. care "Clay-Worker."

**FOR SALE**—Controlling interest in tile factory at Melvin, Ill. Entire interest in tile factory now operated by us at Bloomington, Ill. Also, one 40 horse-power engine, good as new. One Brewer & Co. tile machine, good as new. EDGAR M. HEAFER, 10 tf. d. Bloomington, Ill.

**FOR SALE.** One Grand Automatic Brick Machine, only used two years, just as good as new. One Porter portable engine and boiler, 20 horse-power steel boiler, five off-bearing trucks, five mud wheelbarrows and 18,000 pallets and racks for same. Am retiring from business and will sell cheap. For further information write to AUG. H. NIEMAN, 10 4 c. No. 2628 So. 13th St., St. Louis, Mo.

**FOR SALE.** A controlling interest in a pressed and stiff mud brick plant. Also make drain tile. Our pressed brick are very fine and are red buff, and buff with iron spots. Trade good. Have our own coal. Reasons for selling: Am a professional man and can not give this business my attention. Address, J. N. KIME M. D., 10 tf d. Ft. Dodge, Ia.



## STIFF MUD BRICK MACHINES.

Moulds any size from  $8\frac{1}{2} \times 4$  to  $9\frac{1}{2} \times 4\frac{3}{4}$  inches, and 2 to 3 inches in depth.

CAPACITY, 30,000 BRICK PER DAY.

## POWER RE-PRESSES,

15,000 PER DAY.

For particulars address

## CENTRAL MACHINE WORKS,

Cleveland, Ohio.

## FIRE BRICK.

Below are analyses of the PLATT BRICK & FIRE PROOFING CO.'S Fire Clay Deposits.

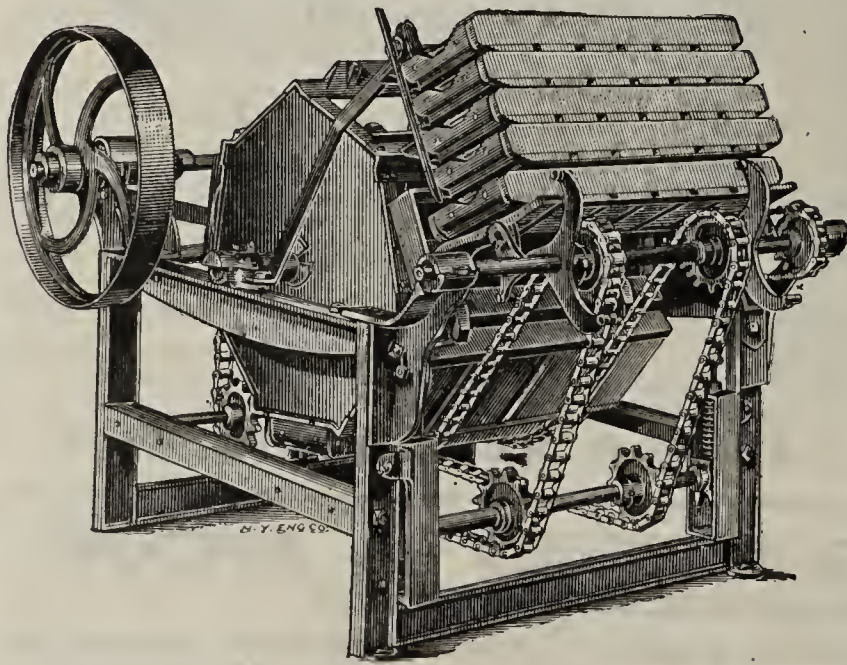
|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick. Address

PLATT BRICK & FIRE PROOFING CO.,  
706 Youngerman Block, Des Moines, Iowa.

## J. A. BUCK'S NEW CHAMPION BRICK MOULD SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine—having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letter patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications to

J. A. BUCK, No. 76 Oneida St., COHOES, N.Y.

[Mention the Clay-Worker.]



**ELEVATORS**

..FOR..  
Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.

**JEFFREY CHAIN BELTING,**

—ALSO—

Malleable, Steel, Cable and Special Chains,

DESIGNED FOR.....

Elevators, Conveyors, Drive Belts,

FOR HANDLING.....

Brick, Clay, Tile, Ores, Etc,

Send for REDUCED PRICE LIST. Address

**THE JEFFREY M'F'G CO.,**

New York Branch: 163 Washington Street.

Columbus, Ohio.

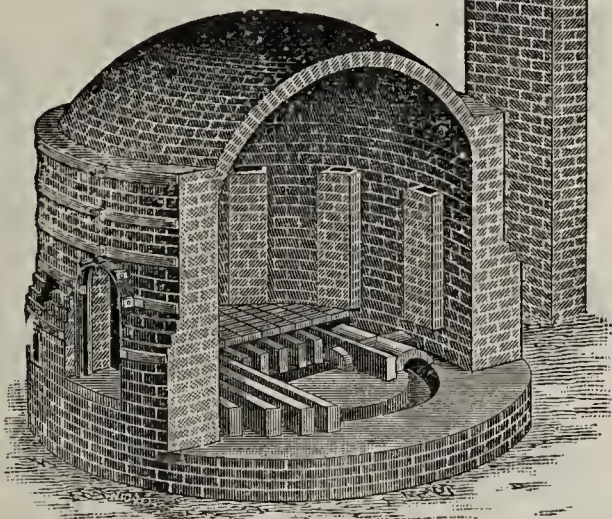
**NEW DISCOVERY KILN.**

Patented April 13, 1886, June 12  
1888, Nov. 17, 1891.

More Than **1,000** Now Stand as  
Monuments of Fame to its Inventor

It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitriified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

To know more and what they say of it, address,

**E. M. PIKE, Patentee****CHENOA, ILLS.****EAGLE IRON WORKS,**  
DES MOINES, IOWA.

FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY  
CRUSHERS. CLAY ELEVATORS  
AND CONVEYING MACHINERY  
TO ELEVATE AT ANY ANGLE.  
ENGINES, BOILERS, POWER  
PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]

**IMPORTANT!**

Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.

**FOR SALE.** Sewer pipe works in one of the best localities on the Pacific coast. Contains all requisite machinery, power press, three large kilns. Everything complete and in best working order. Reasons for selling, other interests demand attention of owner. None but principals need apply. Address, S. C. C., care "Clay-Worker."

**WANTED.** Party with capital of \$12,000 to \$15,000, or part of above amount, to join advertiser in a lease of a brick plant, now erected and in splendid location, excellent shale and clay mixed. Will answer for street pavers or fine grade of front brick. Shipping facilities either by water or rail, first-class. With slight change in machinery this can be made a money making investment. Particulars from "W." care "Clay-Worker."

**SOFT SNAPS.** One second-hand Wallace Brick and Tile Machine.  
One second-hand Ohio Brick and Tile Machine, with crusher attached.  
One second-hand Acme Brick and Tile Machine.  
One second-hand Centennial Brick and Tile Machine.  
One second-hand Hoosier Soft Mud Brick Machine.  
One second-hand 15 h. p. Horizontal Stationary Engine, good as new.  
One second-hand 30 h. p. Double Vertical Stationary Engine, in excellent condition.  
The above will be sold cheap for cash. For particulars, address, H. J. VOTAW, Decatur, Ill.

**Recipes for Enameling Bricks.**

W. Clayton is now prepared to sell a full line of enamel recipes for bricks, suitable for all kinds of clays, including bricks made from shale rock and slate refuse. The above embrace about 12 colors and shades, including white, lilac, turquoise, yellow, buff, chocolate, and others.

The enamels are prepared for, and put on the "green" brick, so that the whole is done with one burning.

The "white" is especially adapted for sinks, and bath tubs, for which there is such demand just now. Correspondence solicited. CLAYTON, 6. tf. d. Hamilton Ave., Trenton, N. J.



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Largest circulation of any scientific paper in the world. Splendidly illustrated. No intelligent man should be without it. Weekly, \$3.00 a year; \$1.50 six months. Address MUNN & CO., PUBLISHERS, 361 Broadway, New York City.

**SPEND THE WINTER IN THE SOUTH.**

The Cincinnati, Hamilton and Dayton Railroad have this season reduced the Winter Tourist rates to all points in Florida and other Southern States, making it possible for everybody to spend the winter in the sunny South. These rates are in effect from all points on or via the C. H. & D. R. R., and passengers should ask for tickets by this route—via Cincinnati.

For further information address D. G. Edwards, General Passenger Agent, C. H. & D. R. R., Cincinnati, Ohio, or H. J. Rhein, General Agent, Indianapolis, Ind.



**COLORIFIC.**

For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market, are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of WESTBROOK & WELLS, Ogdensburg, N. Y.

**Analytical and Consulting Chemist**

CHARLES FERRY, B. S.,

TROY, N. Y.

Analyses of all grades of clays, fire sands, kaolins and refractory materials furnished, with desired information based upon practical experience, at a reasonable figure. Only the best work, which is afforded by careful manipulation and a well equipped laboratory, may be expected.

**Steubenville Foundry  
& Machine Works,**

Established in 1820.

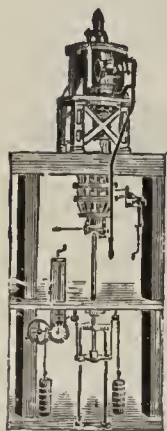
—Manufacturers of—

**STEAM SEWER  
PIPE PRESSES**

OF DIFFERENT SIZES,  
Making From 2 to 30-Inch  
Pipe Inclusive.

Pipe, Brick, Tile, Coping,  
Fire Proofing, and  
Building Block Dies.

Clay Grinding and Tempering  
Pans and Pug Mills.

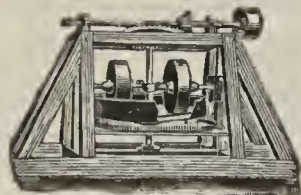


FEED  
SCREWS  
FOR  
MINING  
CLAY.



STEAM  
— ENGINES

—AND—



Every Variety of Iron and Brass Castings  
Shafting and Pulleys.

Send for Circulars and Estimates.

**JAS. MEANS & CO.,**  
Steubenville, Ohio.

Mention the Clay-Worker

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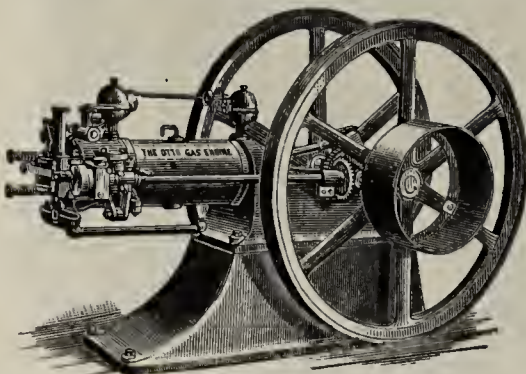
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"Woodbridge" Fire Clays and Bricks, also Apparatus for  
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"Air dried" bricks all the year round.  
A new plan of reducing old, approved methods to  
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A cross spiral current from fan to fan.

Bricks are safely dried in five hours.

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And only half the doors are required.

A little easy running machinery that lessens the  
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**MORE FANS! LESS PIPES!**

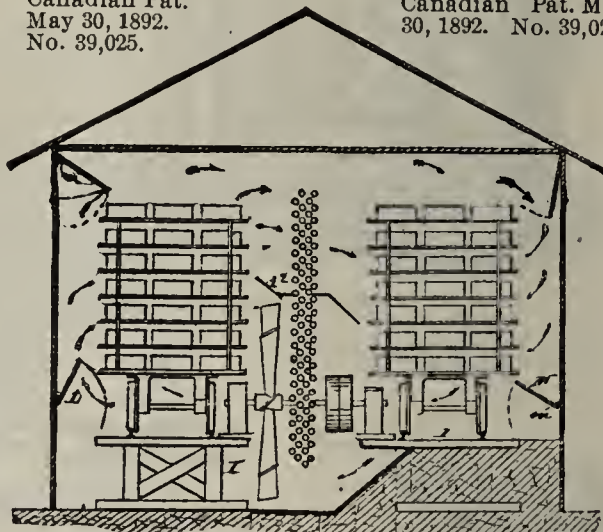
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Therefore, "at home," this system of drying is  
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Canadian Pat.  
May 30, 1892.  
No. 39,025.

Canadian Pat. May  
30, 1892. No. 39,026.



U. S. Patent August 16, 1881. No. 245,742.

U. S. Patent March 31, 1891. No. 449,170.

U. S. Patent March 31, 1891. No. 449,231.

British Patent March 31, 1891. No. 5,520

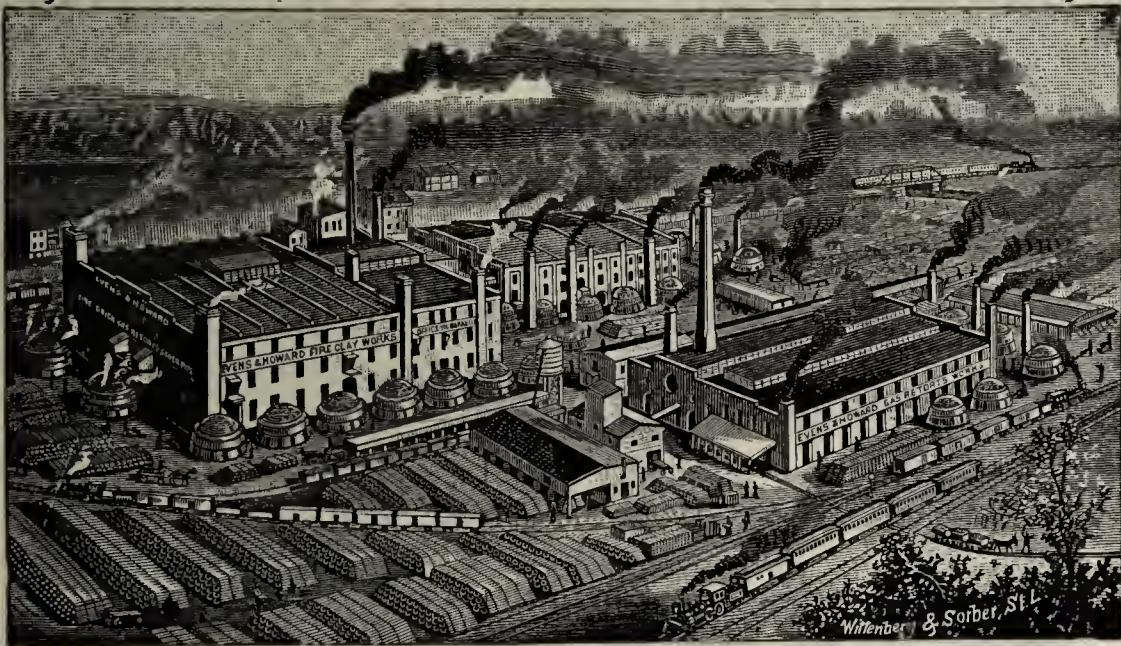




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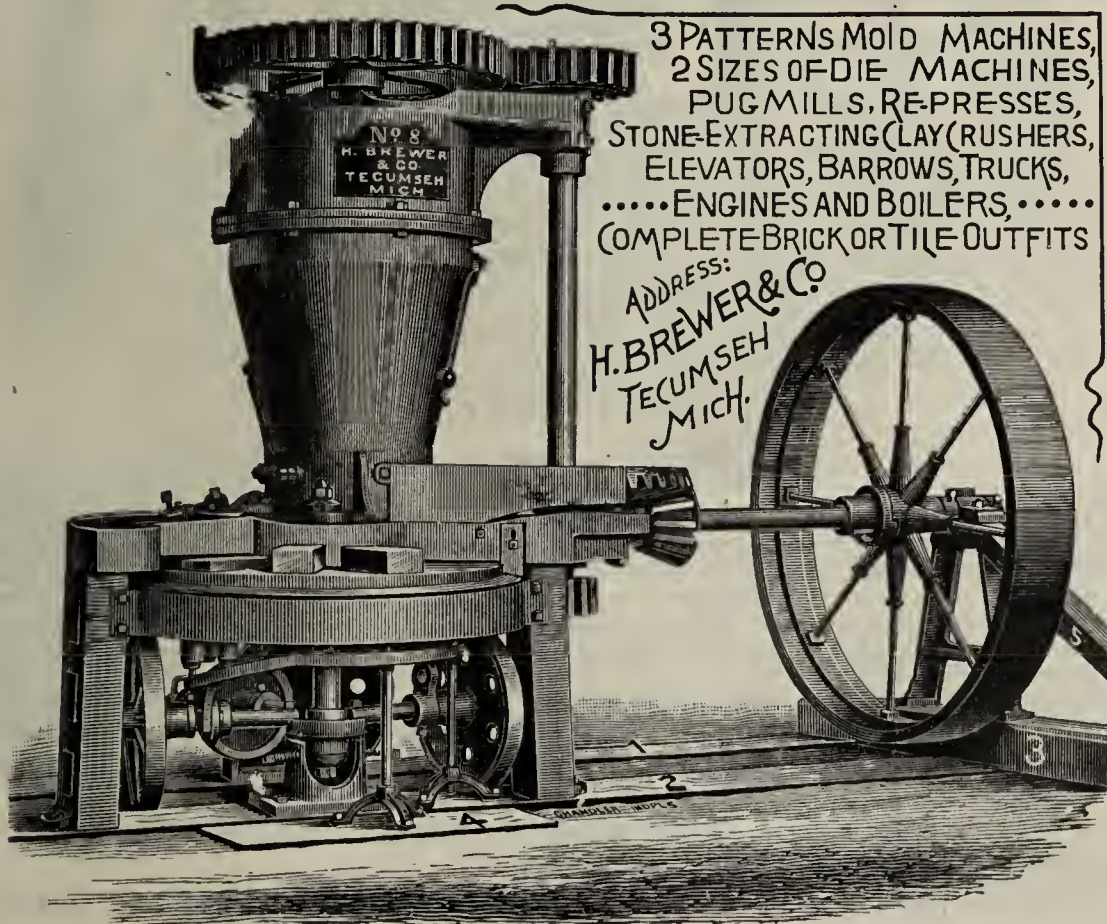
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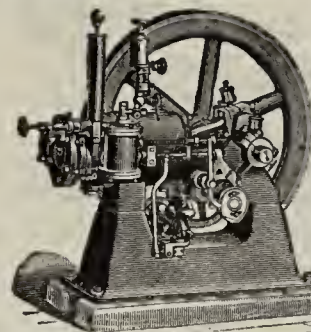
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their shape so much better. We will gladly answer  
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refer to us. Respectfully Yours,  
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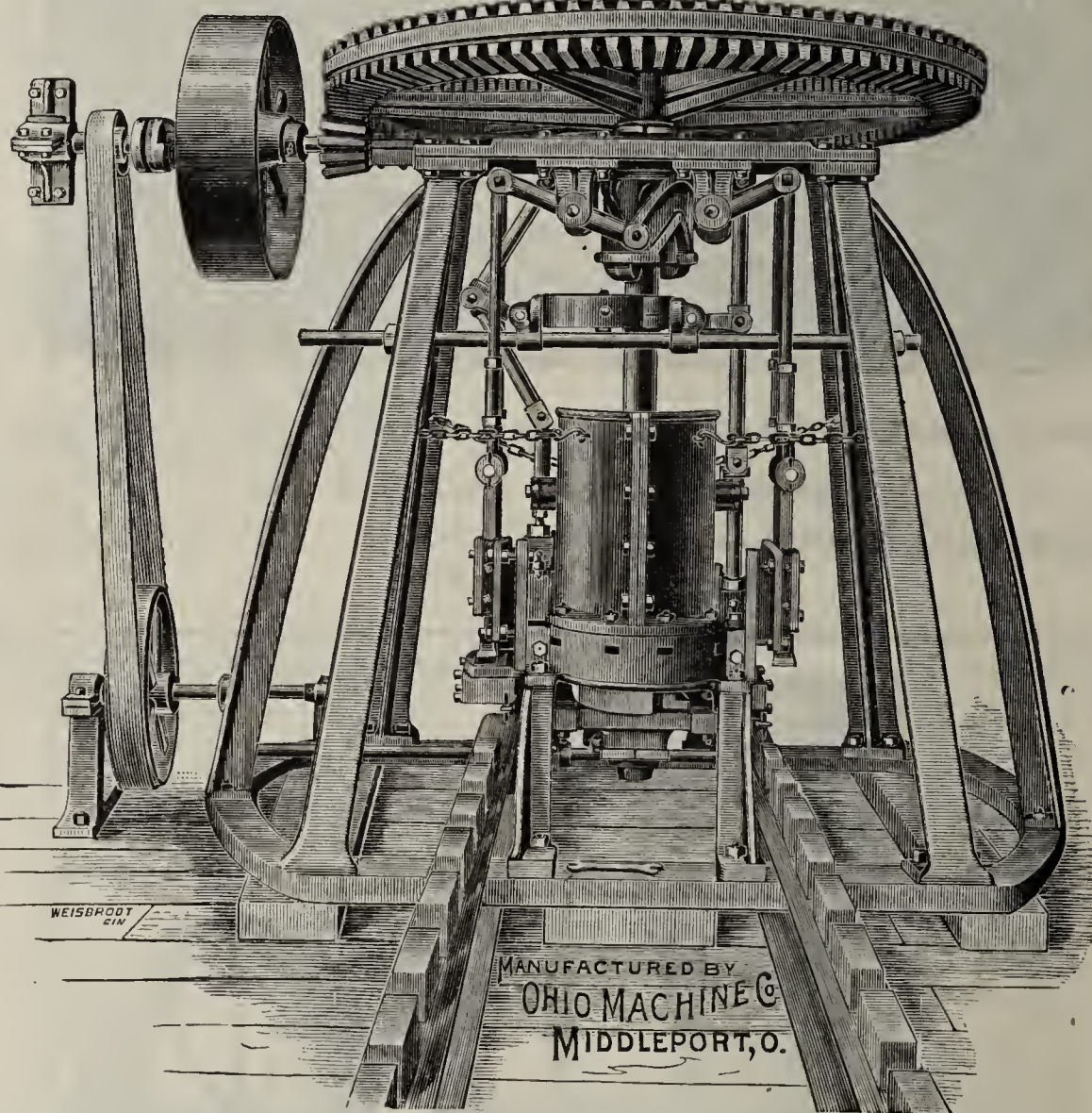
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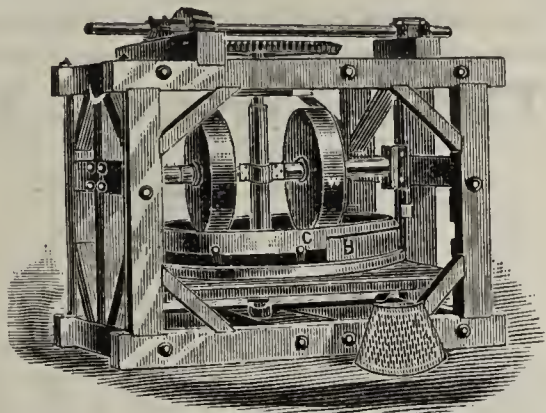
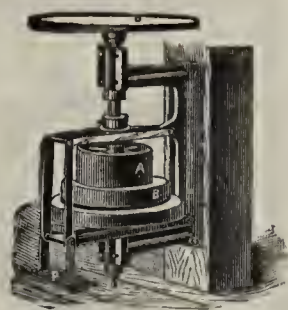
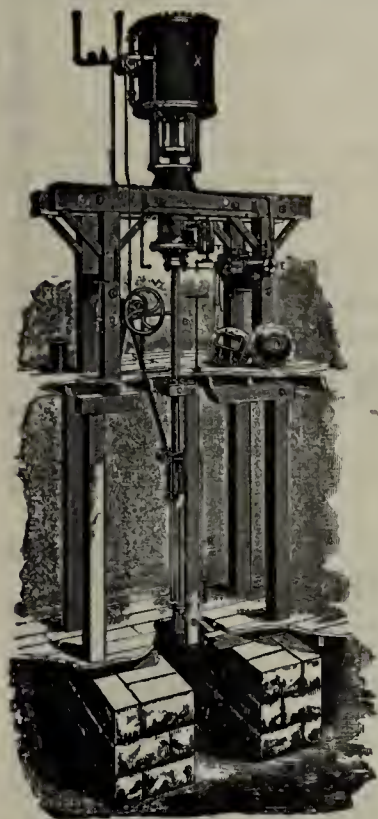


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Pumps, Hand-power Pumps.

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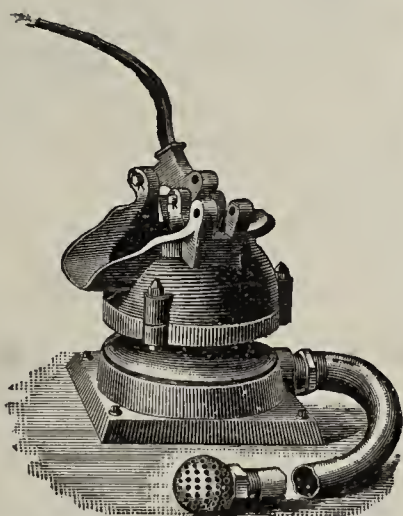
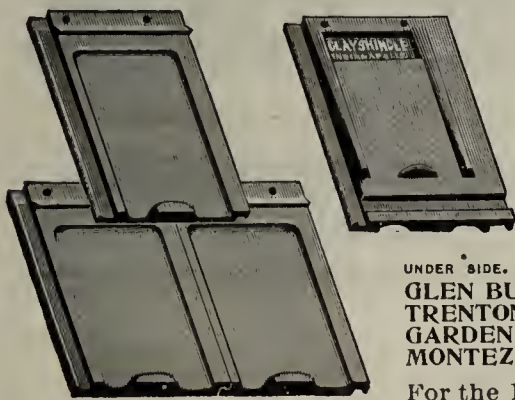
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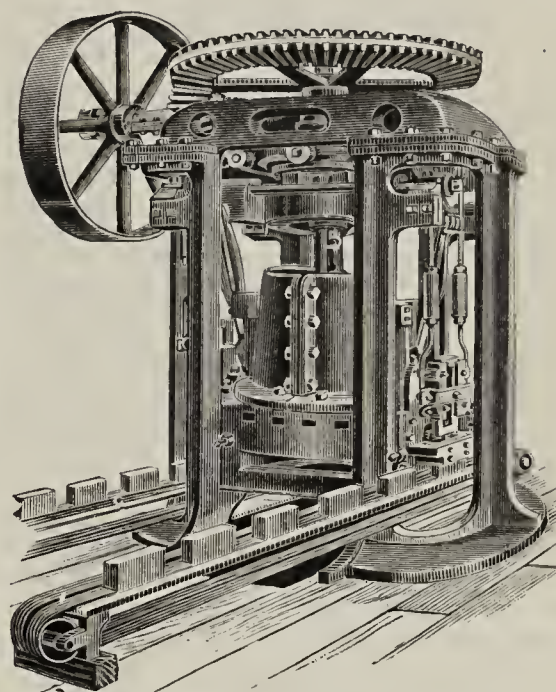
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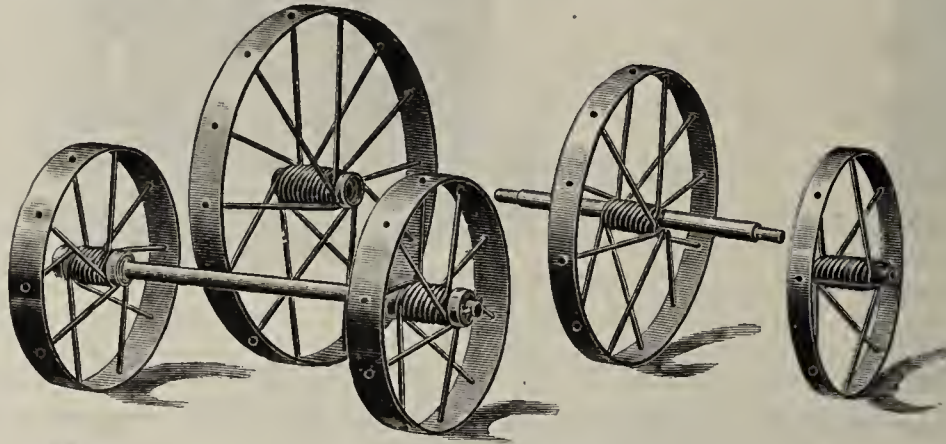


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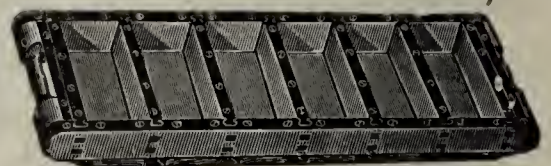
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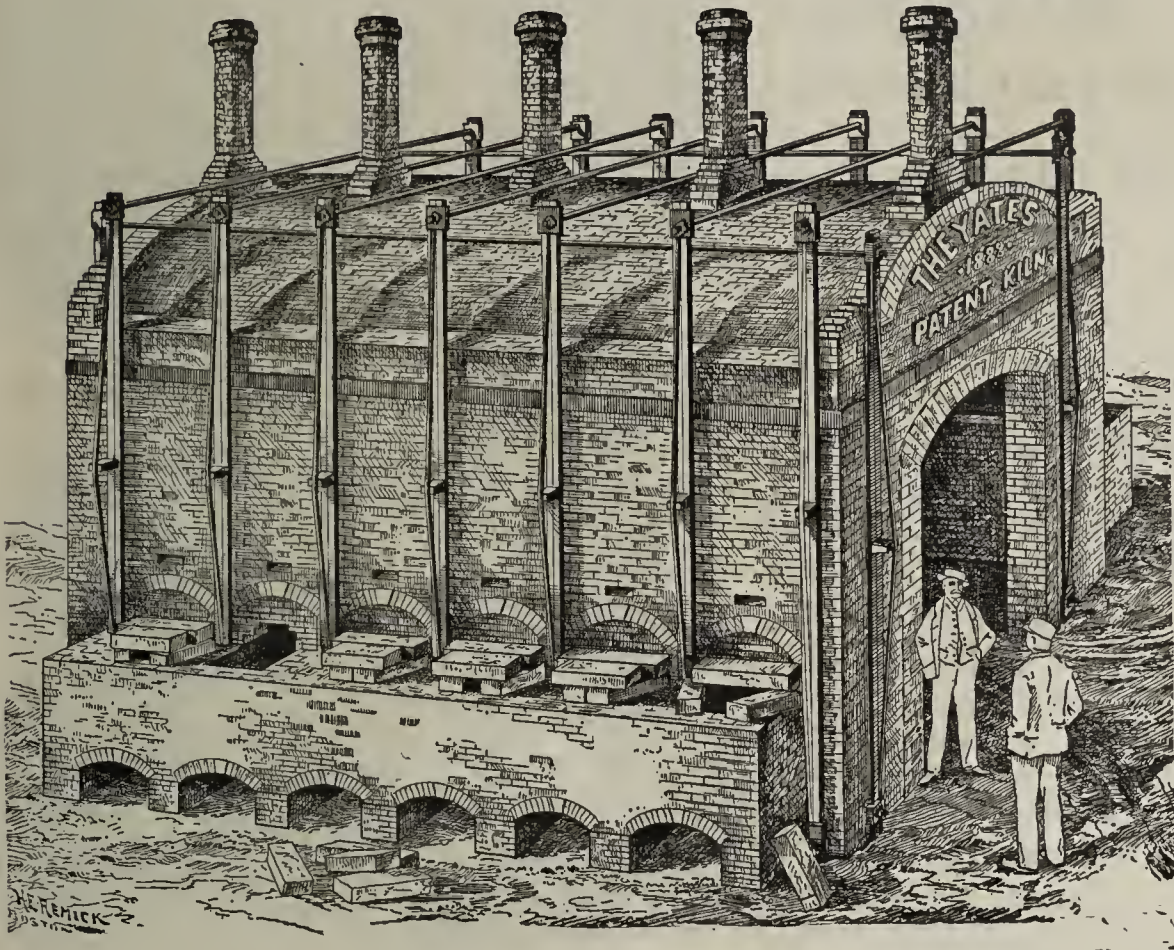
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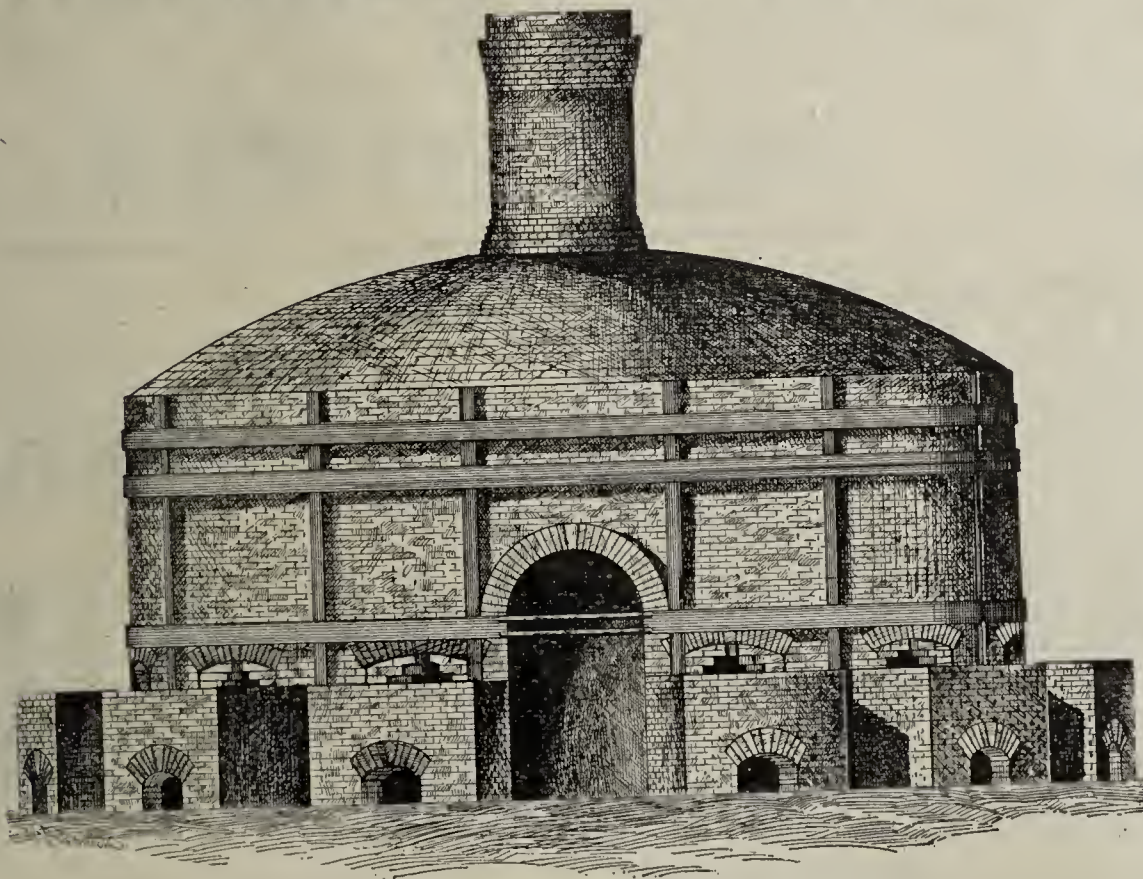


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Brick moulds for hand and  
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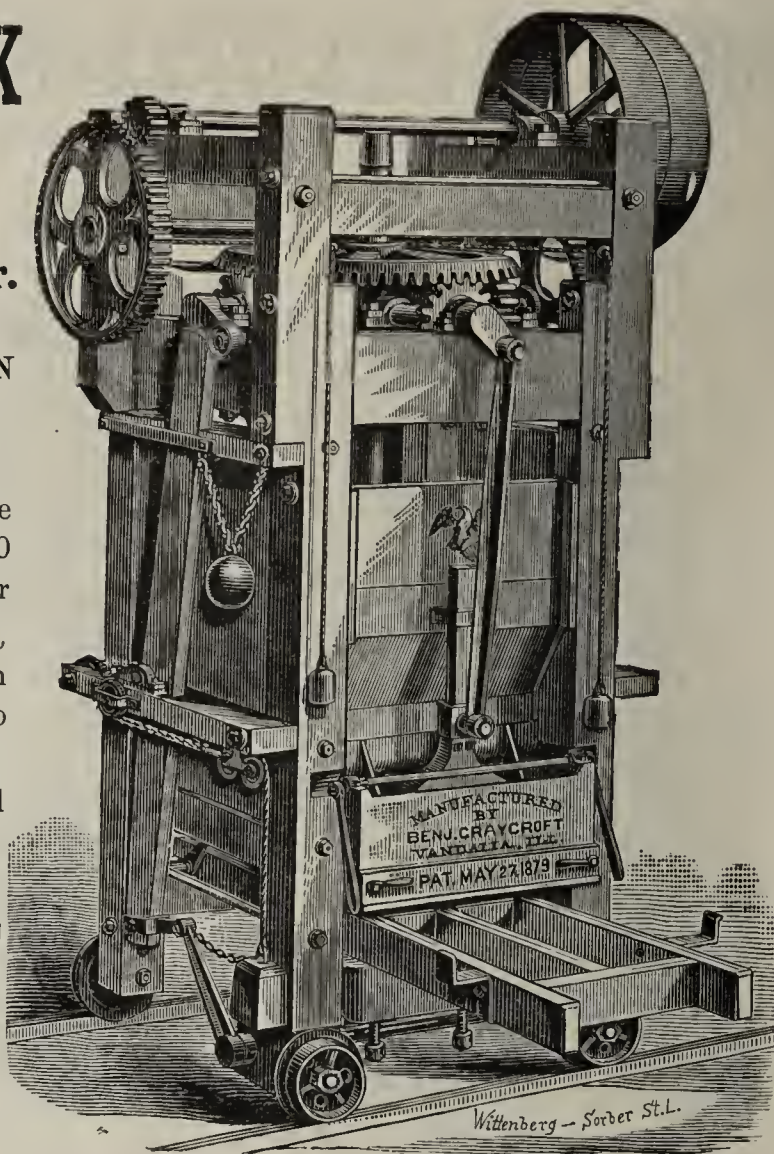
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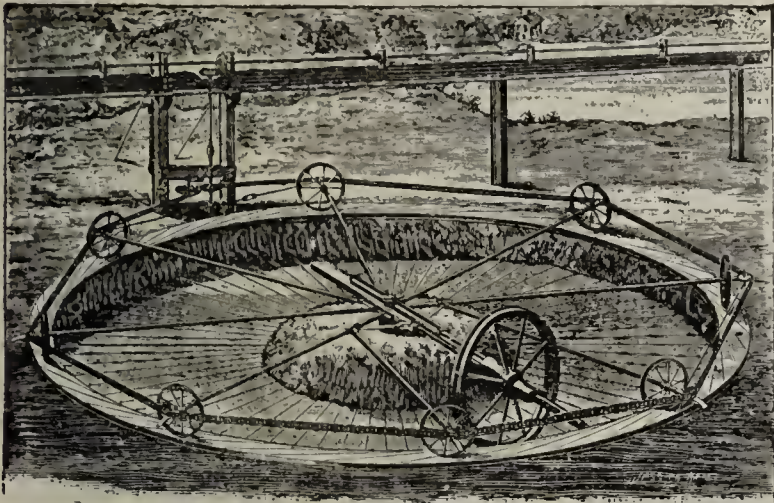
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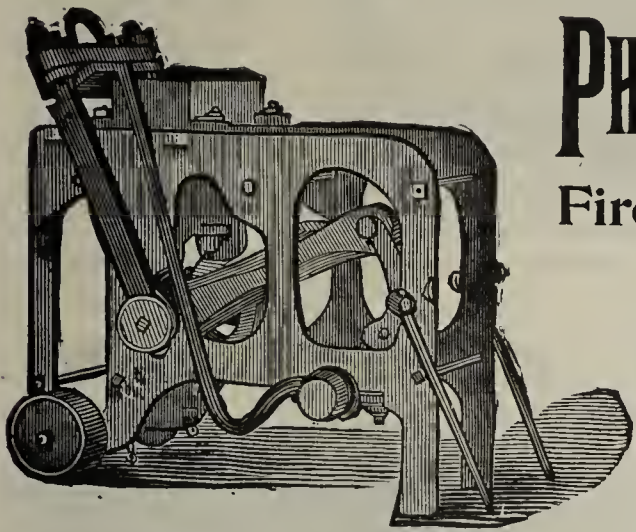


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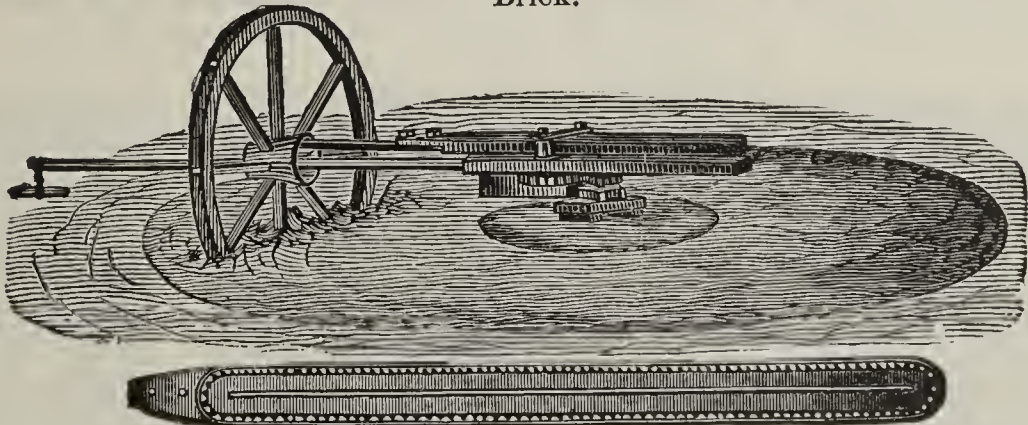
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Fire and Red Brick Presses all sizes.

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Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.

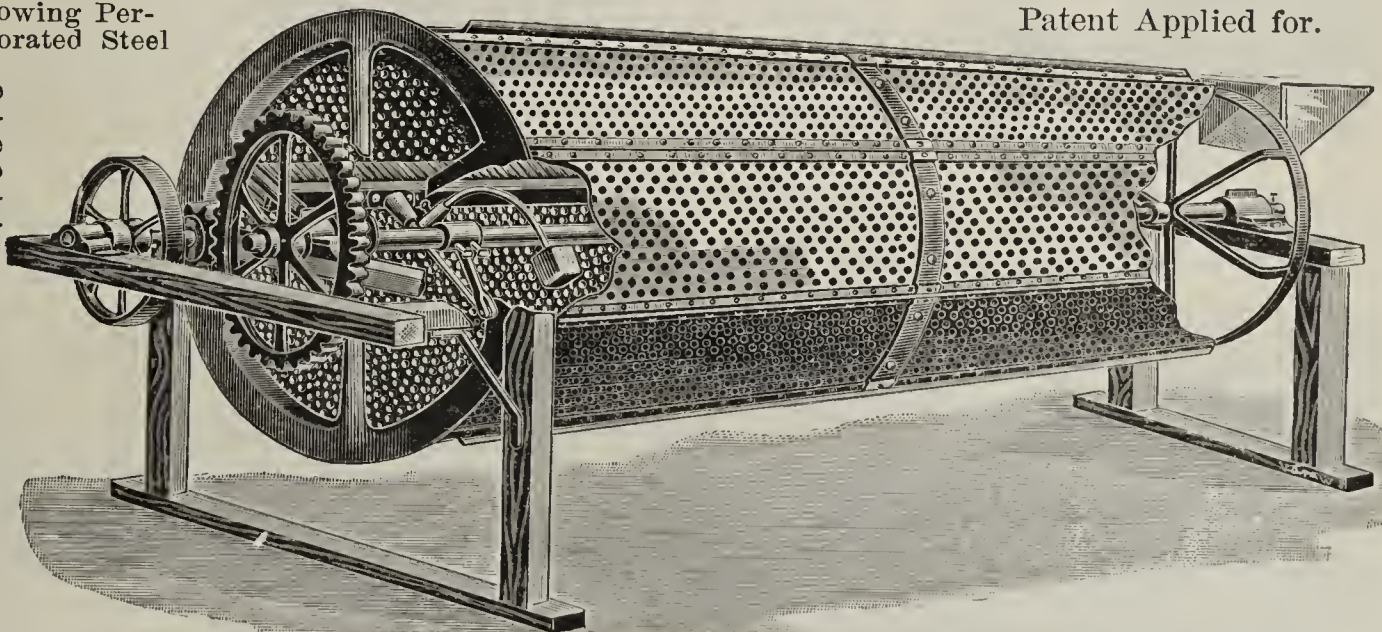


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Patent Applied for.



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Delivers and takes Brick on edge.

Less working parts than any other Re-press.

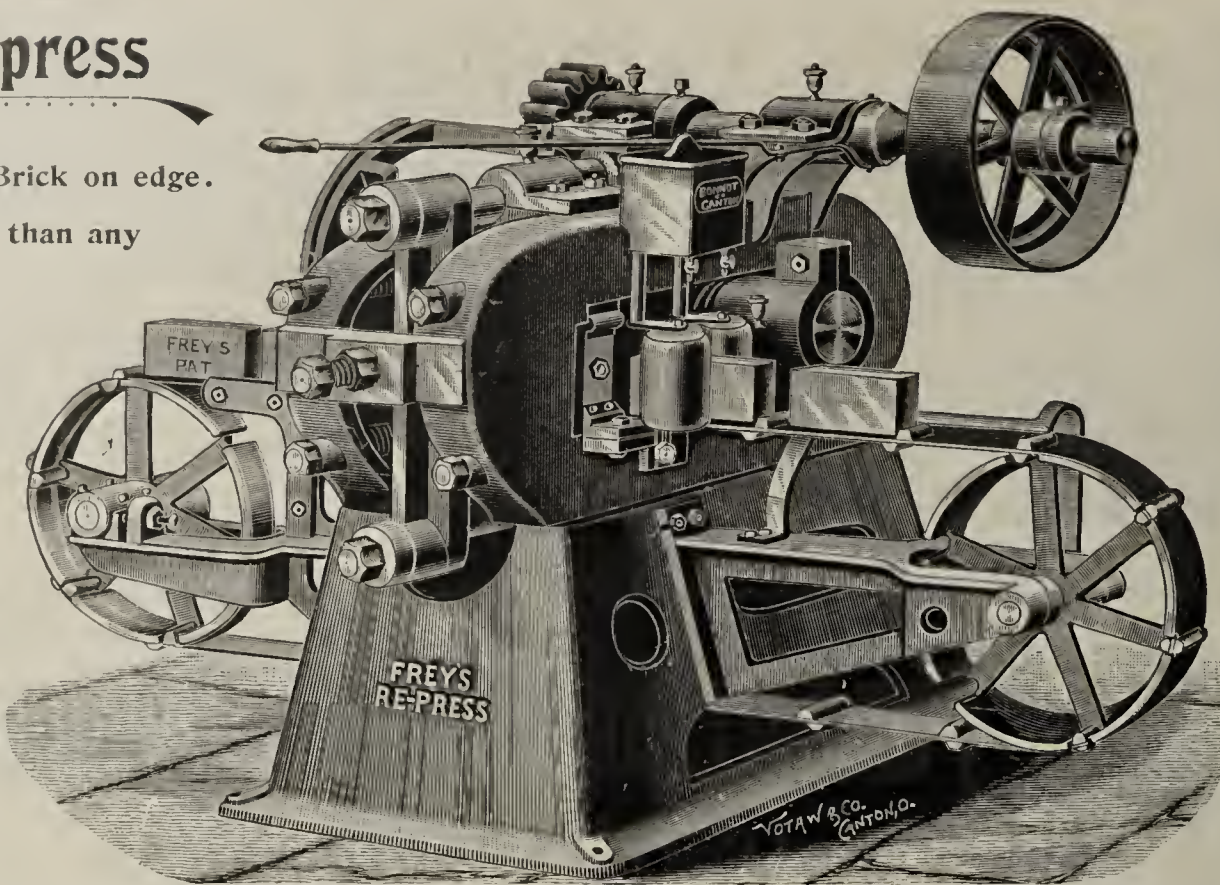
Takes Brick same size of die.

No working parts under the die for dirt to wear.

Send for Circular giving 12 Reasons Why this Re-press is the best, address

Single and Double Die Machines with either Continuous or Reciprocating Feeds as desired.

The latest improvement wipes the pressure plates clean at each operation and oils them.



**F. E. FREY & SON,**  
MECHANICAL  
ENGINEERS.....

And Designers of

**Clayworking  
Machinery**

WILL.....

Take contracts for new Brick or Tile Factories.

Examine Clays and furnish plans for outfits.

Over Thirty Years' Experience.....

**F. E. Frey & Son,**

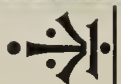
WILLOUGHBY, - OHIO.

## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

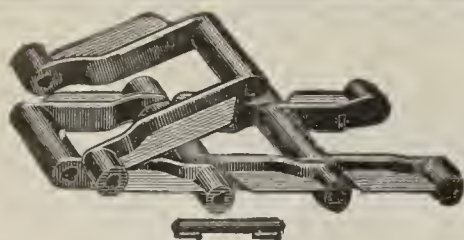
TOOLED FACE.



FISKE, HOMES & CO., Boston.

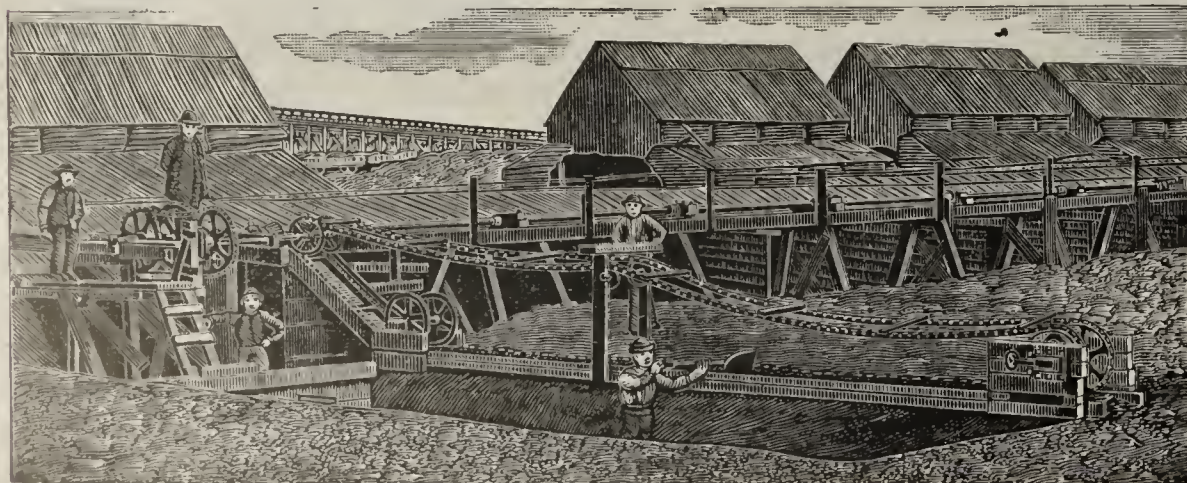
NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed at a glance by every practical brickmaker.



Mey Patent Clay Elevator.

**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.





# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

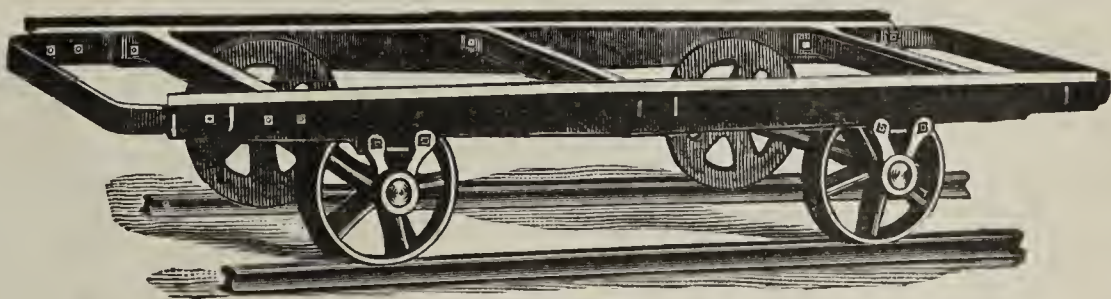
48 Styles.

Also  
Turn Tables,  
Transfers  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



# MAKERS

Send For Price List.

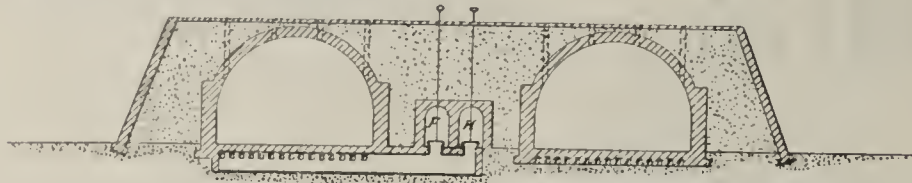


STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



**Marks a Great Advance in the Art of Continuous Burning**

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

**PETERSEN BRICK COMPANY,**  
MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E—downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

For particulars address

Yours truly

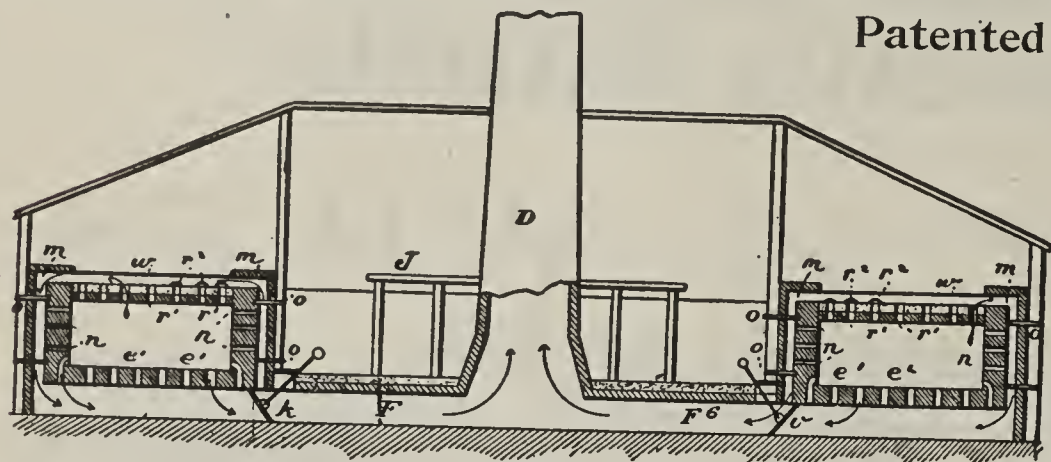
SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,  
Per H. M. STAMMER, Superintendent.

**P. L. YOUNGREN, Oakland, Cal.**

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

Mention the Clay-Worker.]

**CARL F. KAUL, Madison, Neb.**

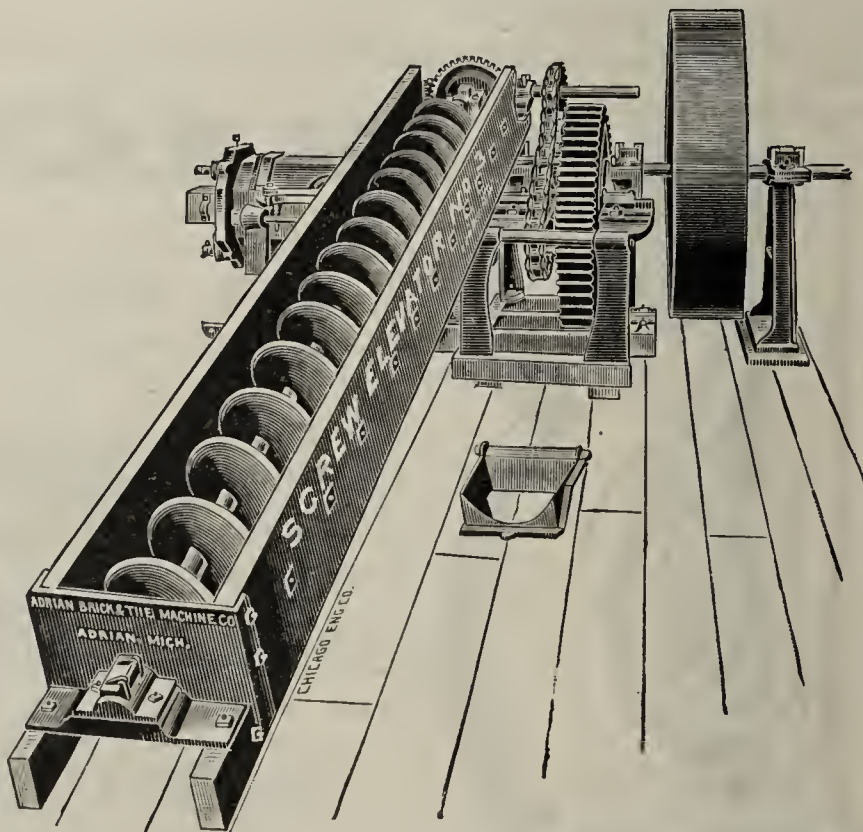
# A LONG FELT WANT SUPPLIED.

**A SCREW ELEVATOR FOR ELEVATING CLAY.**

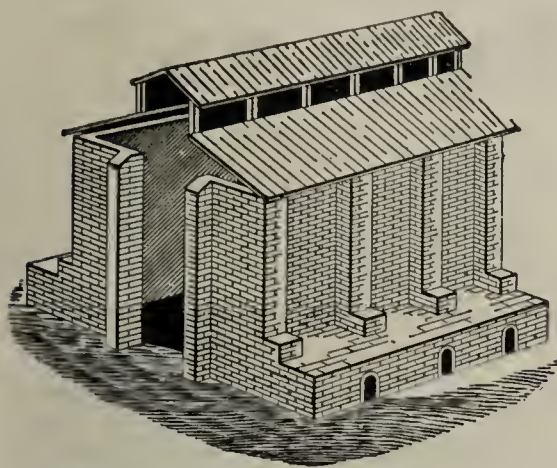
The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**  
ADRIAN, - - MICHIGAN.





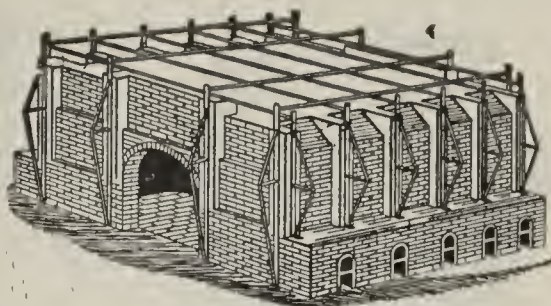


The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

## LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR.  
NEVADA, Mo., July 17, 1892.

H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave.  
St. Louis, Mo., October 18, 1892.

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

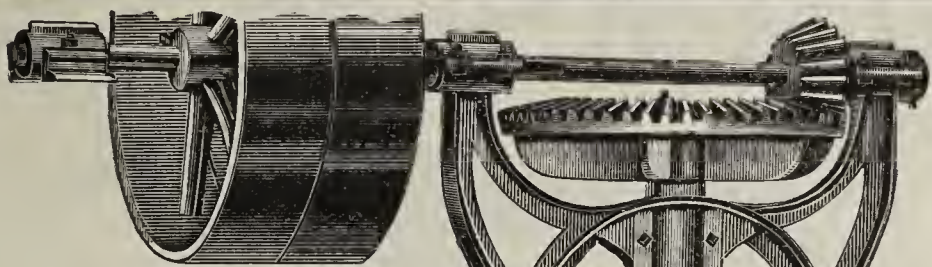
For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,  
1,913 Indiana Ave. KANSAS CITY, MO.

IMPROVED  
Auger - Machines  
For Brick & Tile.

FOUR SIZES

UPRIGHT PUG MILLS,  
HORIZONTAL  
CONVEYORS,  
MICHIGAN  
DISINTEGRATORS,

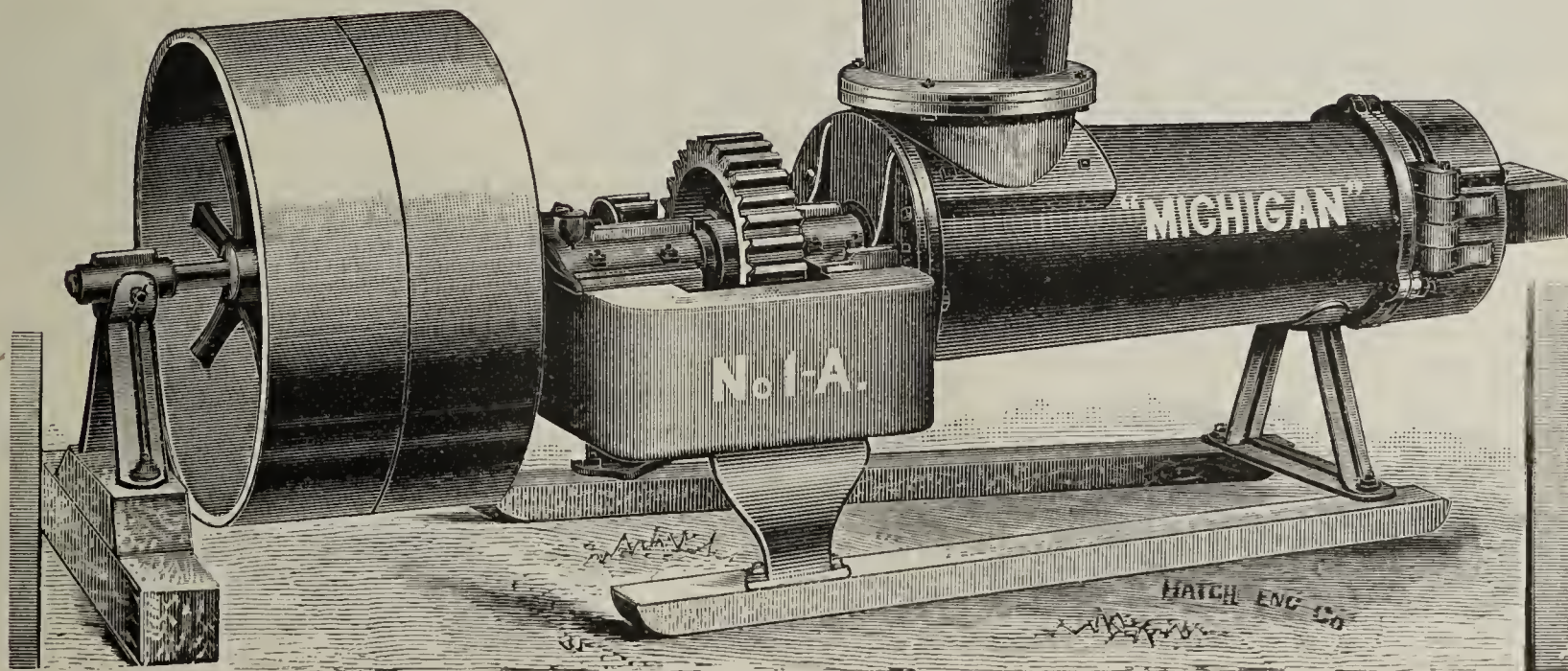


WITH ALL THE  
Modern  
Attachments

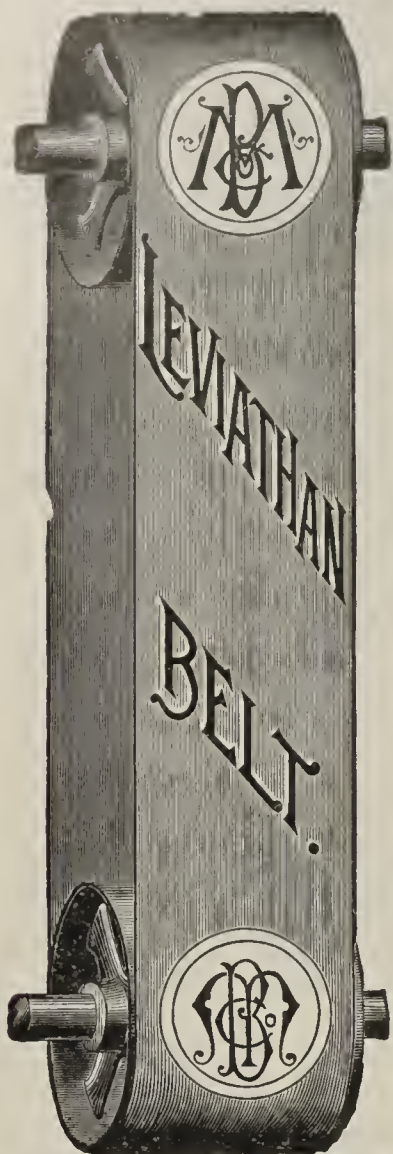
..Manufactured by..

Michigan Brick &  
Tile Machine Co.,  
MORENCI, MICH.

Ask us to send you our Catalogue.







## "Leviathan"

The only Belt for Brick and Tile Machinery.  
Will outwear any three Belts of other makes in the Market.  
Runs in heat, steam and water without injury.  
Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

### MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

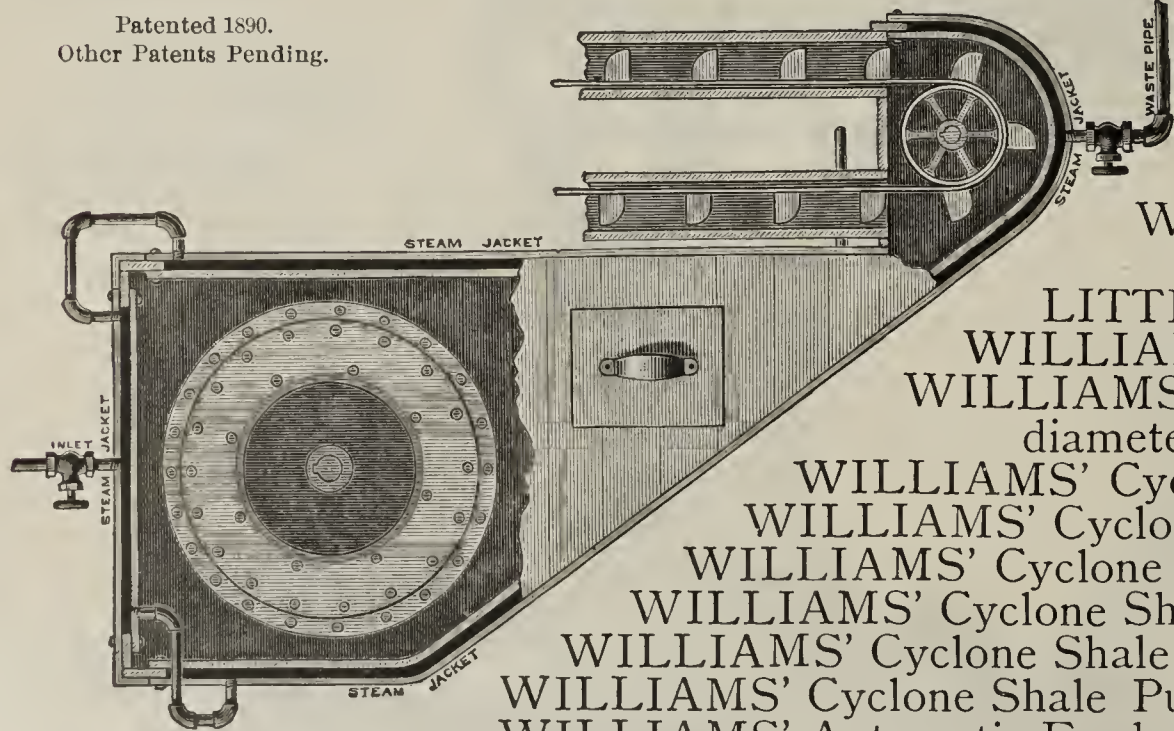
Thompson's Water-Proof Belt Dressing for  
Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



## WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers  
WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**



## If You Need . . . .

Brick yard supplies of any kind, we can furnish anything you want at prices that will surprise you.

MOULDS, TRUCKS, BARROWS, ELEVATORS,

SHAFTING, PULLEYS, BELTING,

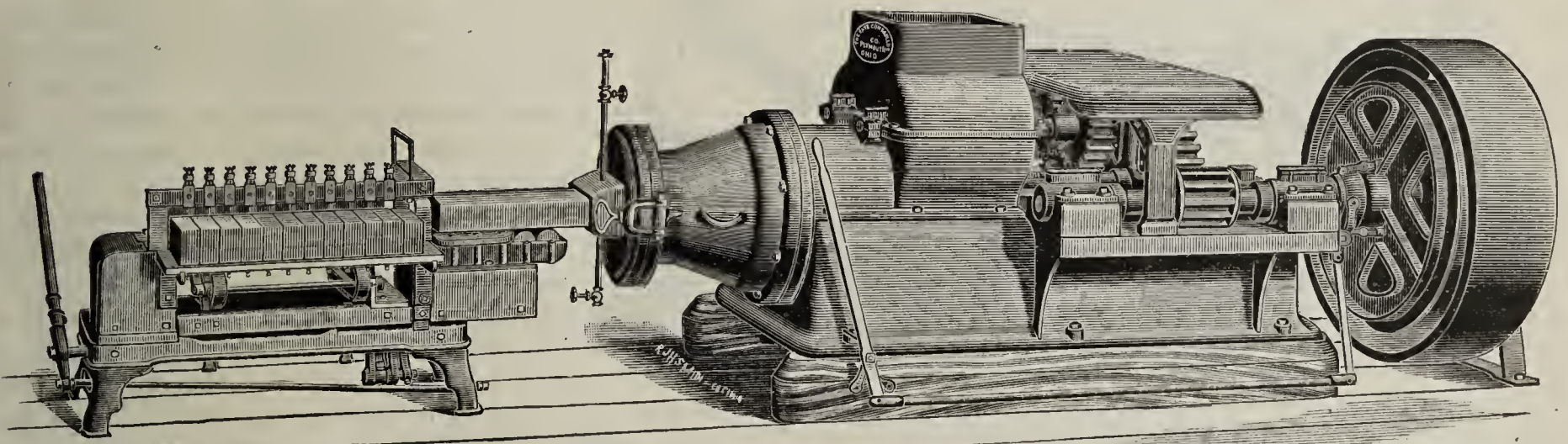
.....CARS and WINDING DRUMS.

All goods are manufactured in our works; we can save you all commissions.  
Write for our New Catalogue, the most complete book of the kind ever issued.

**C. & A. POTTS & CO.,**  
Indianapolis, Ind.

# The "Plymouth."

DURABLE,  
....STRONG



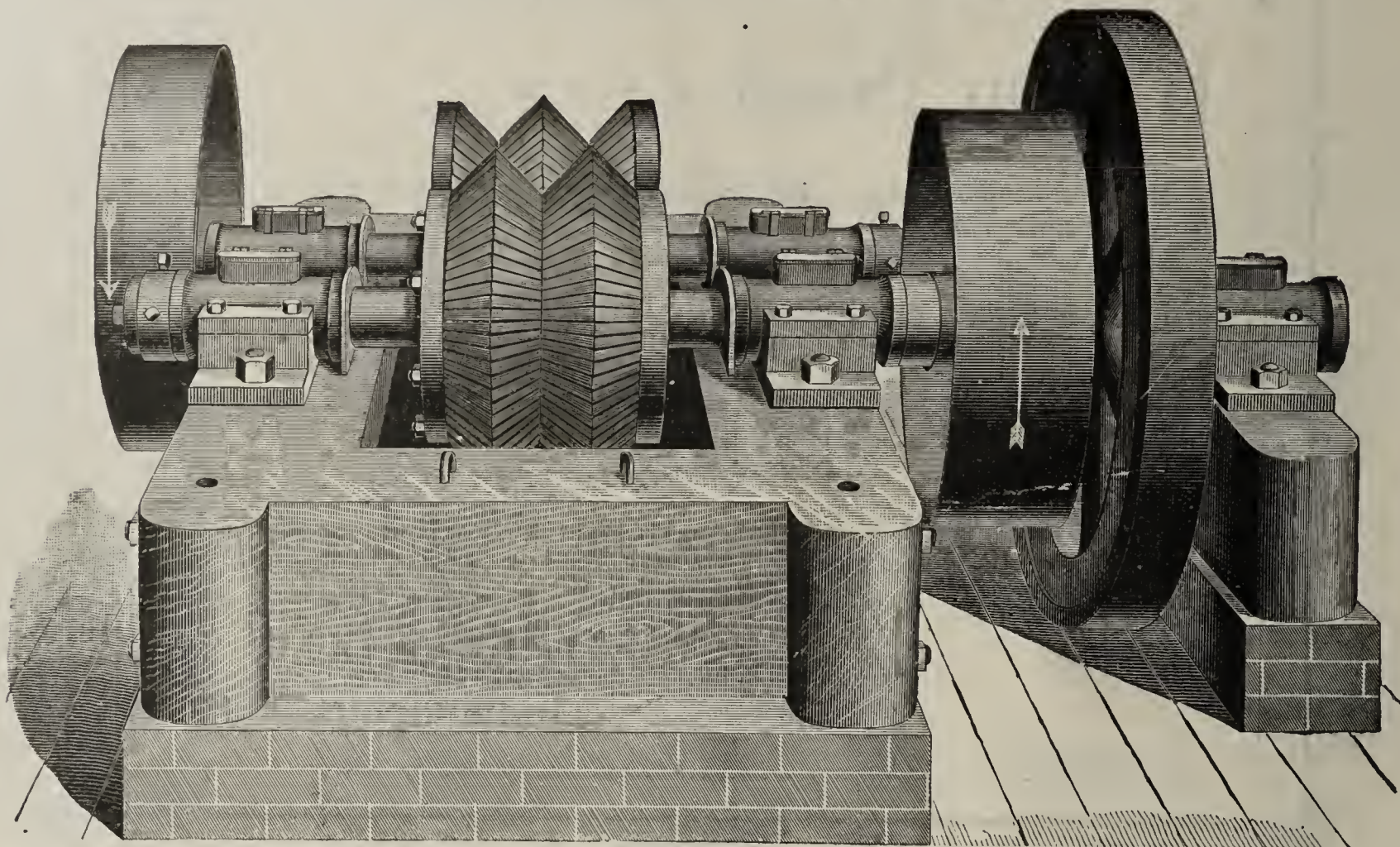
Brick Machines, Pug Mills, and all brick and tile yard supplies.  
Write for catalogue and prices.

**THE FATE-GUNSAULLUS CO.,**  
RICHLAND COUNTY. PLYMOUTH, OHIO



# NEWELL IMPROVED CLAY PULVERIZER

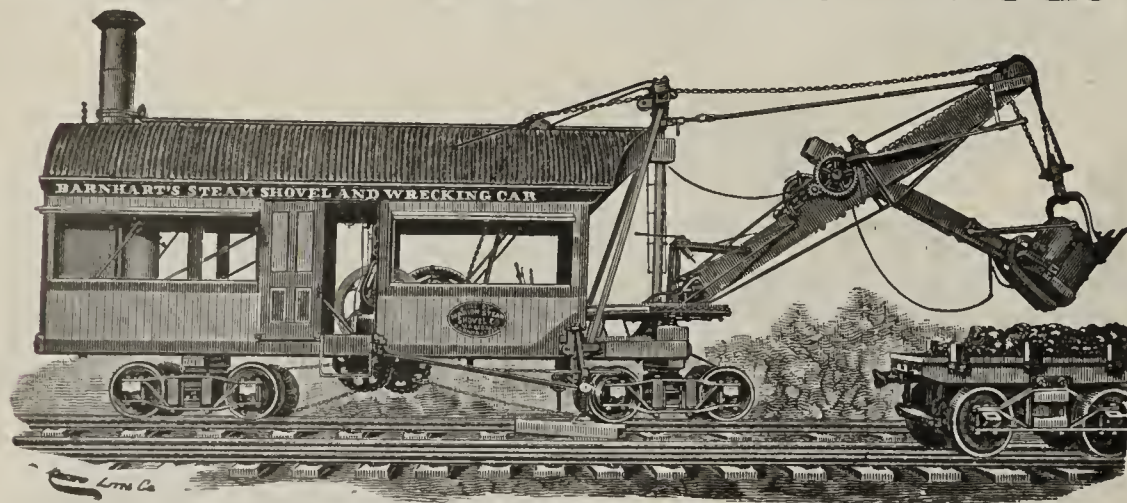
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

The Marion Steam Shovel Co.,  
603 West Center Street,  
MARION. OHIO.

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C—¾ YD

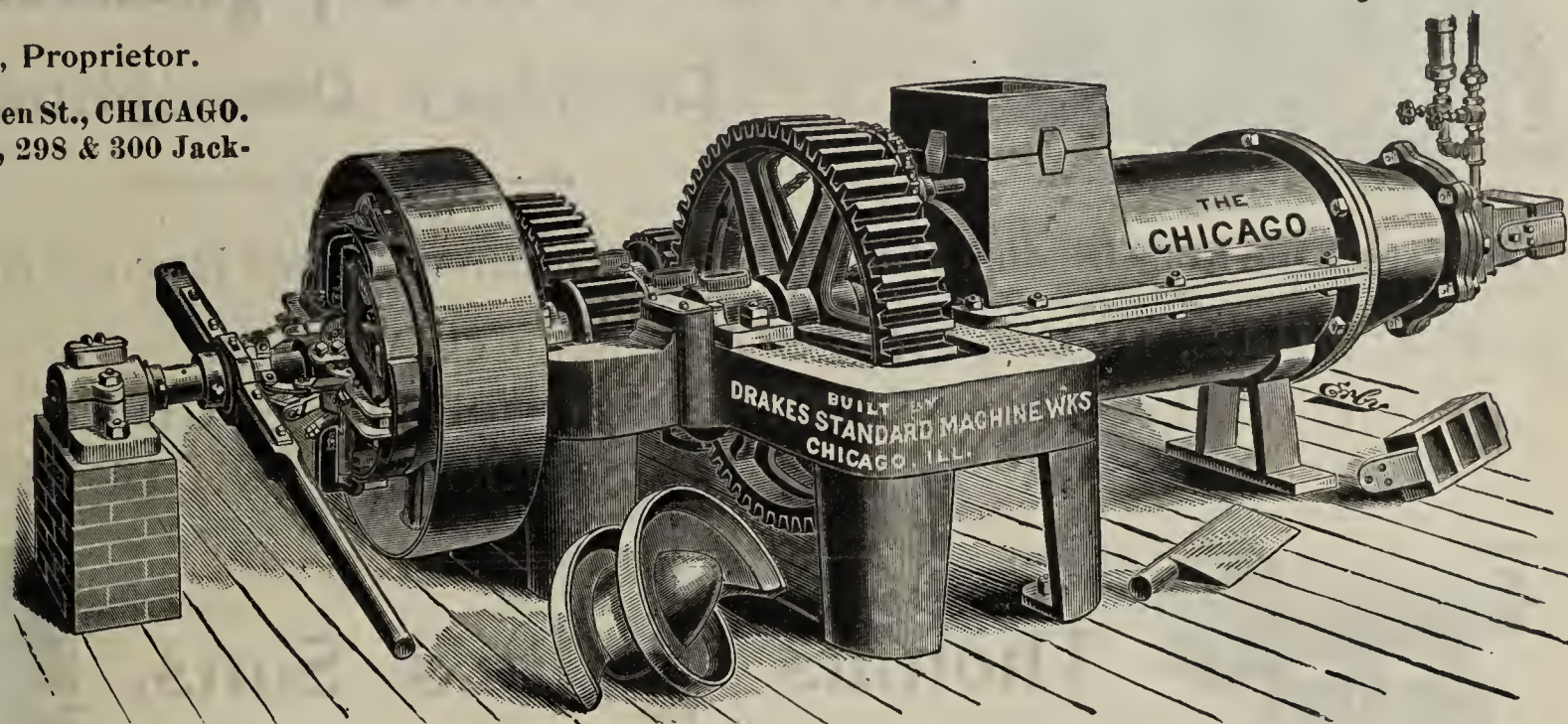


# DRAKE'S STANDARD MACHINE WORKS,

## Manufacturers of All Kinds of Brick Machinery.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.  
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**

E. MEECH,  
MANUFACTURER OF  
BRICK AND TILE.  
ROLFE, IOWA.

Rolfe, Iowa, Jan. 5, 1892.

C. & A. Potts & Co.,  
Indianapolis, Ind.:

Dear Sir--In reply to your letter of the 29th inst, I am very glad to tell you in regard to our Disintegrator you shipped us, it is just the machine I was needing. It is a dandy, it will do the work just as you represented it to us. I was stuck until I got it. I think it is a splendid machine for any brick or tile maker.

Yours truly,

*E. Meach*  
*Rolfe, Iowa*

## The Potts Disintegrators

Do all claimed for them; they are strong and durable. The rolls are chilled.

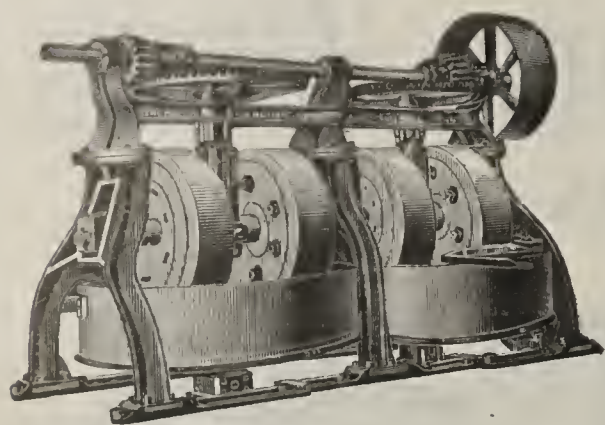
The thorough mixing and tempering of clays is the secret by which good brick are made.

The Disintegrator will do the work.

Write for prices to

**C. & A. POTTS & CO., = Indianapolis, Ind.**





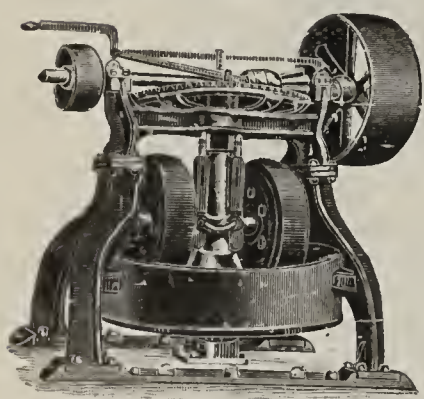
OUR SPECIALTY.

# GRINDING AND MIXING PANS

Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

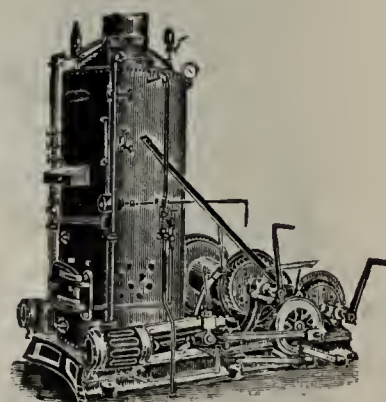
PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.

One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot guage Dump Cars.

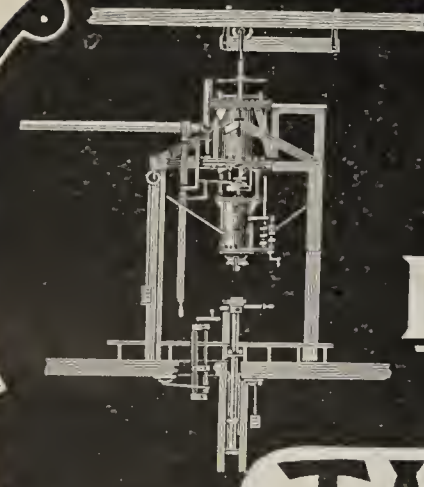
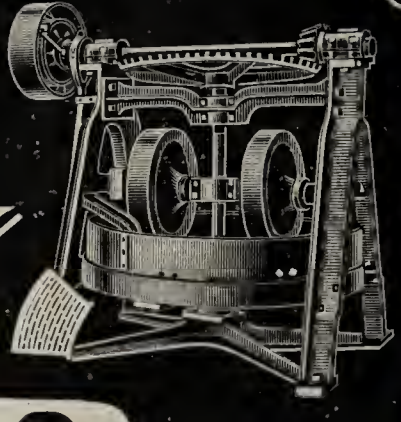
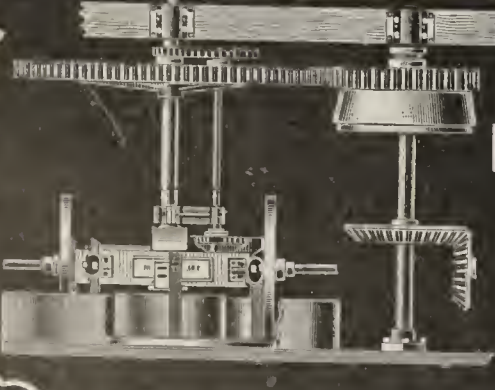
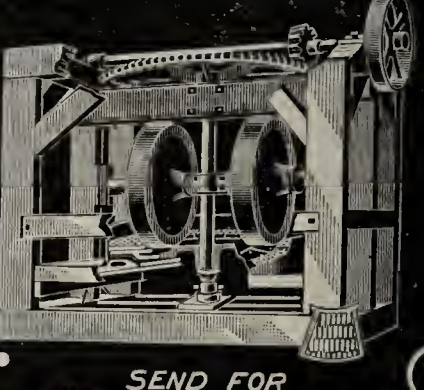


MANUFACTURERS OF  
 IMPROVED  
**CLAY WORKING  
 MACHINERY**  
 OF EVERY DESCRIPTION  
**TAPLIN RICE & CO.**

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.  
**AKRON, OHIO, U.S.A.**

PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



C. HERBESCH, Publisher  
P. 1007, Boston, Mass.

TELEPHONE, 737-7

## STANDARD BRICK CO..

MANUFACTURERS OF THE CELEBRATED

Milwaukee Cream Colored Brick.

OFFICE AND YARDS  
475-510 CLEMENT AVENUE, 17th Ward.

Milwaukee, Wis., February 5, 1893.

Messrs. C. &amp; A. Potts &amp; Co.,

Indianapolis:

Gentlemen--After having used your Horizontal Brick Machine and Pug Mill in connection with your No. 4 Disintegrator, we will say that we are well pleased with both of them. Last year we made seven million bricks with the machine, which certainly is a good record, and to obtain such a result with a machine making thirty-three thousand brick a day--this being considered a day's work here in Milwaukee--certainly means steady running and no break down. In fact, we had not an hour's delay caused by the latter last season, as we had none either with the machine nor the disintegrator.

The bricks are of a superior quality to those we made before on either the Cream City or Journey machine, and the pug mill tempers the clay a great deal better than the soak-pit did, which we are glad to be a thing of the past for us at least, and no doubt soon will be for every one. We enclose check for \$13.50 to balance account.

Wishing you a prosperous season, we are,

*Yours truly*  
*Standard Brick Co. A. J. Potts*

C. & A. POTTS & CO., - Indianapolis, Ind.

Now IS THE TIME TO . . . .

## INVESTIGATE.

If you intend making any change in your plant, we would be pleased to give you any information you may want regarding our HORIZONTAL STOCK BRICK MACHINE.

IT IS THE LEADER.

IT WILL MAKE BETTER BRICK.

IT IS STRONG AND DURABLE.

For prices and terms, address

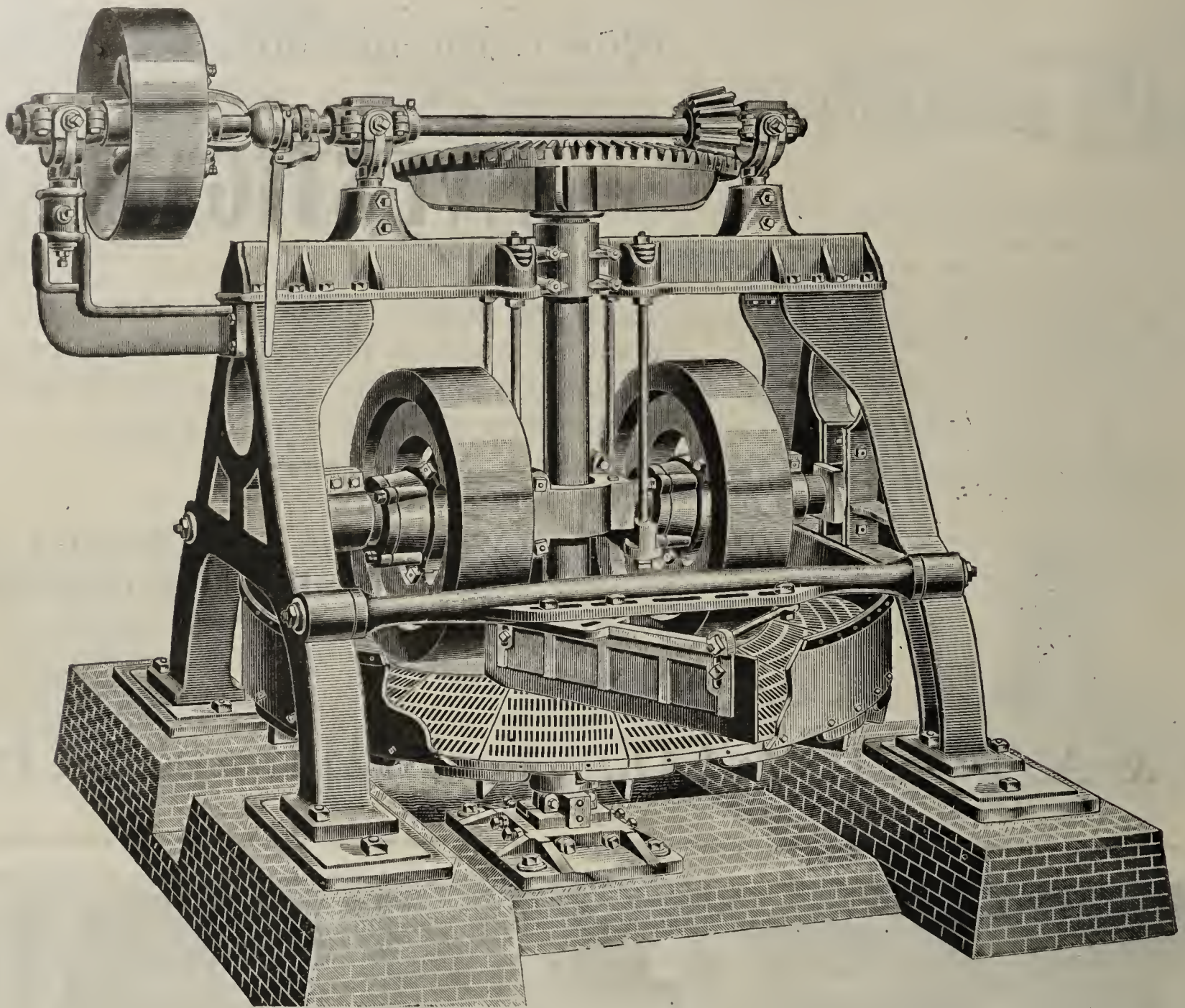
**J.H. & D. LAKE, Co.**  
**MASSILLON, O.**  
**U.S.A.**

FRICION CLUTCH PULLEYS;  
 MFRS. OF  
 PLAIN OR SPLIT PULLEYS,  
 SHAFTING,  
 HANGERS, ETC.  
 ALSO  
 COUNTER SHAFTS  
 COMPLETE.

CUT-OFF COUPLINGS,  
 PLAIN OR SPLIT;  
 FORMERLY OF HORNELLSVILLE, N.Y.

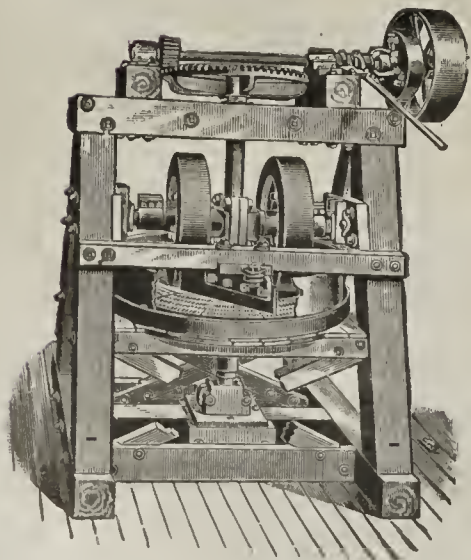
CANTON ENG. CO.





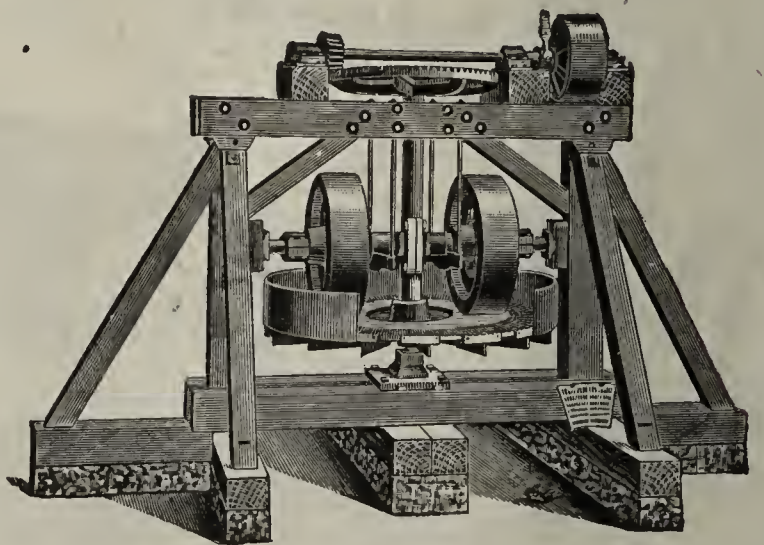
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.



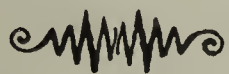
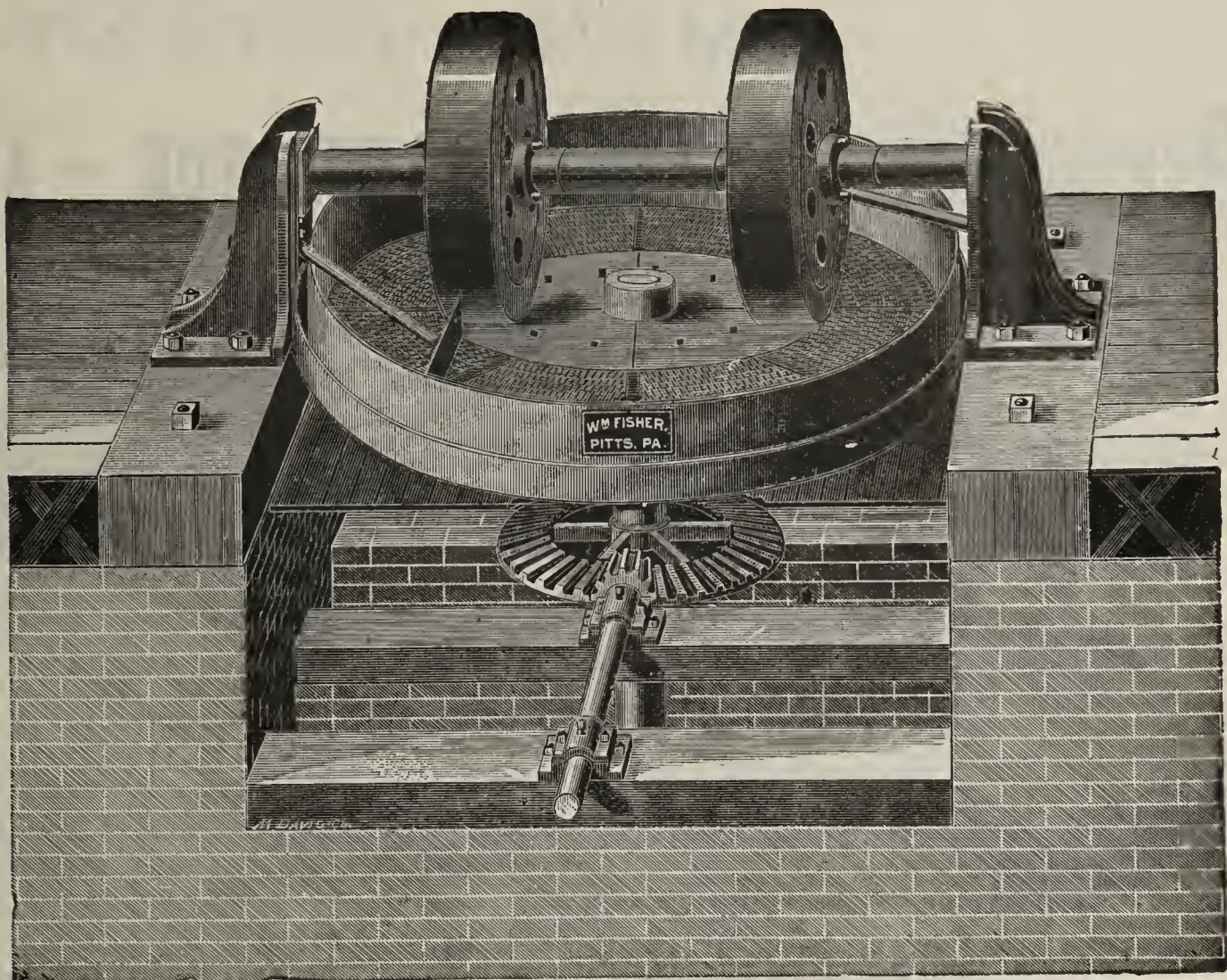


# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.  
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR  
Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

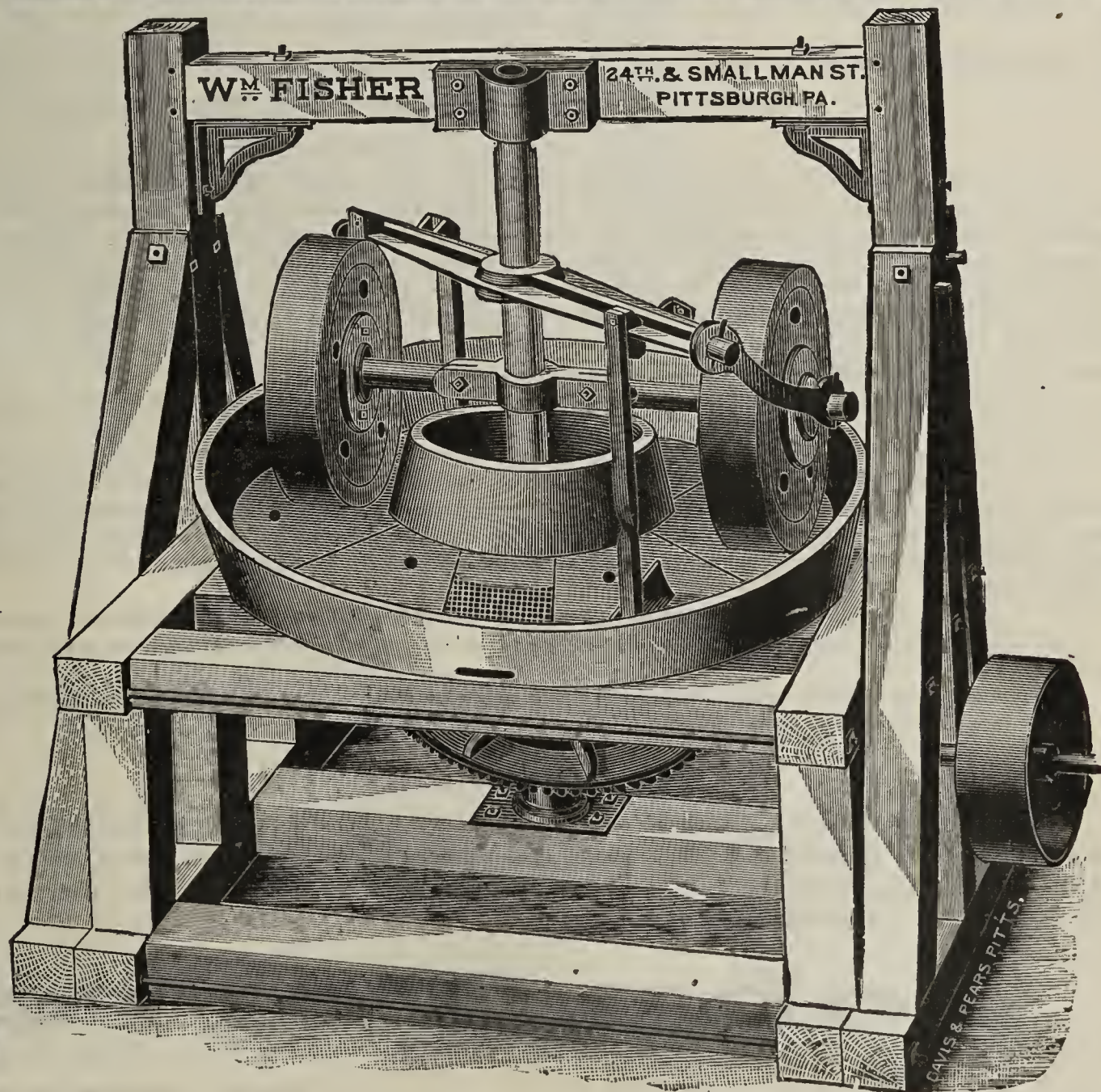
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



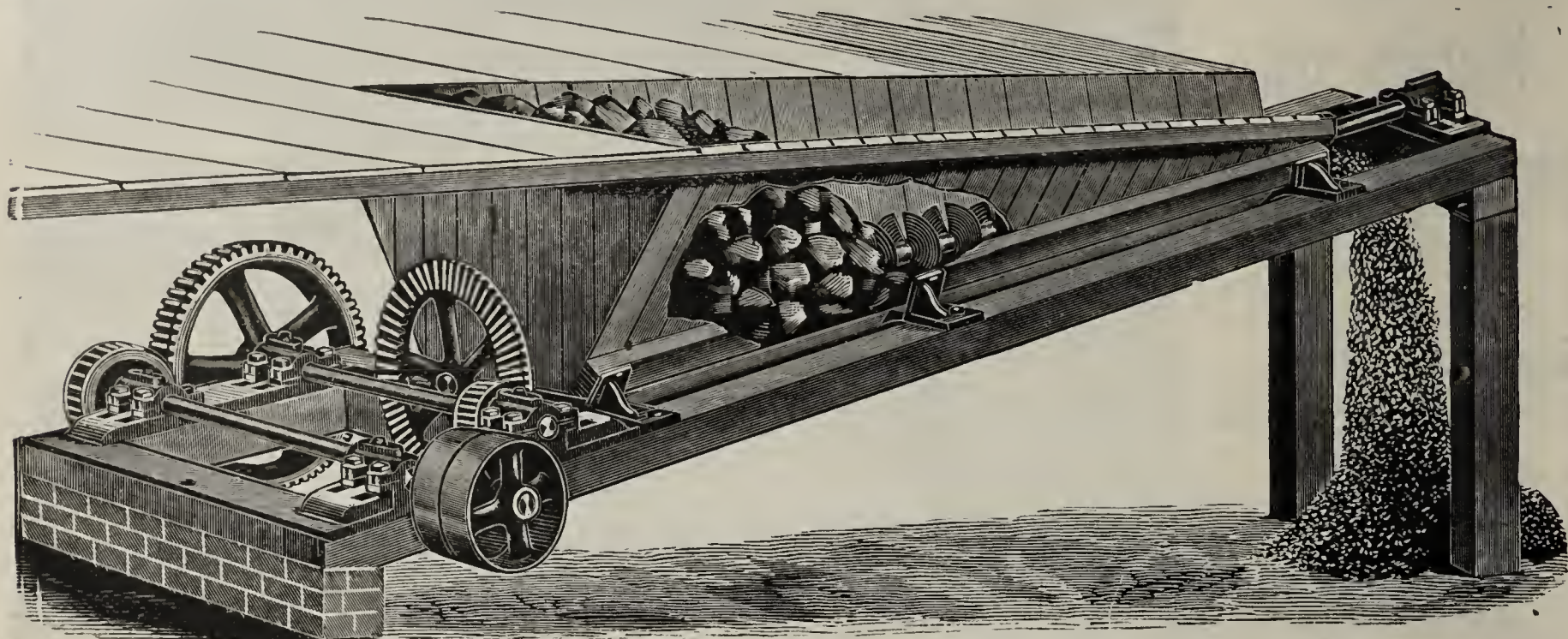
PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



☞ When writing for prices, state kind of material and capacity required.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

## MUSKEGON, MICH.

Mention Clay-Worker.

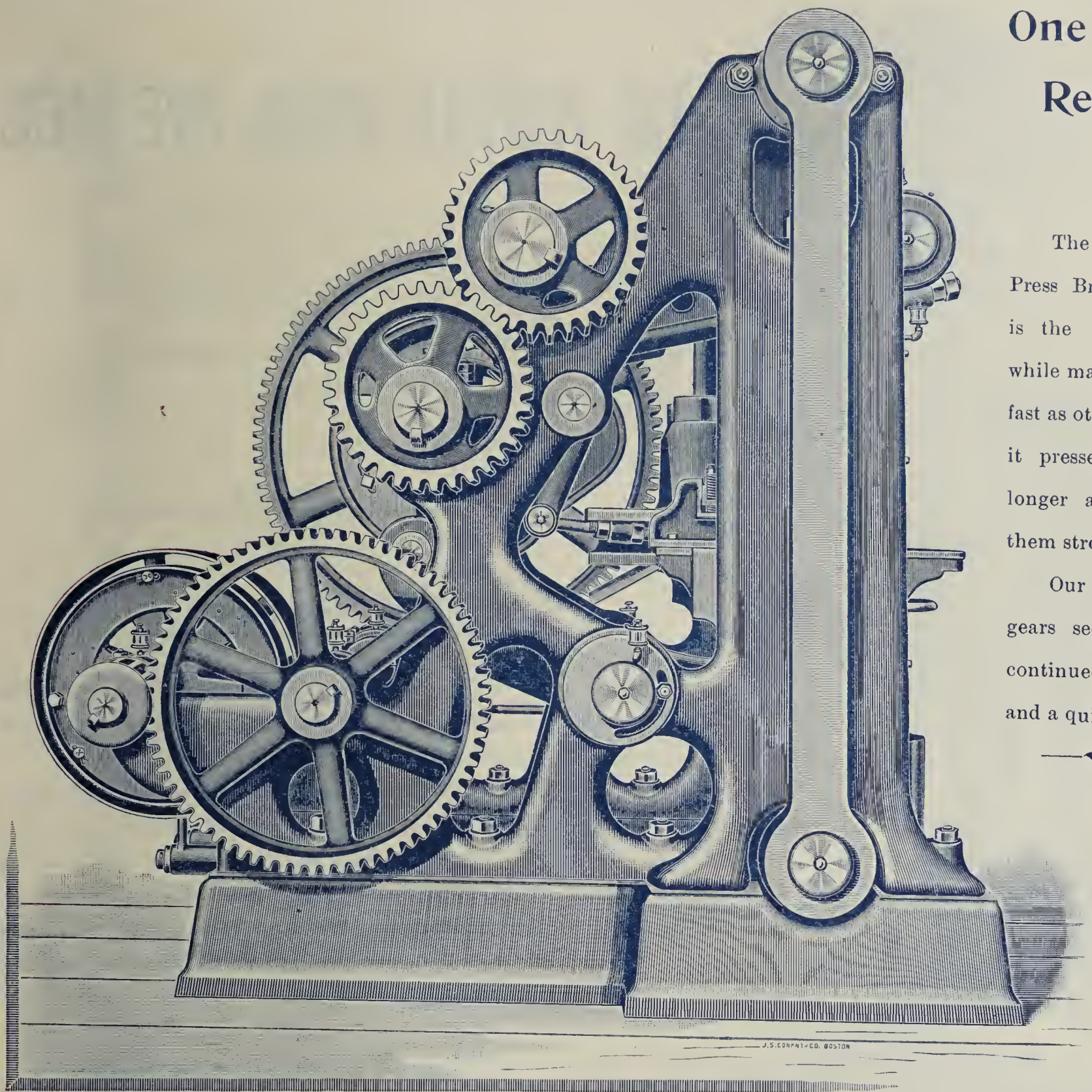


J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY  
WILLOUGHBY, O.

## One Reason ..Why

The Penfield Dry Press Brick Machine is the best is that while making brick as fast as other machines it presses the brick longer and makes them stronger.

Our elliptical gears secure a long continued pressure and a quick return.



Penfield 4-Mold Dry Press Brick Machine. (Side View.)

# Thus the Penfield Dry Press Brick Machine

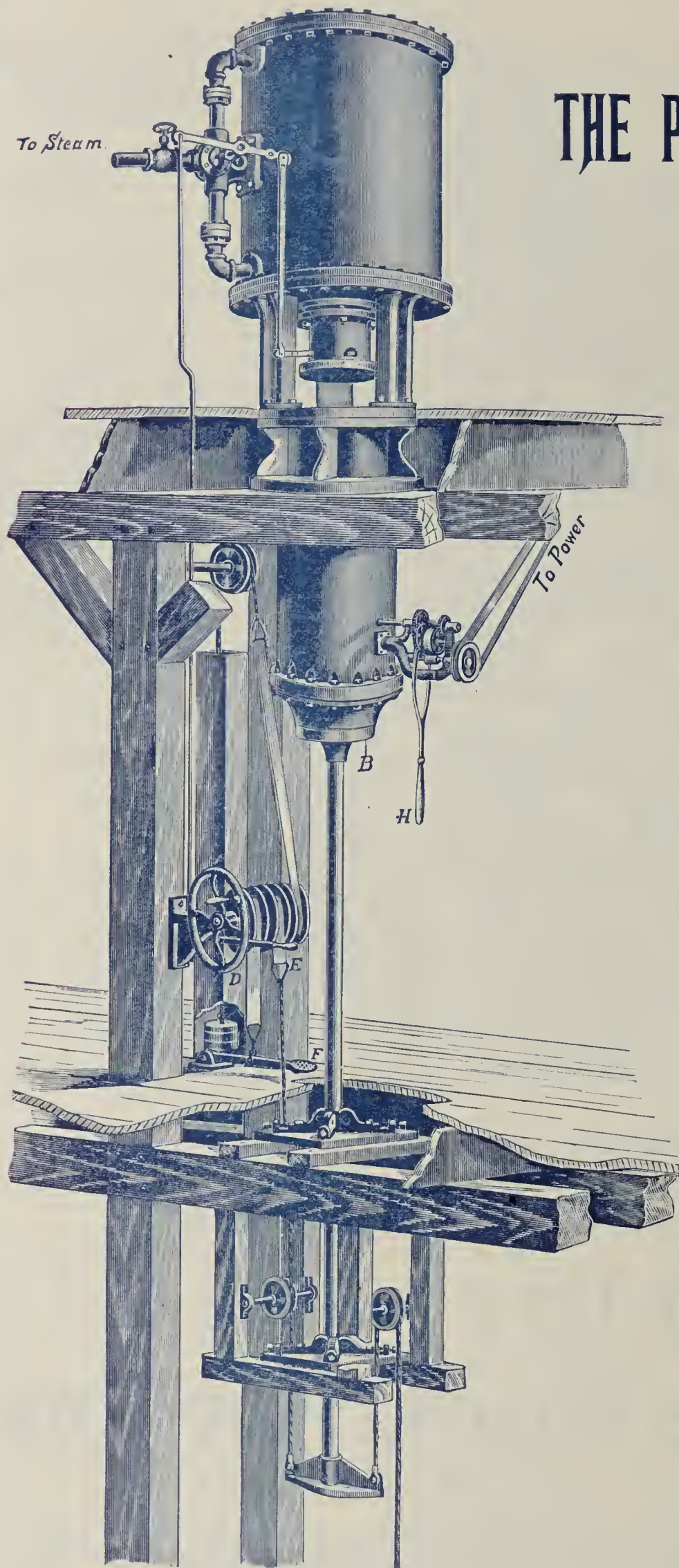
Keeps the pressure on the brick ten-thirteenths of the time required for a complete revolution of the machine.

Strength, durability and convenient adjustments are some of its other advantages. Write and we'll tell you all about it.

J. W. PENFIELD & SON, = Willoughby, Ohio, U. S. A.

J.W. PENFIELD & SON  
CLAY-WORKING MACHINERY





## THE PENFIELD SEWER PIPE PRESS

Has valuable improvements over others.

It is unusually easy to erect.

The length of stroke is 50 inches, ensuring more rapid and more perfect work.

The Power Cutter works like a charm.

It has other advantages.

Send for details.



### The Only Reason

Penfield Brick Machinery did not receive the award at the World's Fair, was that we did not exhibit there.

World's Fair Authorities provided no space for United States exhibits of Clay-Working Machinery although room was found for imported or supposably-imported machinery.

Practical Brickmakers, though, who know a good thing when they see it, admit that for many reasons,

**The Penfield is the Best.**



**J. W. PENFIELD & SON,**  
WILLOUGHBY, OHIO, U. S. A.

AUGER BRICK MACHINERY,  
PLUNGER BRICK MACHINERY,  
STOCK BRICK MACHINERY (Sand Moulding,)  
DRY PRESS BRICK MACHINERY,  
SEWER PIPE MACHINERY,  
CLAY WORKING MACHINERY OF ALL KINDS.



# BRICK PATENTS.

WE MANUFACTURE ALL KINDS OF

WHITE PINE LUMBER, PACKING BOXES IN SHOOKS,

PIPE BOARDS, ROOFING LUMBER, ETC.

W. B. MERSHON & CO.,

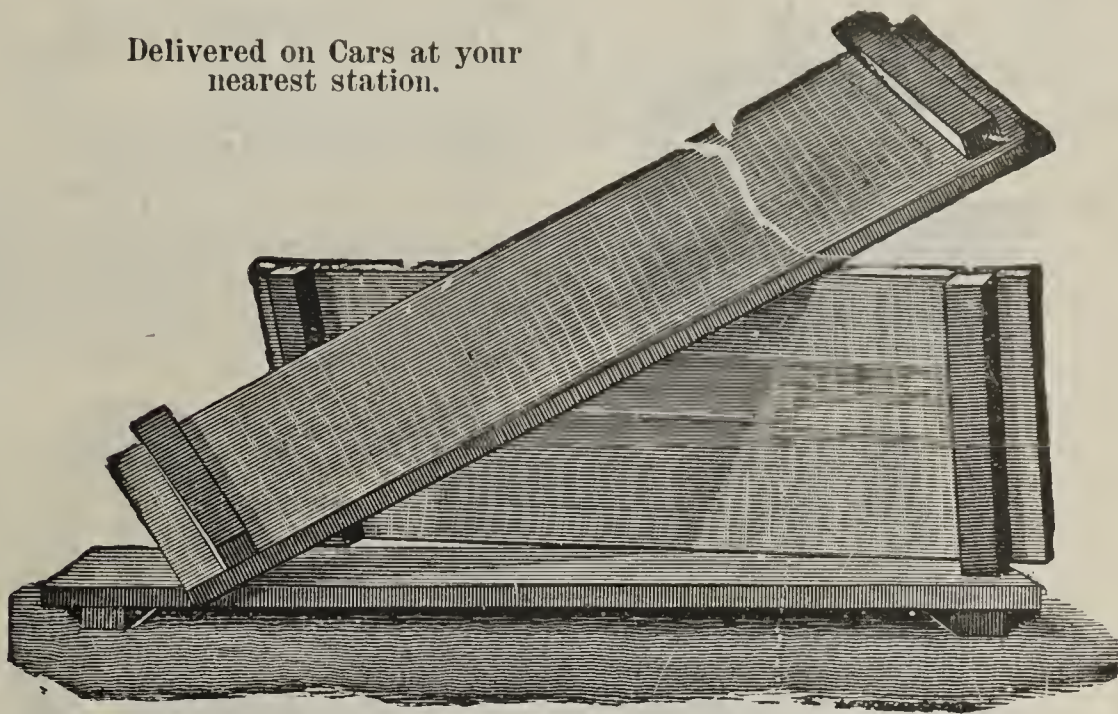
East Saginaw, Mich.

Write for circulars and prices.

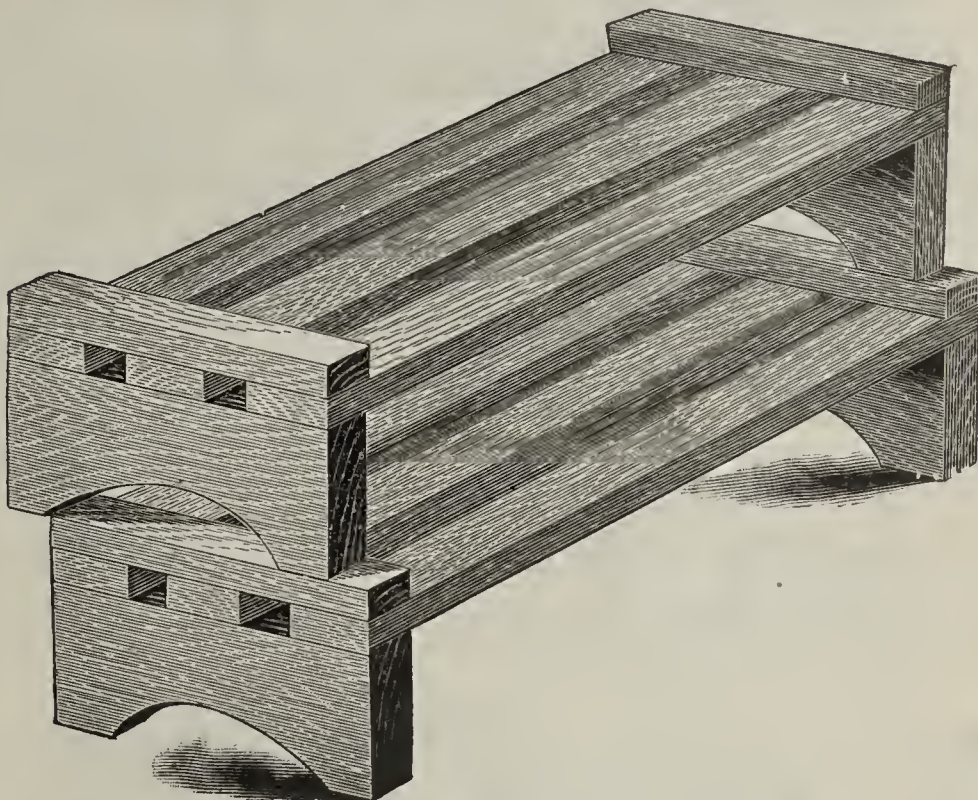
THE CLAY-WORKER.

603

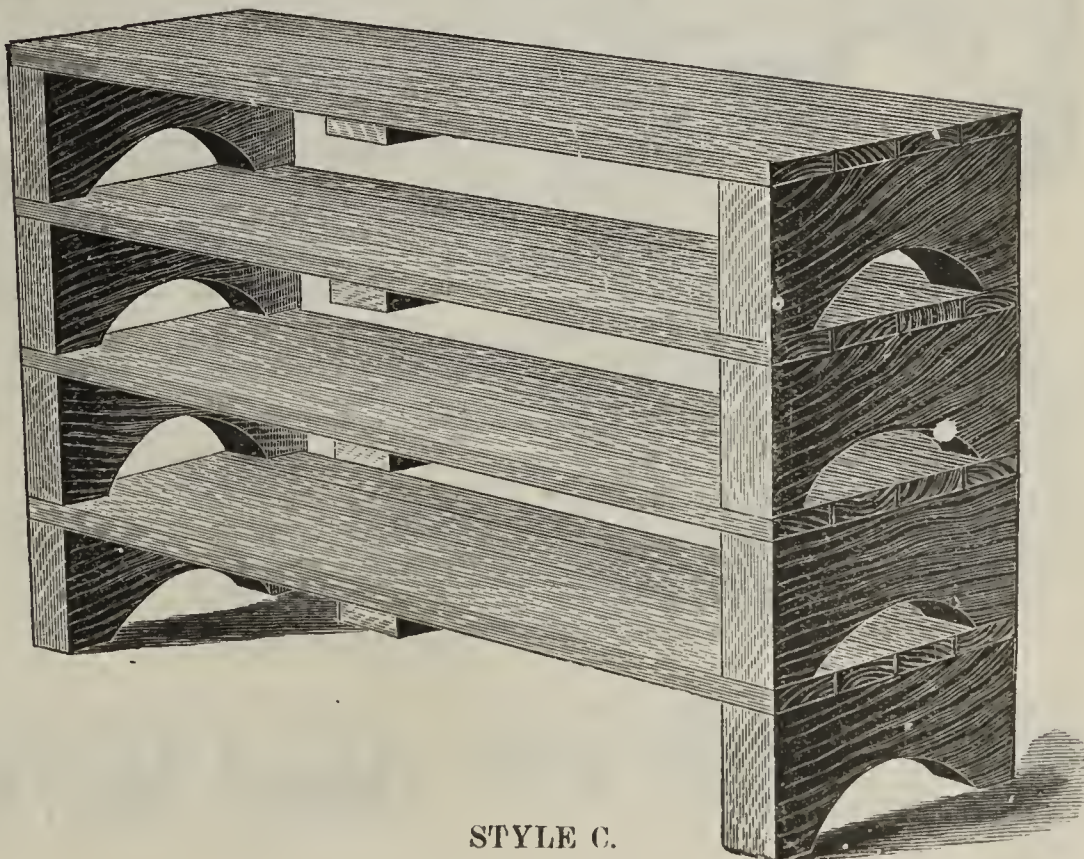
Delivered on Cars at your  
nearest station.



STYLE A.



STYLE B.



STYLE C.



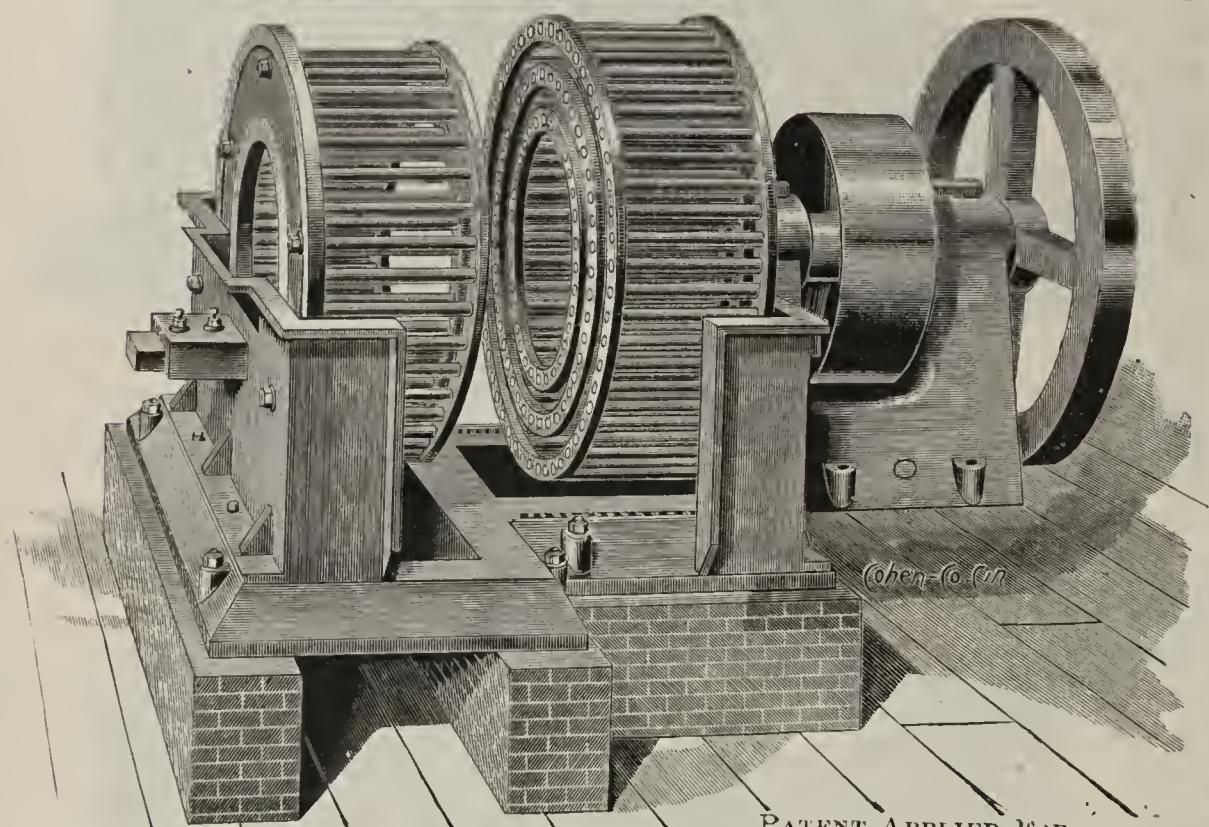
## Description.



This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

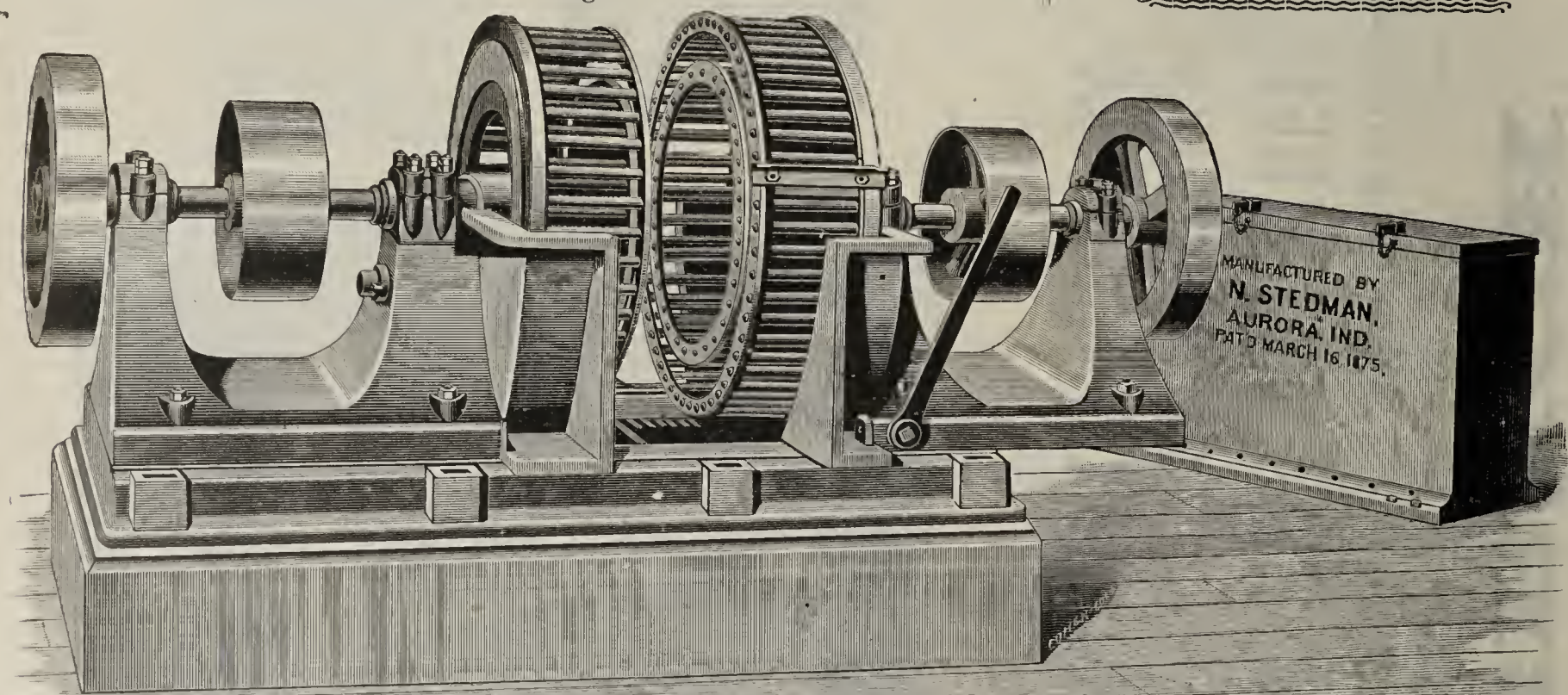
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loomy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



### NOTICE.

The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

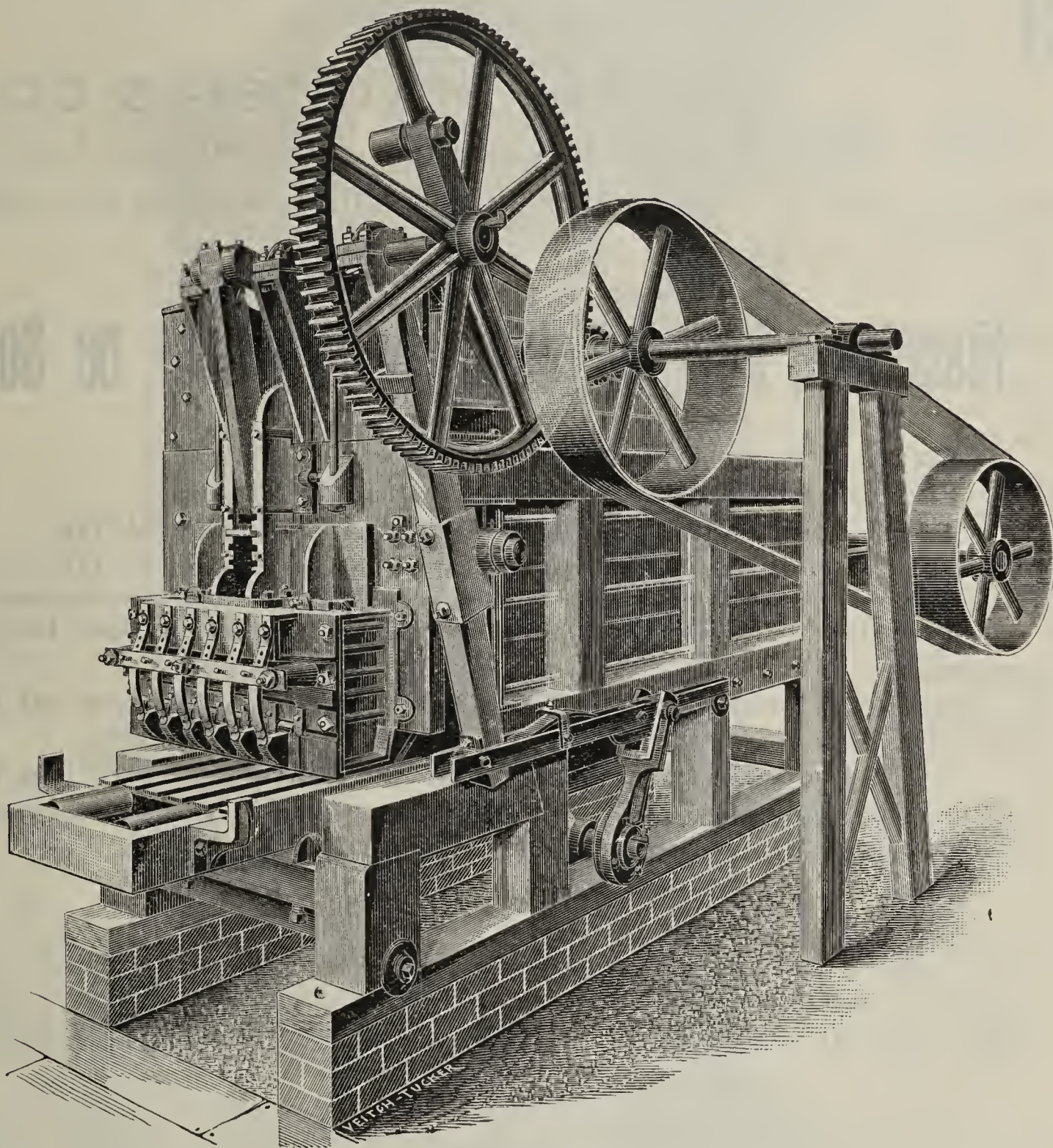


# THIRTY MILLIONS

Have Been Made with One Machine  
in Less Than Thirty Months.



WEIGHT  
NEARLY EIGHT  
TONS.



Not a Single Day's Work Was Lost Through Breakage.

*"New Haven" Records Lead.*

*Let us Prove Them.*

**The McLAGON FOUNDRY CO., New Haven, Conn.**



# RECEIVER'S SALE.

## BARGAINS IN CLAY MACHINERY.

**O**WING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

**NOLAN, MADDEN & CO.,**

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

### Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be SOLD AT UNHEARD-OF PRICES.

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold VERY CHEAP. This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

**JNO. F. SCANLAN, Receiver,**

For **NOLAN, MADDEN & CO.,**

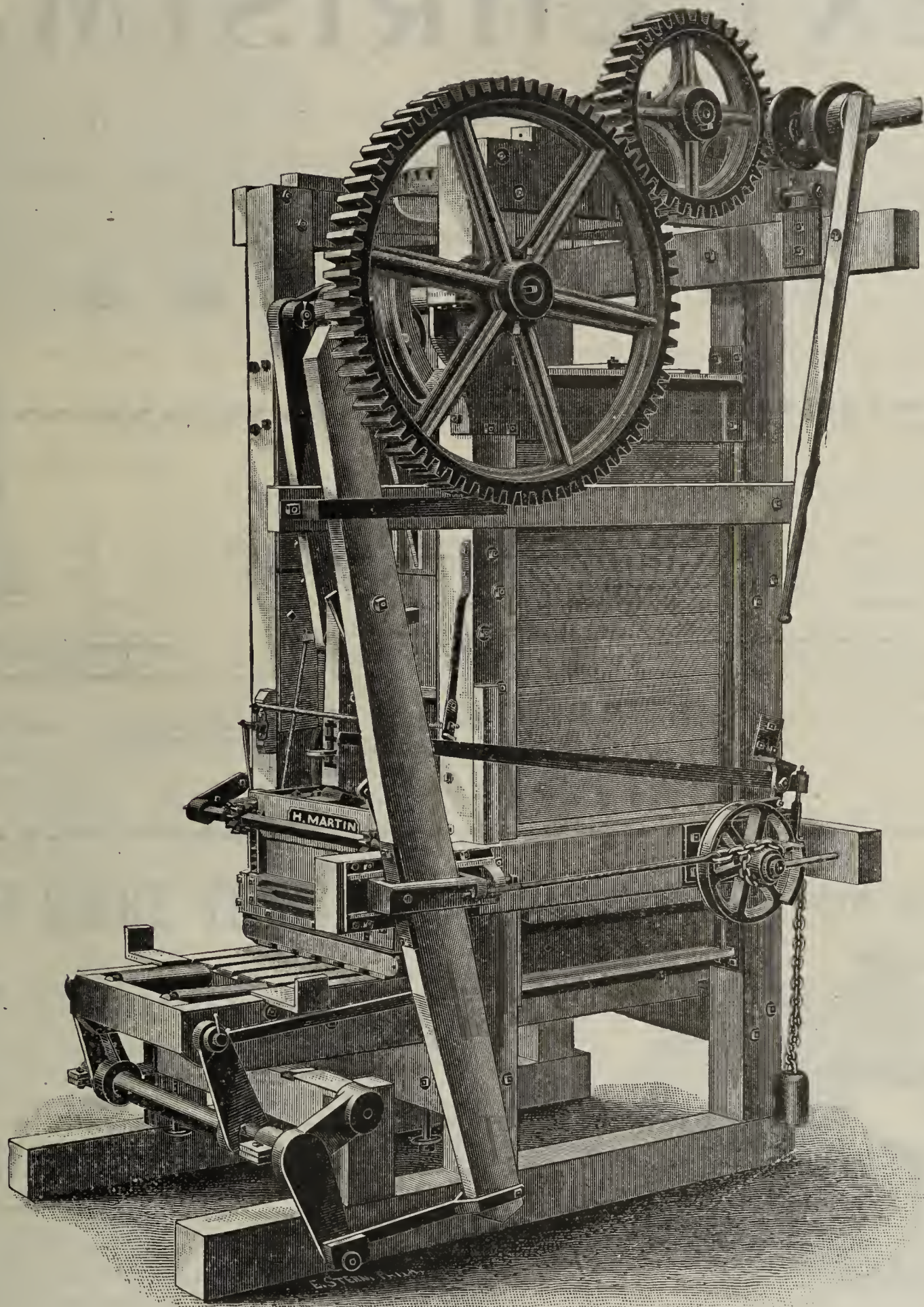
**RUSHVILLE, IND.**

REFERENCE: Rush County National Bank.



# "MARTIN" BRICK MACHINERY.

DIFFERENT STYLES. DIFFERENT SIZES.....  
BUILT FOR STRENGTH AND DURABILITY.



Plans  
and  
Specifica-  
tions  
of  
Complete  
Plants  
Furnished  
Upon  
Application.

Clay  
Tested  
and  
Reports  
Furnished.  
Machines  
in  
Practical  
Operation  
at  
Our  
Works.

The Henry Martin Brick Machine Manufacturing Co. are so well commended to the  
brick interests of the United States that they are well and favorably known.....

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

LANCASTER, PA., U. S. A.

SEND FOR CATALOGUE.  
SOLE MANUFACTURERS OF "MARTIN" PATENTS.



Fresh Evidence Monthly of the Highest Quality.

# NEXT CHRISTMAS

You can buy more presents for the "Kids" than you can this and be "merrier" all around, if you will put in a "Monarch" Machine, for it is a money saver, and makes brick that make money, which makes the owner merry.

Study the points brought out by Mr. Bennett in the letter below and estimate the

**\$ \$ \$ \$ \$ \$ \$ \$**

that these points mean, ——— dollars made and saved for the owner of a "Monarch."

THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO:

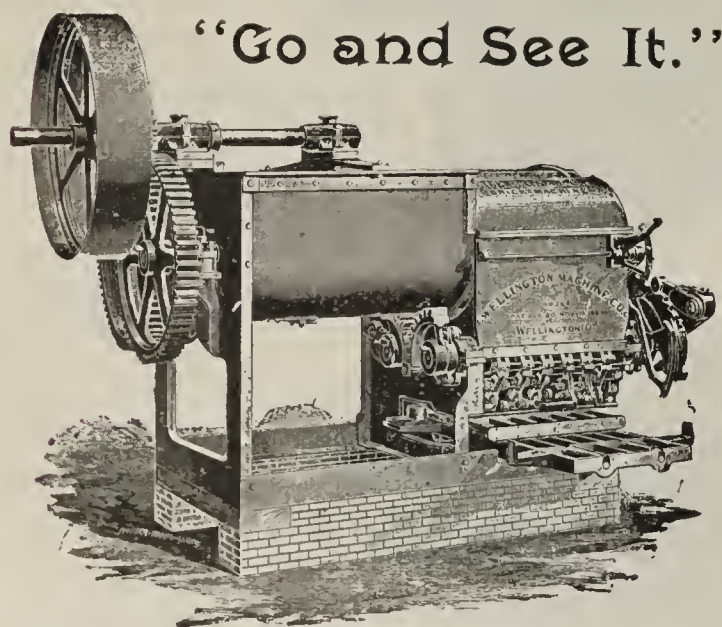
MUNCIE, IND., July 17, 1893.

GENTLEMEN:—The "Monarch" is all and more than you claim for it. It pugs the clay better than the pug mill and "Quaker" combined. It takes up less room than any machine that will do the same work. It is strength itself, and runs so smooth and noiseless that you would not realize that you were near a brick machine if you did not see it. The press box is one of the strong points about the machine. The relief dog makes it impossible to break, should any hard substance get into the machine, and the press wings working inside have nothing to wear them but soft mud; and there is no leakage of mud, as there is no place for it to get out except into the moulds.

These are points that every brickmaker will appreciate, and no other machine has them. These are a few of the many good points that the "Monarch" has. I am well pleased with it, and whoever buys the "Monarch" will make no mistake.

Respectfully yours,

B. W. BENNETT.



"Go and See It."

## DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

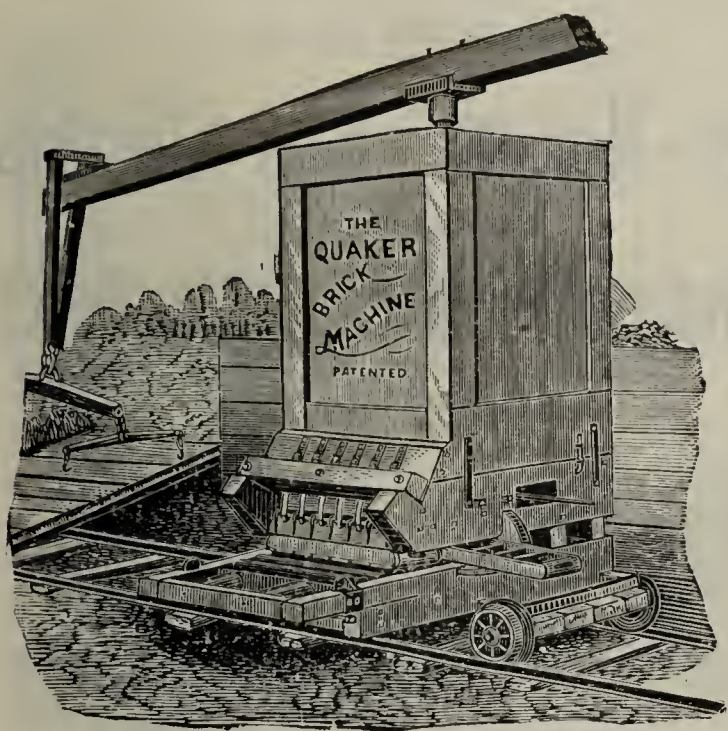
Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.





# THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

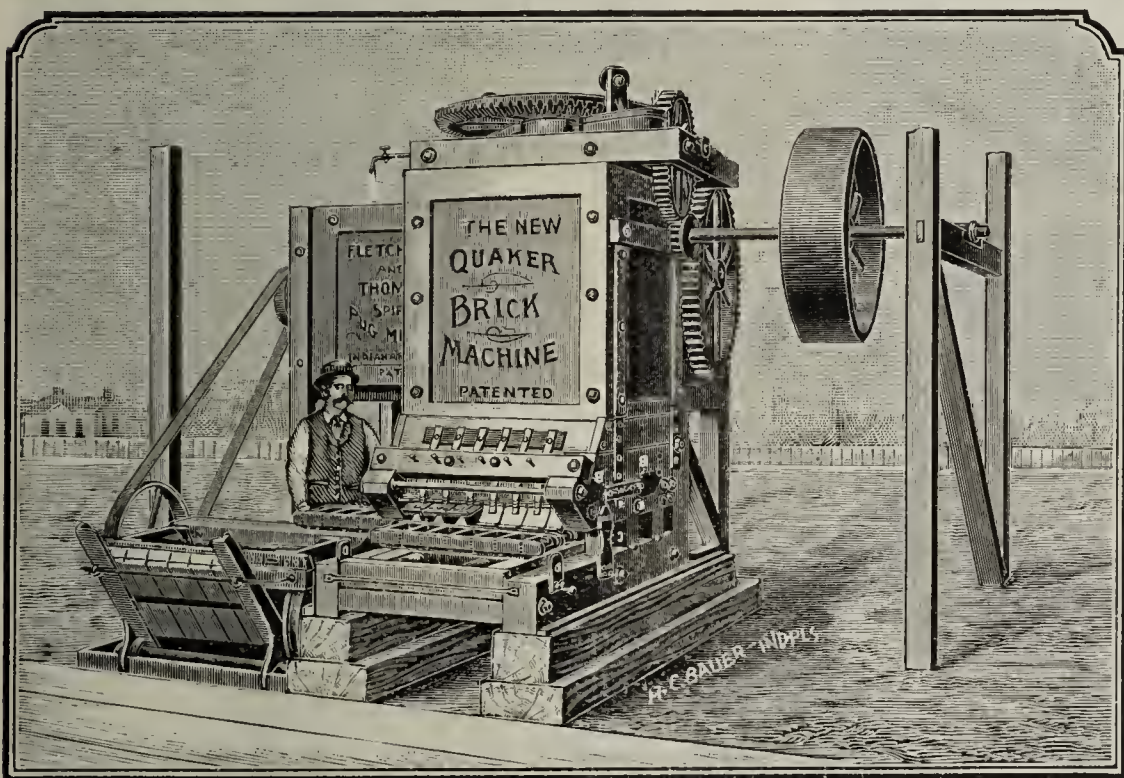
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



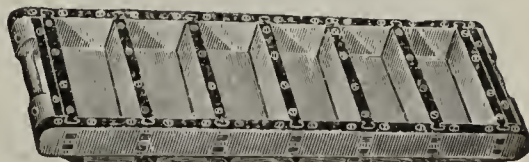
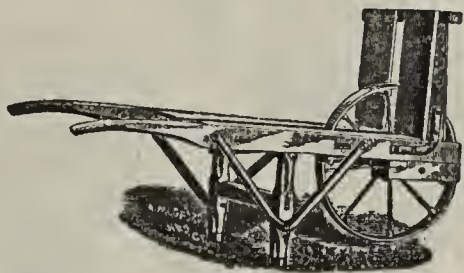
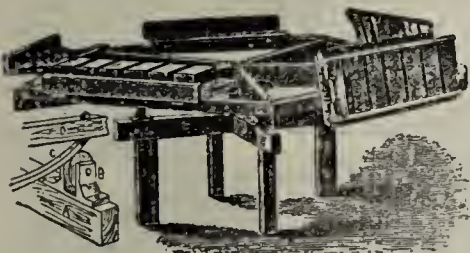
## Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



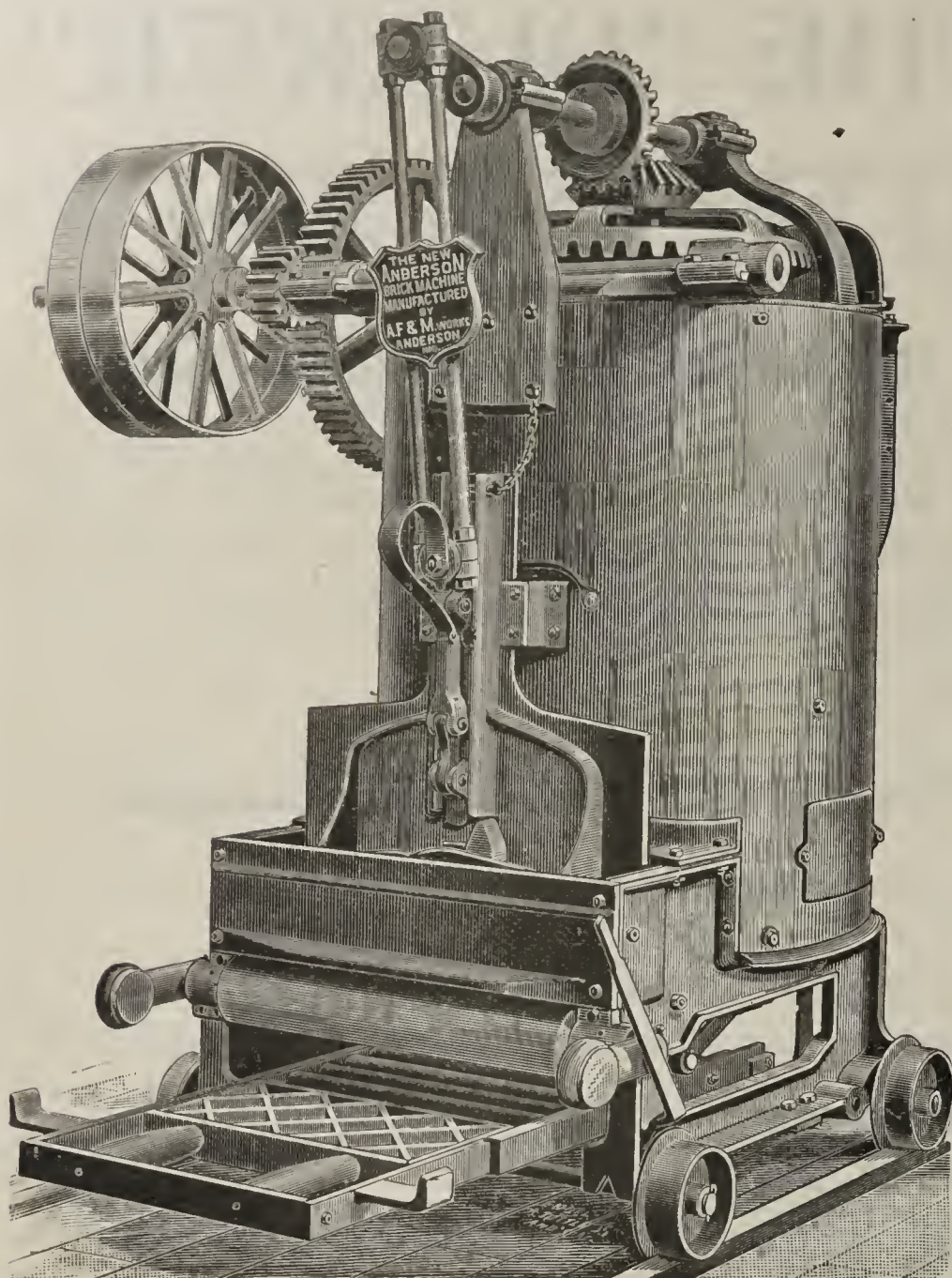
Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.,**  
Wellington, Ohio.

(FOUNDERS AND MACHINISTS.)





## The Chief Disintegrator and Stone

### ✦ SEPARATOR. ✦

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 1/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS, ✦  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.

[Mention the Clay-Worker.]

Correspondence Solicited.

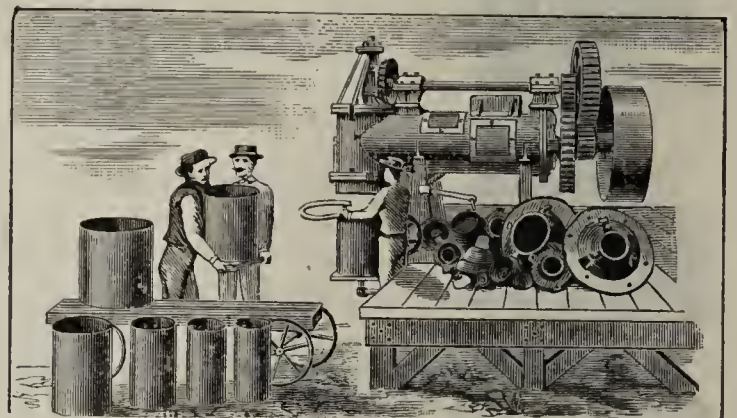
## ✦ THE ✦ New ✦ Anderson ✦ Brick ✦ Machine

MANUFACTURED BY

## THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.

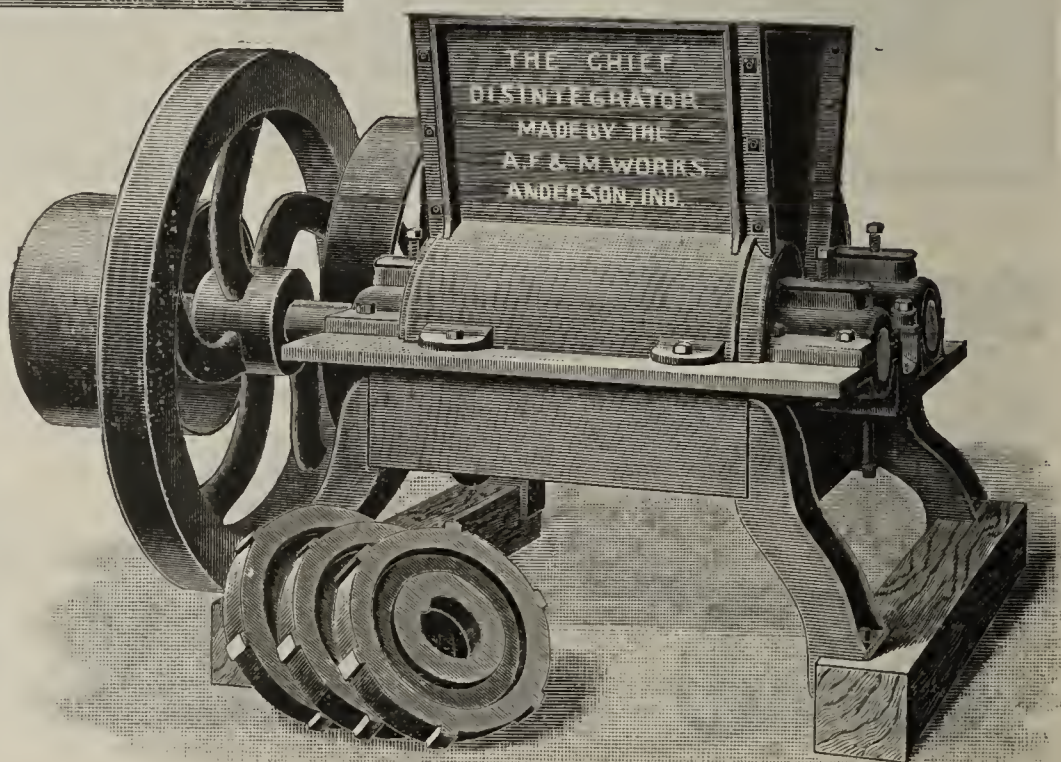


## The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.





## NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

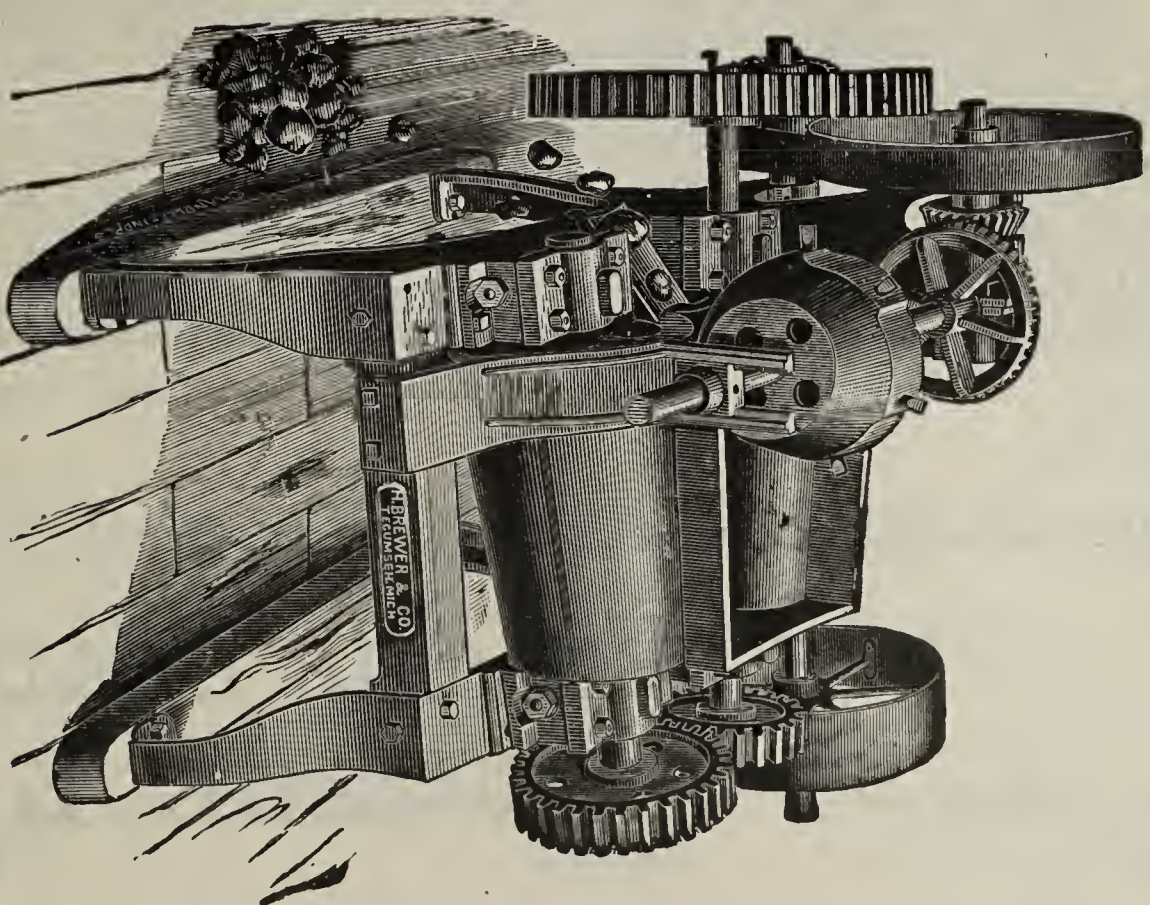
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

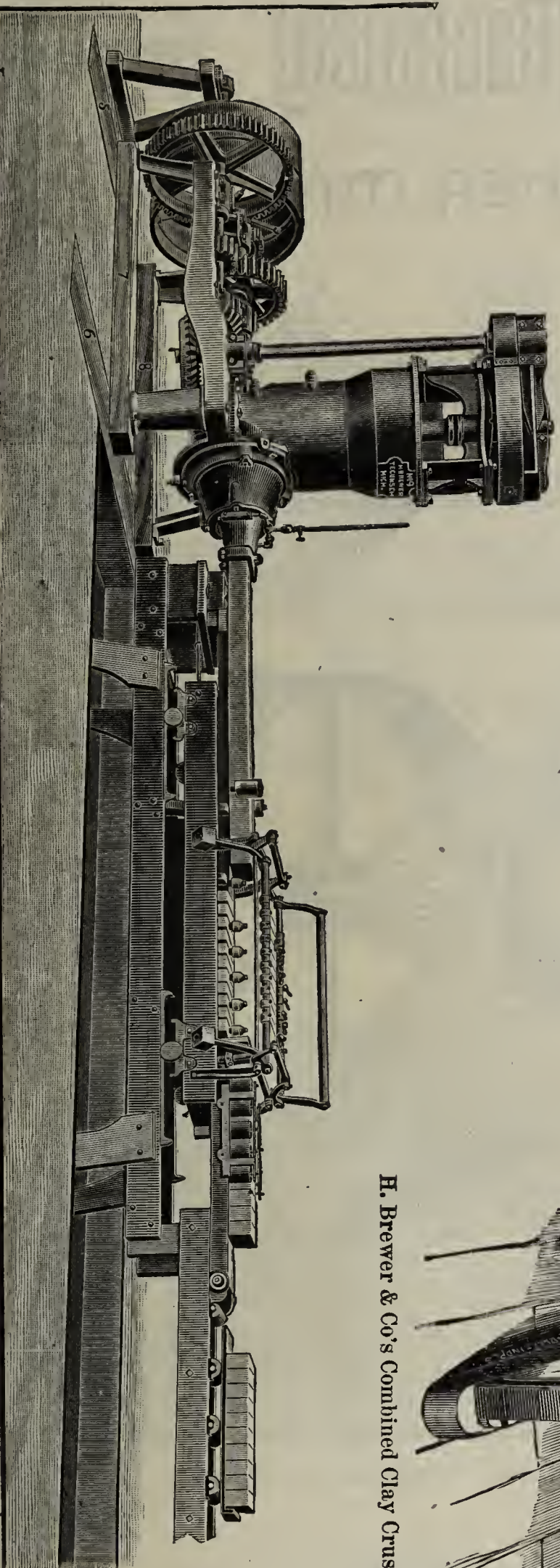
### H. BREWER & CO.,

### Tecumseh, Mich.

[Mention the Clay-Worker.]



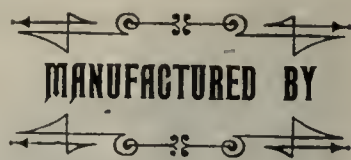
H. Brewer & Co's Combined Clay Crusher and Stone Separator.



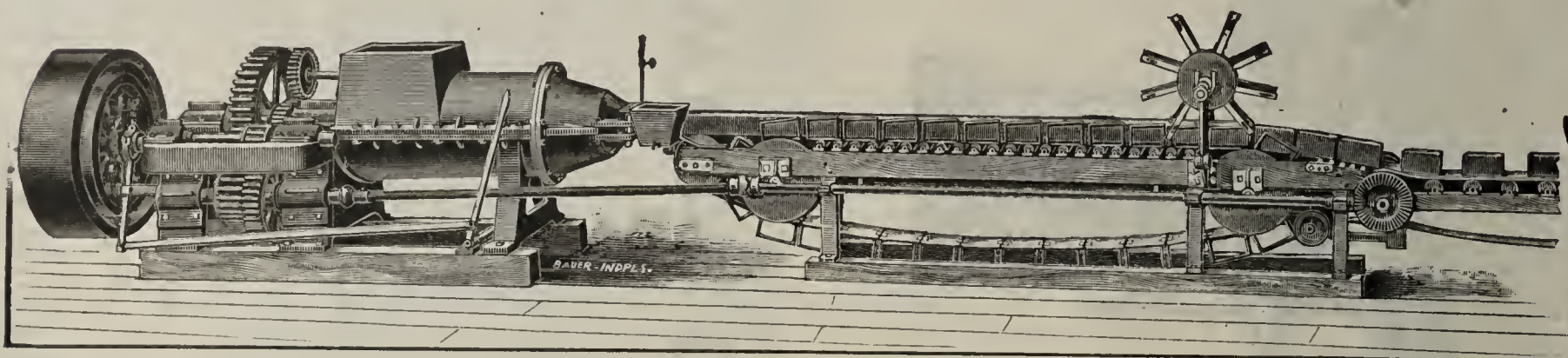
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



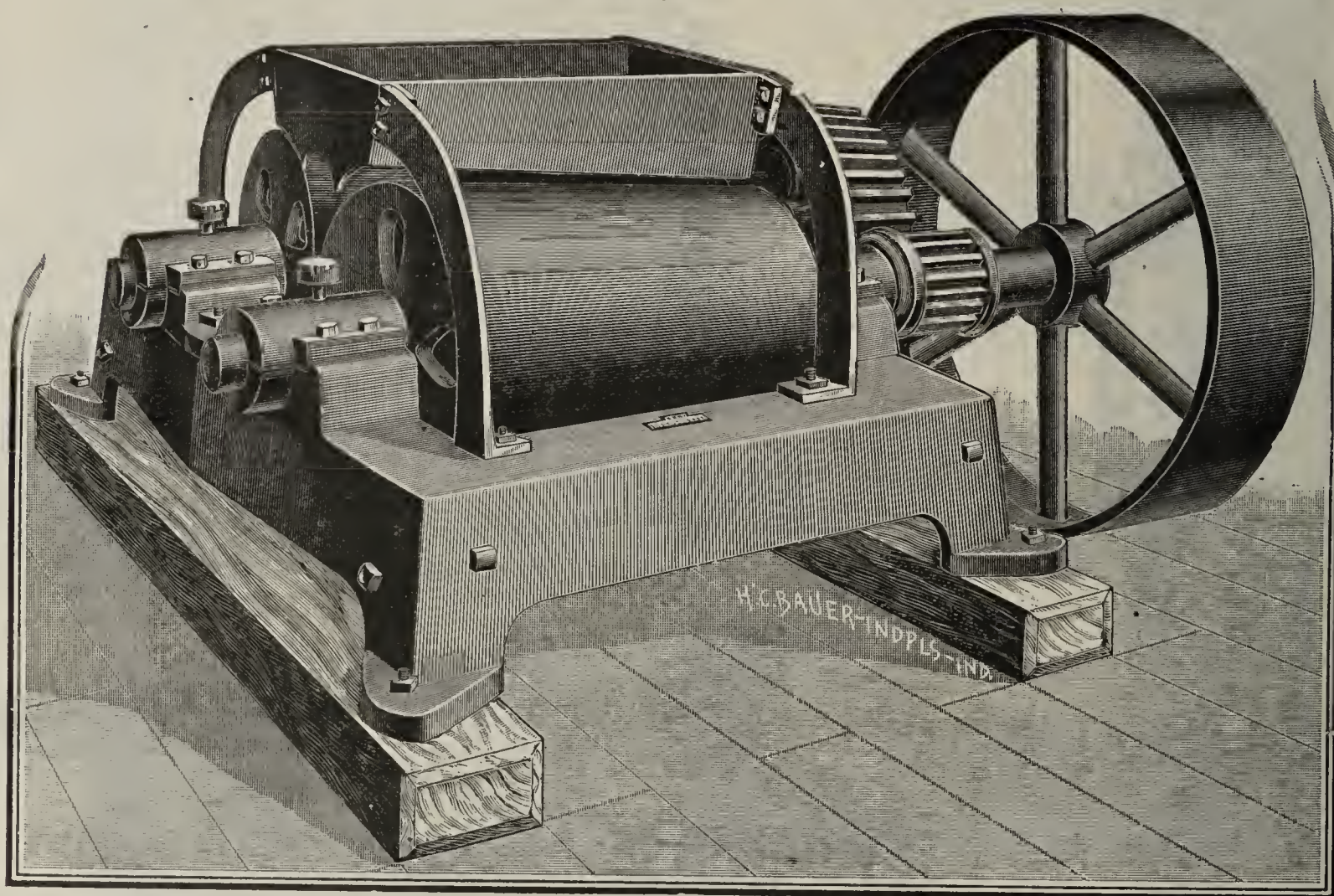
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

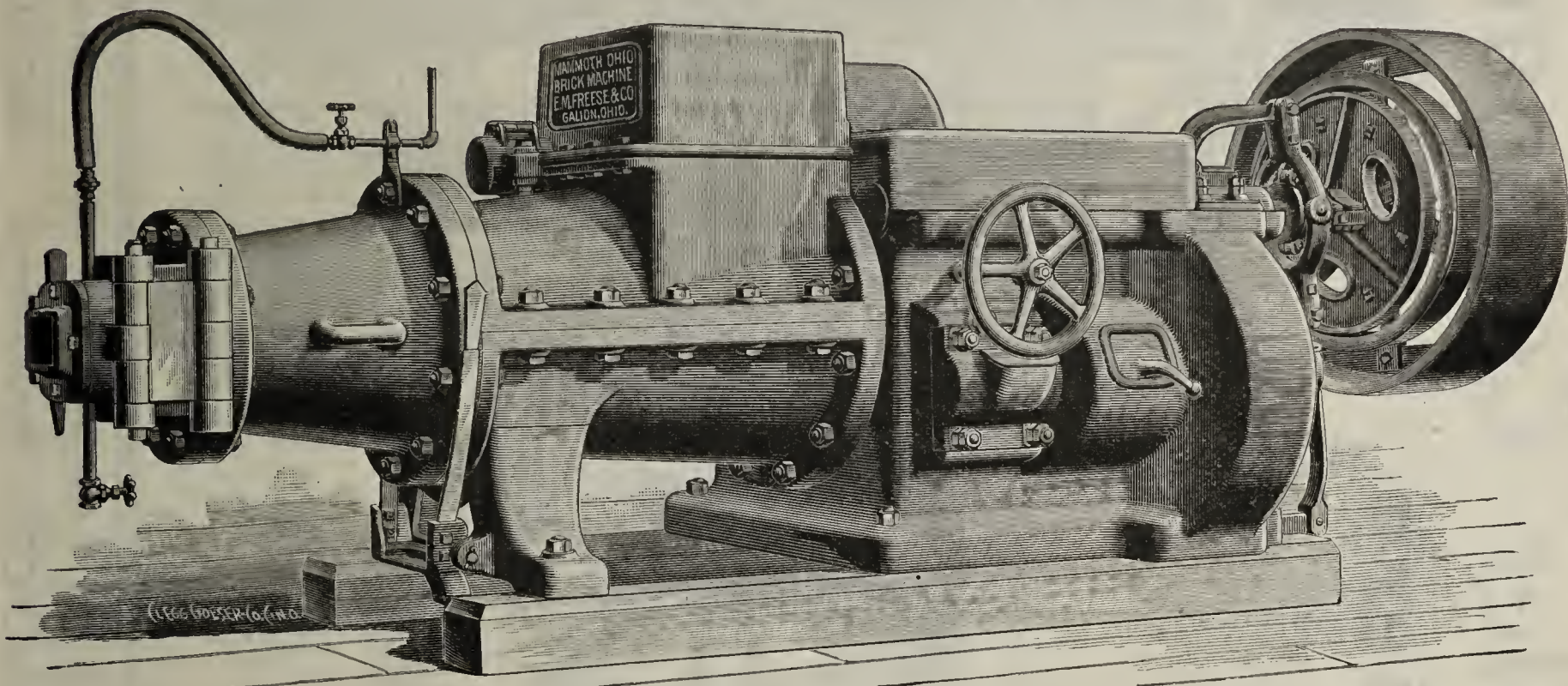
[Mention the Clay-Worker.]

**Decatur, Ill., U. S. A.**



# SUPERIOR BRICK MACHINERY.

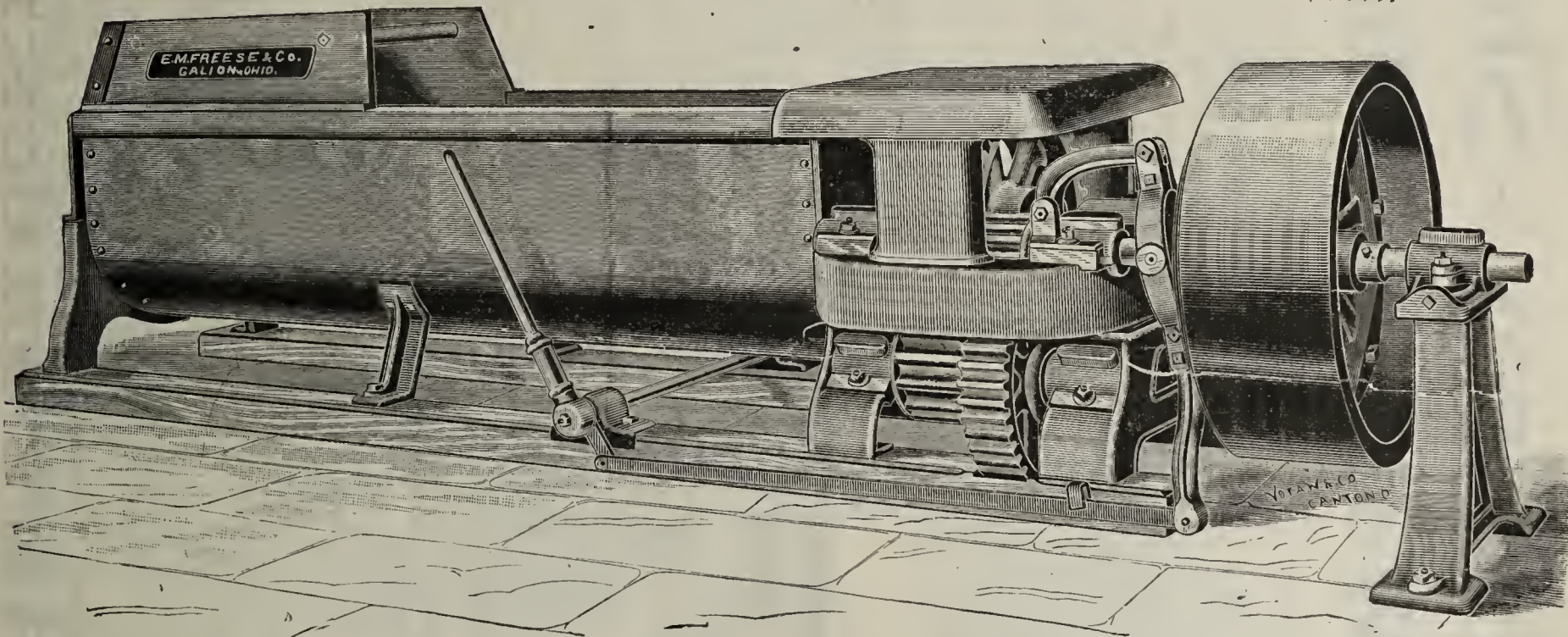
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

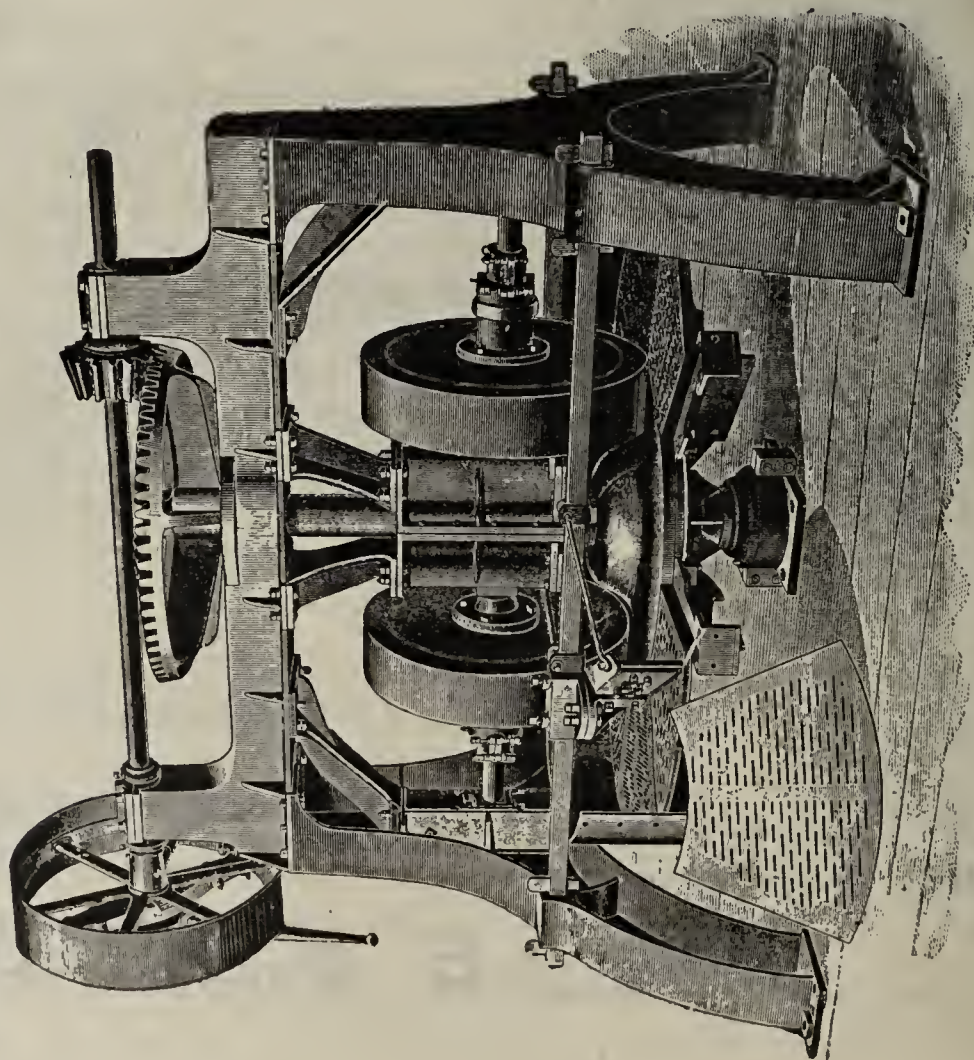
ADDRESS **E. M. FREESE & CO.,**

**GALION, OHIO.**



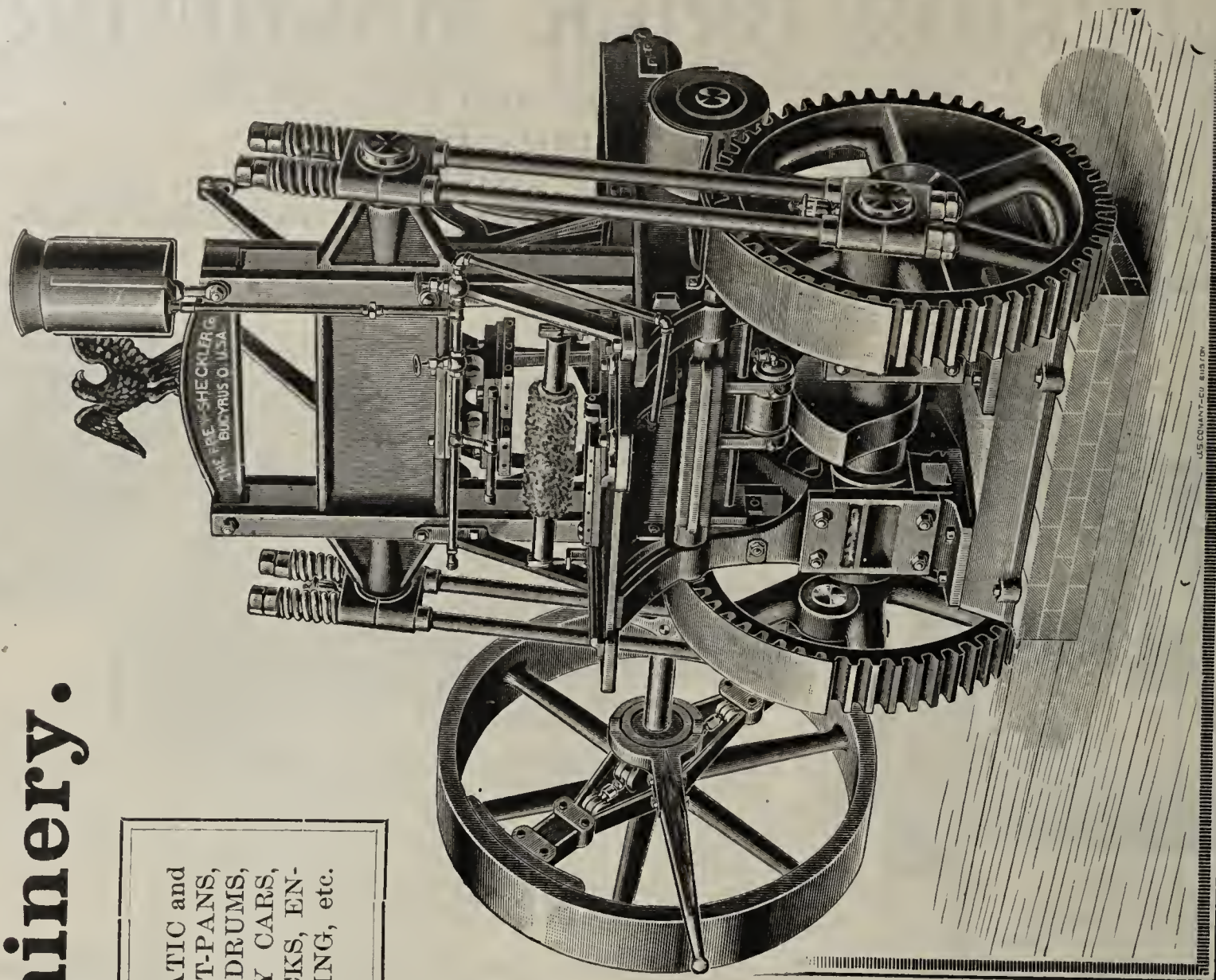
# The Frey = Sheckler Company, Clay Working Machinery.

BRICK, TILE and TERRA COTTA MACHINERY, AUTOMATIC and Hand Power CUTTING TABLES, RE-PRESSES, DRY PANS, WET-PANS, CRUSHERS, REDUCTION MILLS, PUG-MILLS, WINDING DRUMS, DUMP CARS, CLAY CONVEYORS, CLAY SCREENS, DRY CARS, TURN TABLES, TRANSFER CARS, BRICK and TILE TRUCKS, ENGINES and BOILERS, LINE SHAFTING, PULLEYS, BELTING, etc.



Nine Foot Diameter All Iron and Steel Dry-Pan.

SEND FOR CATALOGUE.

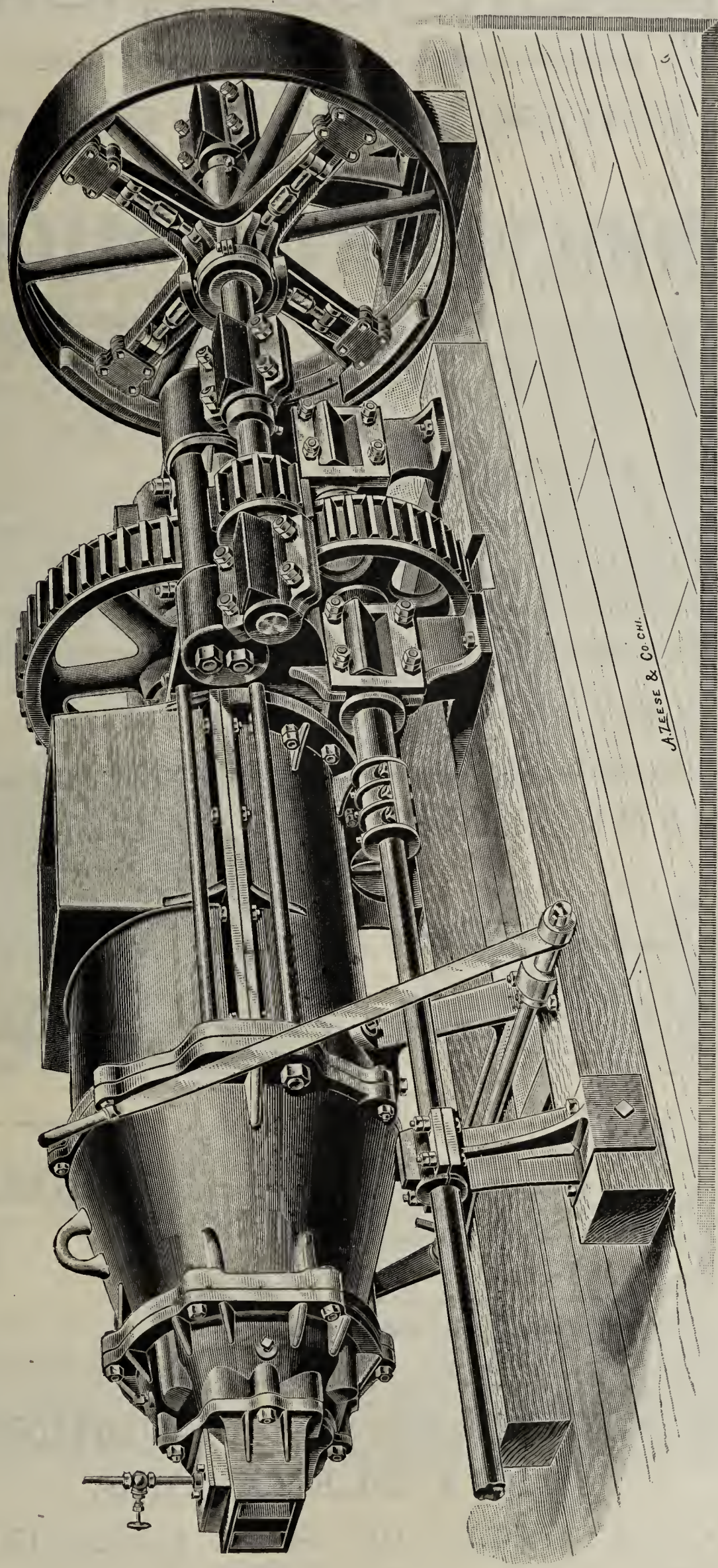


Eagle Steam Power Double Die Repress.

**The FREY-SHECKLER CO.,** Manufacturers, - BUCYRUS, OHIO, U. S. A.



# The Frey=Sheckler Co., Clay Working Machinery.



GIANT BRICK MACHINE.

The Frey=Sheckler Company,

Manufacturers of a Full Line of Clay Working Machinery,

BUCYRUS, OHIO, U. S. A.

SEND FOR CATALOGUE.

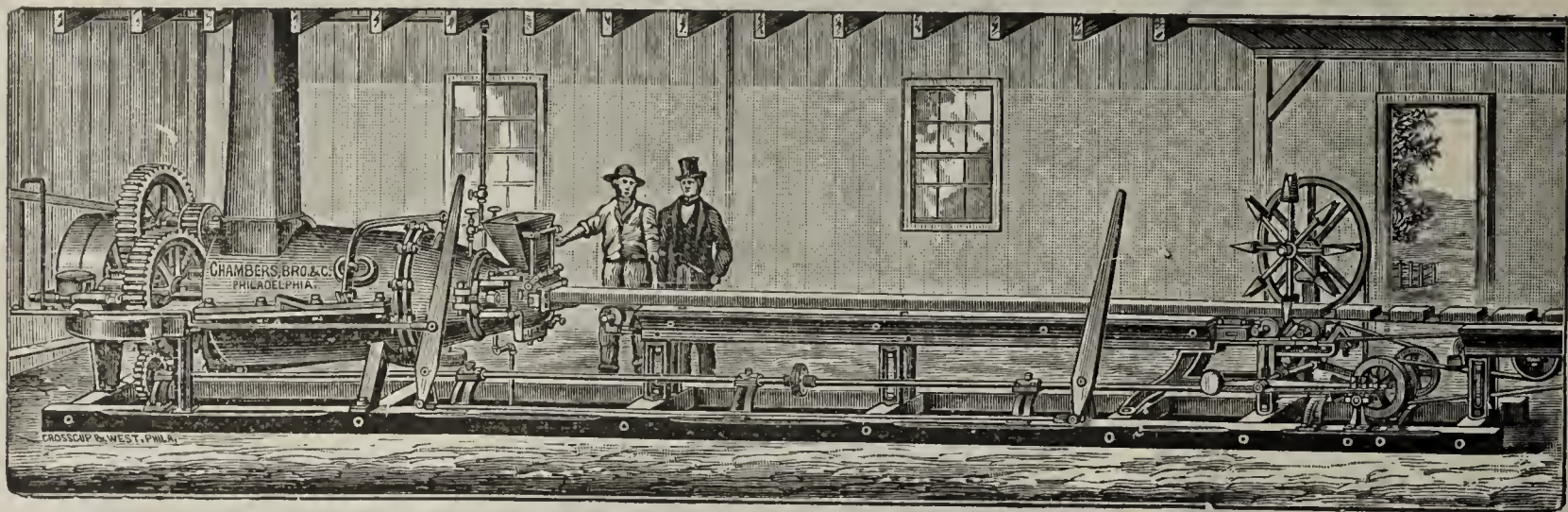


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



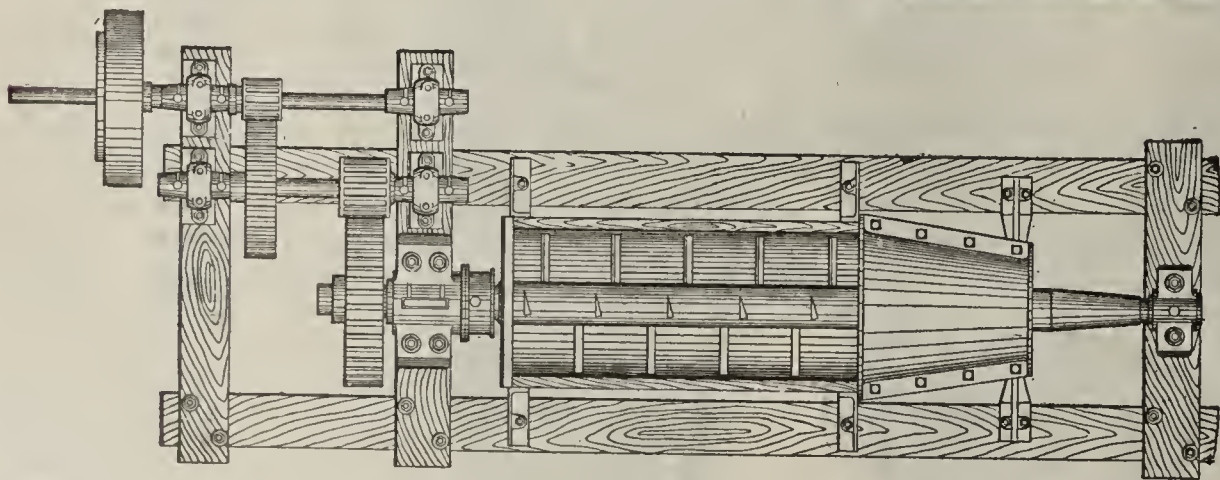
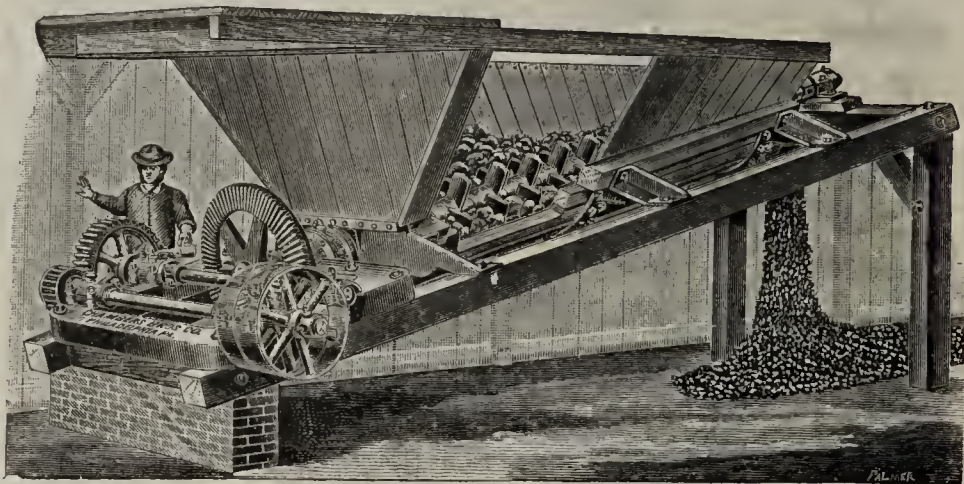
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

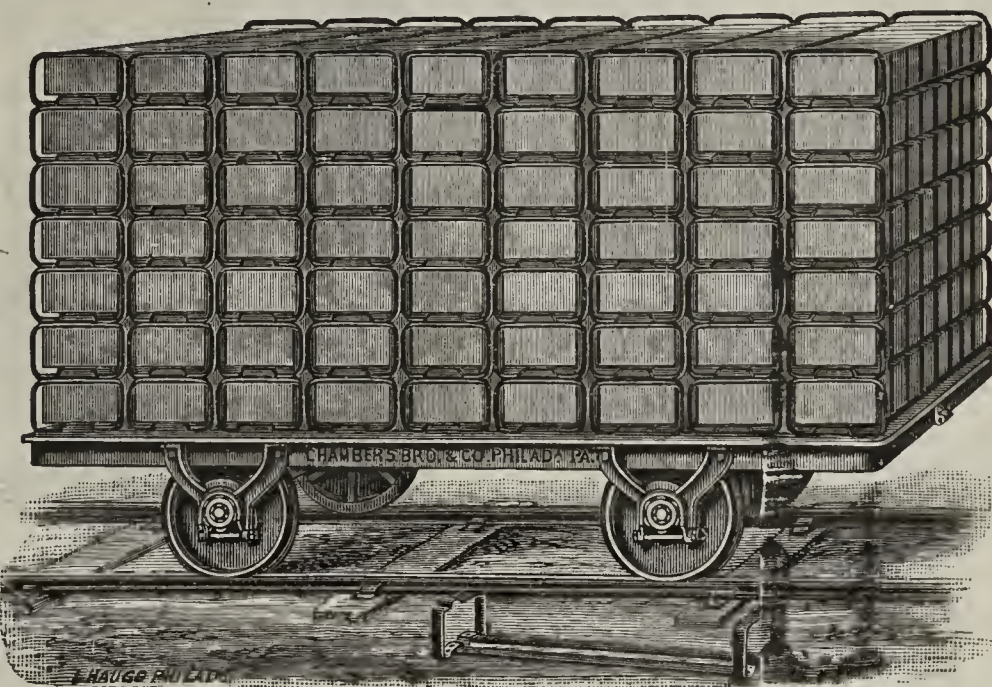
Fifty-Second St., Below Lancaster Ave.,

PHILADELPHIA, PENN.

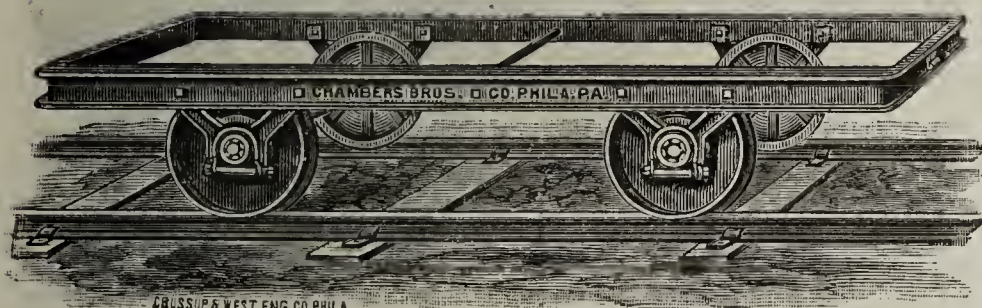
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

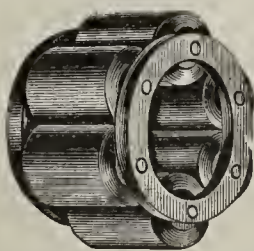


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

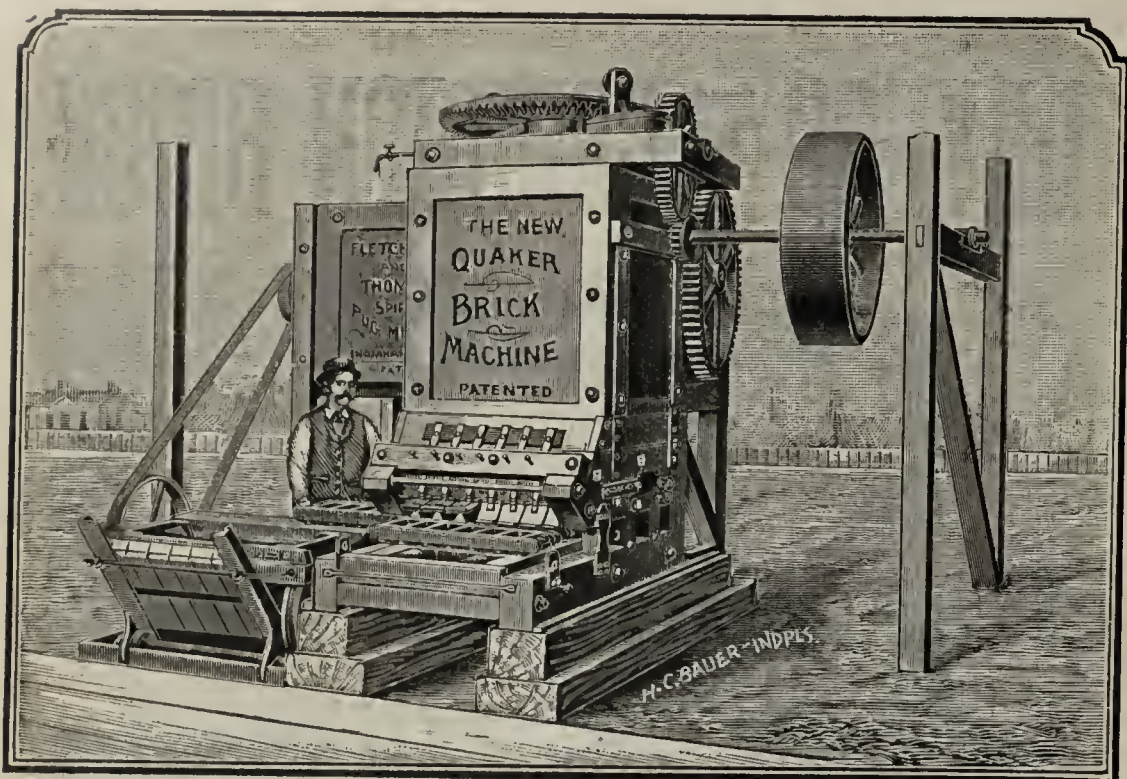
[Mention the Clay Worker



## FLETCHER &amp; THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

## Brick Machinery and Brickmakers' Supplies.



Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

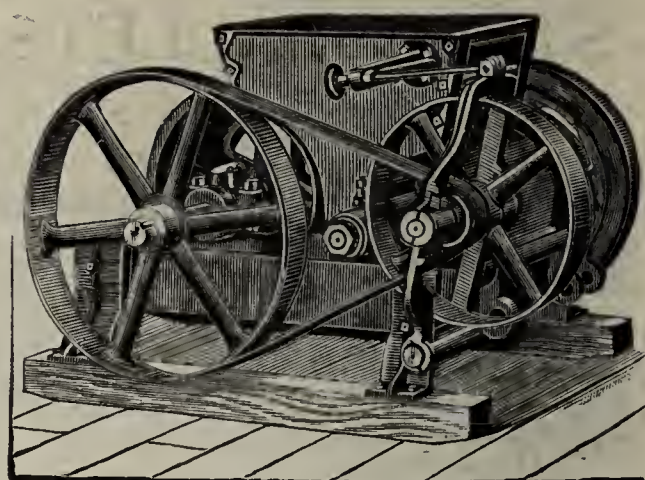
This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



THE NEW QUAKER

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



DISINTEGRATORS.

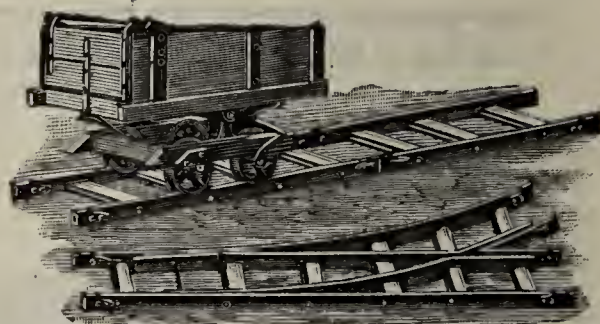
The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

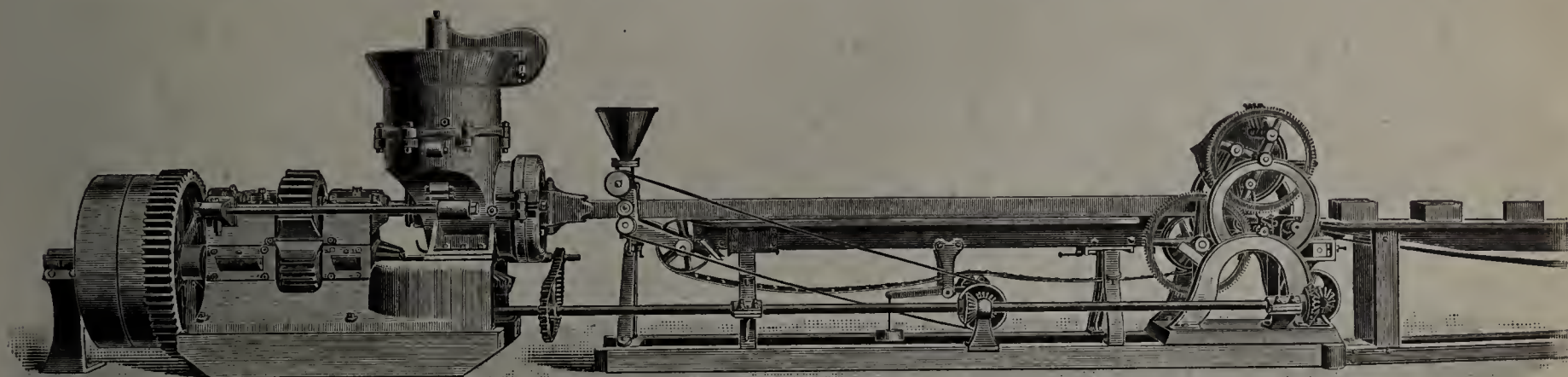
We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

FLETCHER & THOMAS, Indianapolis, Ind.

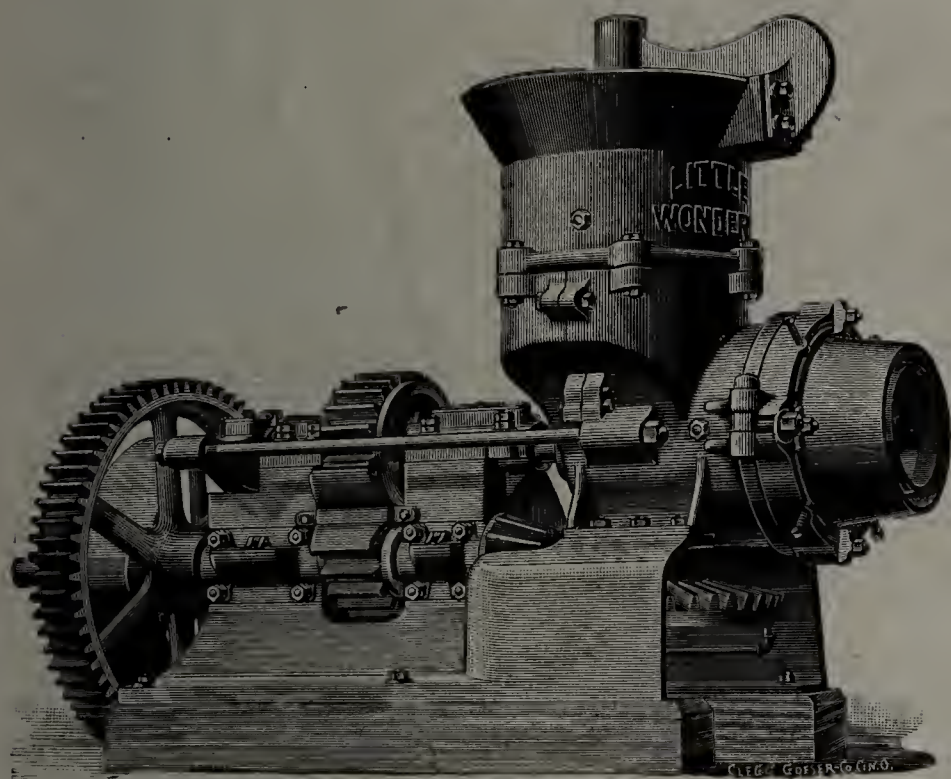


# The WONDER'S IN NEW DRESS.

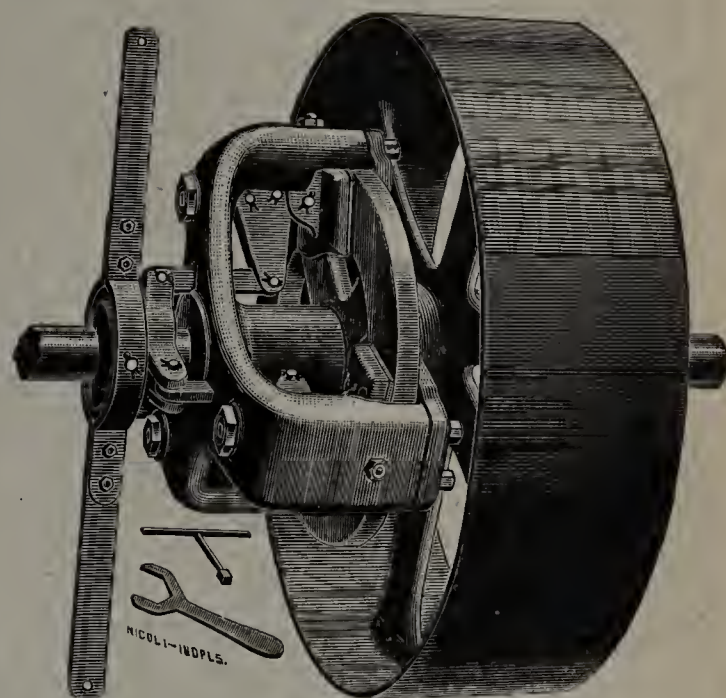


NICOLI-IND.

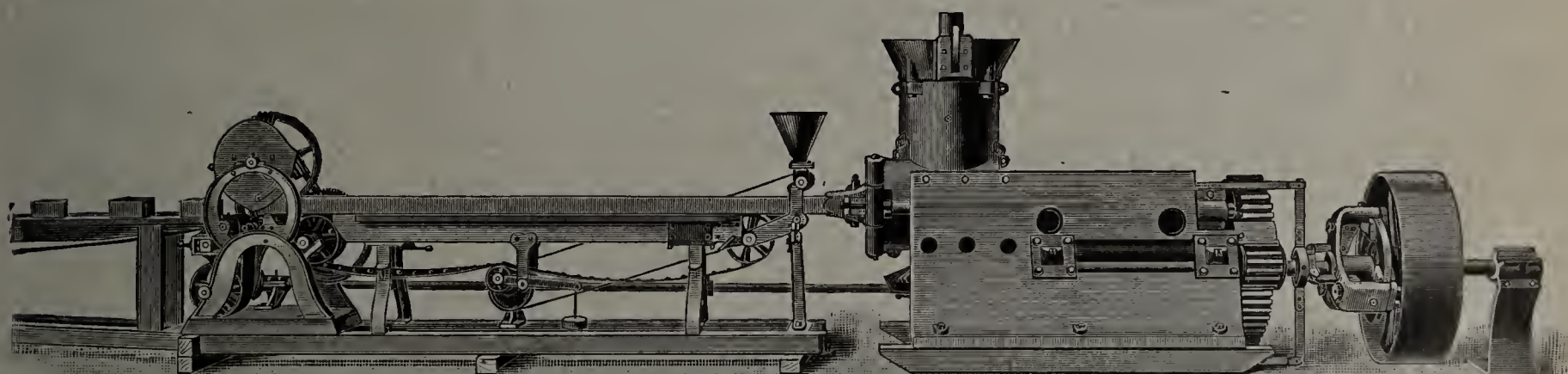
Little Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 25 M. daily Capacity.



Little Wonder Brick and Tile Machine.



Friction Clutch Pulley.



Big Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 60 to 75 M. daily Capacity.

**The Wallace Mfg Co.,**

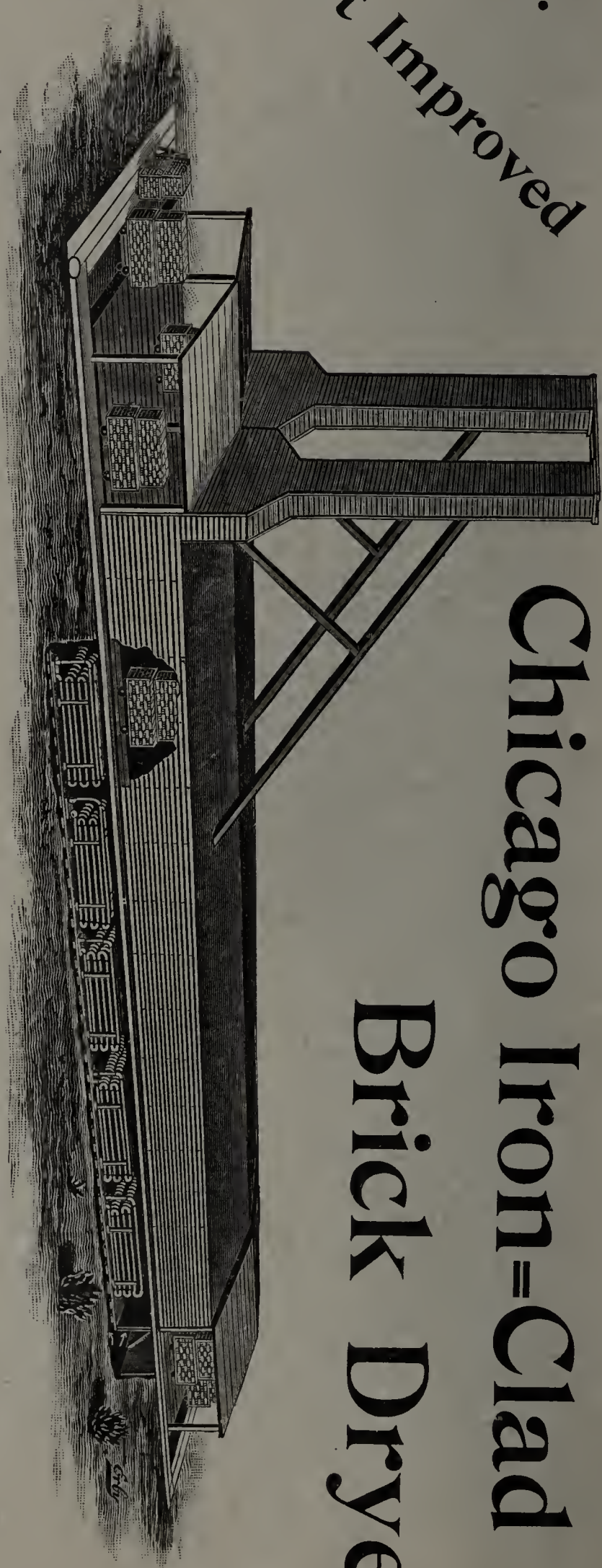
When You Send for Further Particulars  
Mention the CLAY-WORKER.

FRANKFORT, IND.



The...

Latest Improved



# Chicago Iron=Clad Brick Dryer.

We refer to the following parties using the Iron=Clad Dryer:

Weekler-Prussing Brick Co., Chicago, drying 175,000 stiff mud brick per day.  
Purinton Brick Co., Chicago, drying 150,000 stiff mud brick per day.  
Labahn Brick Co., Chicago, drying 100,000 stiff mud brick per day.  
Thomas Moulding Co., Chicago, drying 75,000 stiff mud brick per day.  
Lillis & Glennon, Brownington, Mo., drying 30,000 paving brick per day.  
Karlan-Hollow and Porous Brick Co., Perth Amboy, N. J., drying fire-proofing.  
National Clay Co., Rock Island, Ill., drying 25,000 paving brick.  
Utica Fire Clay Co., Utica, Ill., drying fire-proofing.  
Ottawa Fire Clay and Brick Co., Ottawa, Ill., drying 25,000 paving brick.  
Quincy Press Brick Co., Quincy, Ill., drying 25,000 stiff mud brick.  
Trimble Brick Co., Trimble, Ohio, drying 25,000 stiff mud brick.  
Pioneer Fire-Proof and Construction Co., Ottawa, Ill., drying fire-proofing.  
Excelstor Brick Co., Chicago, Ill., drying 20,000 fire brick.  
J. P. Cappeau & Co., New Kensington, Pa., drying 60,000 stiff mud brick.  
A Hammerschmidt, Elmhurst, Ill., drying 25,000 stiff mud brick.  
Chicago Refort and Fire Brick Co., Chicago, Ill., drying 15,000 fire brick.  
Spurck Street Paving Brick Co., Peoria, Ill., drying 50,000 paving brick.

Royal Brick Co., Canton, Ohio, drying 50,000 paving brick.  
Buckeye Fire Clay Co., Uhrichsville, Ohio, drying 25,000 paving brick.  
Buckeye Brick Works, Wellsville, Ohio, drying 25,000 paving brick.  
Vulcan Clay Co., Wellsville, Ohio, drying 25,000 paving brick.  
Logan-Granite Clay Co., Logan, Ohio, drying 25,000 paving brick.  
Athens Brick Co., Athens, Ohio, drying 50,000 paving brick.  
Salem-Garfield Mining and Mfg. Co., Salem, Ohio, drying 25,000 paving brick.  
Ottumwa Brick and Construction Co., Ottumwa, Iowa, drying 50,000 paving brick.  
Hugo Becker, Le Claire, Iowa, drying 50,000 paving brick.  
Davenport Paving Brick Co., Davenport, Iowa, drying 25,000 paving brick.  
Huntington Paving Brick Co., Huntington, W. Va., drying 40,000 paving brick.  
Wabash Clay Co., Veedsburg, Ind., drying 40,000 paving brick.  
Benton Harbor Brick and Tile Co., Benton Harbor, Mich., drying 25,000 stiff mud brick.  
John Porter Co., New Cumberland, W. Va., drying 30,000 paving brick.  
Zeeland Brick Co., Zeeland, Mich., drying 150,000 stiff mud brick.  
E. Webster & Nephew, Philadelphia, Pa., drying 30,000 soft mud brick.  
Fallston Fire Clay Co., Fallston, Pa., drying 30,000 paving brick.  
Park Fire Clay Co., Park Quarries, Pa., drying 30,000 paving brick.

Pittsburg Clay Mfg. Co., New Brighton, Pa., drying 30,000 paving brick.  
W. A. Doyle, Fort Smith, Ark., drying 25,000 paving brick.  
Standard Brick Co., Milwaukee, Wis., drying 33,000 soft mud brick.  
Fulcher & Dyas Brick Co., Nashville, Tenn., drying 40,000 stiff mud brick.  
Evansville Press Brick Co., Evansville, Ind., drying 45,000 stiff mud brick.  
Glens Falls Terra Cotta and Brick Co., Glens Falls, N. Y., drying 25,000 soft mud brick.  
St. Louis Press Brick Co., St. Louis, Mo., drying 40,000 press brick.  
Cleveland Vitrified Press Brick Co., Cleveland, Ohio, drying 30,000 press brick.  
J. A. Blaffer & Son, New Orleans, La., drying 35,000 soft mud brick.  
St. Joe Paving Brick Co., St. Joe, Mo., drying 30,000 paving brick.  
Kankakee Tile and Brick Co., Kankakee, Ill., drying 25,000 stiff mud brick and tile.  
Alton Paving, Building and Fire Brick Co., Alton, Ill., drying 75,000 paving brick.  
Mackolite Fire-Proofing Co., Chicago Heights, Ill., plaster paris fire-proofing.  
Boone Paving Brick Co., Boone, Iowa, drying 28,000 paving brick.  
Flint Brick Co., Des Moines, Iowa, drying 50,000 paving brick.  
Turner Brick Co., Turner Junction, Ill., drying 35,000 building brick.  
Mayer & Toll, Chicago, Ill., drying 35,000 building brick.

I N looking over this list of references, it will be noticed that we are drying bricks for a great number of successful brickmakers, many of whom have added one tunnel at a time, as required by the growth of their business, proving that our system does good work. Our success, we regret to say, has led many to attempt imitating us, with disastrous results. Our imitators argue, from our success, that steam heat is the proper and only heat for drying clays, losing sight of the fact that we absorb the moisture from brick by drawing the hot air over and around the brick by natural draft, using a large volume of moderately heated air to accomplish the work, just as nature does it, while our imitators are using high degrees of heat and little or no ventilation; cooking the moisture out of the brick, making it impossible to produce tough bricks, no matter how they are burnt. If the reader wants to adopt nature's method, write us.

WOLFF DRYER CO., 358 DEARBORN STREET, ROOM 304, CHICAGO.























